Holly Springs Town Council
7:00 PM **Tuesday, July 15, 2025**
Regular Meeting
Holly Springs Town Hall Council Chambers
128 S. Main Street, 2nd Floor

Agenda

1. Call to Order
2. Pledge of Allegiance
3. Invocation
4. Adjustment and approval of July 15, 2025 meeting agenda

RECOGNITIONS

5. United States Coast Guard 235th Anniversary
6. Presentation of Proceeds from Battle of the Badges Softball Tournament

CONSENT AGENDA

7. June 3, 2025 Town Council Meeting Minutes and June 10, 2025 Town Council Workshop Minutes
8. Monthly Budget Amendments and Grants
9. Avent Ferry Pedestrian Improvement Project (TOHS Proj. 23-009)
10. Condemnation Resolution for the Downtown Avent Ferry Sidewalk
11. Condemnation Resolution for Main Street Sidewalk Project
12. Condemnation Resolution for the Holly Springs Fuquay-Varina (Sanford) Water Line
13. Engineering Design and Construction Standards Supplement #12
14. Voluntary Annexation 5900 Duncan Cook Road (A25-05)
15. Extension Request for Wegmans Development Plan Expiration (18-DP-15-A01)
16. Business Park Pump Station and Force Main Improvements
17. Operations Campus Building Upfitting - ADW Architects Design Construction Change Directive

PUBLIC HEARINGS

18. Hazel Ridge Major Subdivision Plan (25-MAS-01) - Quasi-Judicial Public Hearing
19. 1317 N Main St. Commercial Tracts Development Plan Major Amendment (21-DP-02-A02) - Quasi-Judicial Public Hearing

NEW BUSINESS

20. 4016 Berman Edge Rd Rezoning (25-REZ-03)
21. Eagles Landing Park - Building & Site Amenities, Guaranteed Maximum Price Amendment 02 (GMP-02)

PUBLIC COMMENT PERIOD

Each speaker may speak up to 3 minutes, and the total comment period will be 30 minutes or less. Citizens should sign up with the Town Clerk to speak prior to the start of the meeting. Although the Council is interested in hearing your concerns, speakers should not expect Council action or deliberation on subject matter brought up during the Public Comment segment. Topics requiring further investigation will be referred to the appropriate town officials or staff and may be scheduled for a future agenda. Thank you for your consideration of the Town Council, staff, and other speakers.

OTHER BUSINESS

MANAGER'S REPORT

CLOSED SESSION

ADJOURNMENT

In accordance with ADA regulations please contact the Town Clerk's office at least 48 hours before the meeting to request an auxiliary aid or service needed to participate in this meeting:
linda.mckinney@hollyspringsnc.gov 919-557-3900

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 5.

Recognitions
Title: United States Coast Guard 235th Anniversary
Strategic Priority Area: Vibrant Community
Staff Resource: Linda McKinney, Town Clerk

Action(s):
Issue a proclamation celebrating the US Coast Guard's 235th anniversary.

Explanation:

- As the 250th anniversary of the United States approaches, various branches of the armed services are reaching major milestones.
- The US Coast Guard turns 235 on August 4, 2025.
- Coast Guard veterans from American Legion Post 116 will be present to accept the proclamation.

Background:

- On August 4, 1790, President George Washington signed the bill drafted by Treasury Secretary Alexander Hamilton which authorized the construction of 10 cutters, a small fleet that would grow to become today's Coast Guard.
- The Coast Guard received its current name in 1915 when the Revenue Cutter Service merged with the U.S. Life-Saving Service.
- The Coast Guard professes the core values of Honor, Respect, and Devotion to Duty.
- North Carolina is the home to multiple Coast Guard stations (Wilmington, Elizabeth City, Caswell Beach, Bogue Banks, Hobucken, Wrightsville Beach and Camp Lejeune).

Funding Source(s):
N/A

Attachment(s):
1. US Coast Guard 235th Proclamation

Town of Holly Springs

A Proclamation By The Mayor

235th Anniversary of the U.S. Coast Guard

WHEREAS, on August 4, 1790 Congress created the Revenue Marine to enforce federal tariff and trade laws and prevent smuggling; and

WHEREAS, in 1915 the Revenue Marine merged with the United States Life-Saving Service, thus forming the modern United States Coast Guard; and,

WHEREAS, the Coast Guard enforces laws and treaties, facilitates commerce, saves lives, protects our environment, and deploys for defense operations all over the world; and,

WHEREAS, the Coast Guard professes the core values of Honor, Respect, and Devotion to Duty; and

WHEREAS, North Carolina is the home to multiple Coast Guard stations;

NOW, THEREFORE, I, Sean Mayefskie, Mayor of the Town of Holly Springs, North Carolina, do hereby proclaim August 4 2025 as the

US Coast Guard's 235th Anniversary

in the Town of Holly Springs and call this observance to the attention of all our residents.

Proclaimed this, the 15h day of July, 2025.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the Town of Holly Springs, North Carolina to be affixed on this 15th day of July, 2025.

_____

Sean Mayefskie, Mayor

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 6.

Recognitions
Title: Presentation of Proceeds from Battle of the Badges Softball Tournament
Strategic Priority Area: Organizational Excellence
Vibrant Community
Community Safety
Staff Resource: LeRoy Smith, Fire Chief, Michael Castelloe

Action(s):
Present Funds to the Miracle League

Explanation:

- Representatives from the Fire Department will present a check to the Miracle League for the "Battle of the Badges" softball tournament. The total is approximately $15,000
- The Miracle League is a 501(c)(3) national nonprofit charitable foundation whose donations go to children with special needs to participate in sports activities.
- Funds were raised by community attendees and supporters of the event.

Background:

- A softball tournament was held on April 25th through April 27th at Ting Park.
- The Town of Cary Fire Department Team won the tournament.
- Teams represented in the tournament include Holly Springs Fire and Rescue, Holly Springs Police, Apex Fire Department, Apex Police, Cary Professional Fire Fighters Association, Garner Police Department, Garner Fire Department, Fuquay Varina Police, Morrisville Fire Department, and Wake County EMS.

Funding Source(s):
Donations from admissions, donations, shirt sales, and food and drink sales.

Attachment(s):
None

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 7.

Consent Agenda
Title: June 3, 2025 Town Council Meeting Minutes and June 10, 2025 Town Council Workshop Minutes
Strategic Priority Area: Organizational Excellence
Staff Resource: Linda McKinney, Town Clerk

Action(s):
Approve the minutes of the June 3, 2025 Town Council Meeting and the June 10, 2025 Town Council Workshop Meeting.

Explanation:

- Minutes in draft form are attached for the Council's review.
- If there are any corrections, please notify the Town Clerk in advance of Tuesday night's meeting so that corrected versions of the draft minutes can be circulated for review before adoption of the Consent Agenda.

Background:

Funding Source(s):
N/A

Attachment(s):
1. 6.3.25 minutes - DRAFT
2. 6.10.25 workshop minutes - DRAFT

MINUTES

The Holly Springs Town Council met in regular session on Tuesday, June 3, 2025. Mayor Mayefskie presided, calling the meeting to order at 7 p.m. A quorum was established as the Mayor and five Council members were present in the Chamber as the meeting opened.

Council Members Present: Mayor Sean Mayefskie, MPT Dan Berry Council members Timothy Forrest, Danielle Hewetson, Annie Drees, and Chris Deshazor.

Council Members absent: none.

Staff Members Present in Chambers: Randy Harrington, *Town Manager*; Scott Chase, *Assistant Town Manager;* John Schifano, *Town Attorney;* Linda McKinney, *Town Clerk* (recording the minutes); Jeff Wilson, *Director of IT;* Kameron Womack and Jesse Dixon, *IT;* Corey Petersohn, *Director, Office of Budget, Innovation and Strategy;* MaryBeth Spoehr, *Office of Budget, Innovation, and Strategy;* Cassie Hack, *Director of Communications and Marketing*; Chris Hills, *Director, Development Services;* Elizabeth Goodson and Sean Ryan, *Development Services*; Kendra Parrish, *Executive Director of Utilities and Infrastructure;* Michael Leonas, *Utilities and Infrastructure;* Sabrina McDonald, *Director, Human Resources;* Tina Stroupe, *Finance Director;* George Brown, *Director, Office of Customer Care;* Paige Scott, *Director, Public Works;* LeeAnn Plumer, *Director, Parks and Recreation;* Jay Osborne, *Assistant Town Attorney*; LeRoy Smith, *Fire Chief;* Paul Liquorie, *Police Chief;* Kathy White, *Deputy Clerk.*

2. and 3. The Pledge of Allegiance was recited followed by an invocation by Pastor Paul Wilson, of Oasis Church.

4. Agenda Adjustment: The June 3, 2025 meeting agenda was adopted with changes, if any, as listed: none.

Motion: Berry
Second: Forrest
Vote: Unanimous

CONSENT AGENDA

The Council passed a motion to approve all items on the Consent Agenda. The motion carried following a motion by MPT Berry, a second by Council member Hewetson and a unanimous vote. The following actions were affected:

5. May 13, 2025 workshop meeting minutes – Council approved the minutes of the May 13, 2025 workshop meeting.

6. Town Council Meeting Calendar Amendment – Council amended their calendar of meetings to add a joint meeting with the Mayor and Council of Cary, NC on August 26, 2025 at 5:30 at The Mayton

7. Amgen Helix Three-Party Agreement – Council approved a three-party agreement between Amgen, Town of Holly Springs, and Helix Development Group.

NEW BUSINESS

8. Adoption of the Fiscal Year 2025-2026 Operating Budget and Community Investment Plan

Corey Petersohn, Director of the Office of Budget, Innovation, and Strategy, said this item was to share highlights of the Fiscal Year 2025-2026 Budget and Community Investment Plan, and for Council to consider its adoption. He said the recommended budget was shared at the May 13th meeting. No changes to the recommended budget were made at the Budget Workshop on May 22nd. This budget maintains one of the lowest tax rates in the County at 34.35 cents per $100 property valuation. It invests in key Mayor and Council priorities including transportation infrastructure, water and sewer infrastructure, downtown, Eagles Landing Park, and a new Microtransit mobility service.

Action 1: Motion to adopt the Fiscal Year 2025-2026 Operating Budget and Community Investment Plan to include the associated ordinances and policy updates included in the packet.

Motion: Forrest
Second: Hewetson
Vote: unanimous
Copies of Policy FN11.3, and Ordinances 25-17, 25-18, 25-19, 25-20, 25-21, 25-22, and 25-23 are attached to these minutes.

Action 2: Motion to adopt Council Order 25-01 directing Wake County to levy and collect property taxes for the Town of Holly Springs.

Motion: Forrest
Second: Hewetson
Vote: unanimous
A copy of Order 25-01 is attached to these minutes.

Public Comment: At this time, an opportunity was provided for members of the audience who had registered to speak to address the Council.

The following public comments were received in writing: three comments opposed to the Mira Ridge development from Dave Laucella, Elizabeth Musto, and Vincent Musto; one comment opposed to 1220 N. Main from Melanie Yetter; one anonymous comment regarding traffic and noise in Trinity Creek.

The following public comments were received in person:
Chanel Wilkins said she was here to share her excitement that Amgen is almost here. She said they are committed to a skills-first hiring philosophy. Also, their work has to do with cancer, with which she has experience. She is excited about the investment.

OTHER BUSINESS

Council member Drees thanked Randy Harrington, Corey Petersohn and other staff for their help during the budget process. She is concerned about the water rate on residents, and wonders if we could look into a program where water residents could round up, with the money put into a fund to assist those with trouble paying their water bills. Mr. Harrington had told her it might be possible, and she wanted to bring it to Council. Council member Hewetson asked how it would operate if it was managed by another group, like a nonprofit. Mr. Harrington said that jurisdictions that offer this in NC contract with a nonprofit or with the County health department. They are best positioned to make those decisions. In his prior job the municipality had a contract with an agency who managed the funds with guidelines or core principals articulated by Council. Council member Deshazor said we should look into it and make the decision once we have the data. MPT Berry asked what the collection rate on utilities is currently. Tina Stroube, Finance Director, said she doesn't know the actual percentage, but

month over month there are 60 to 80 accounts on the cut-off list out of about 16,000 accounts. It is very small. We do offer payment plans to people and connect them to area nonprofits. MPT Berry said he doesn't think it's a large enough percentage to get the government involved. Council member Forrest said we can keep an open mind and think about it later in the year. Council member Drees said to mull it over it would be helpful to have the information. Mayor Mayefskie asked if there was consensus to bring it to a workshop. There was not a majority interested.

Council member Drees wished everyone happy Pride Month. She congratulated graduating seniors and said she is looking forward to Juneteenth. She said she attended an Apex Community Town Hall last night and it was a positive experience with no agenda and no timers, for people to meet with their representatives.

Council member Forrest thanked Randy Harrington, Corey Petersohn, and staff for the budget process. He said it's a conservative and responsible budget and he thinks it's the right call. The strategic investments are sound, long-term investments, and it meets Council's strategic vision.

Council member Deshazor wished people Happy Pride Month. He also said that Juneteenth is coming up and there are activities around that. Central Pines has pre-meetings and this week they were talking about microtransit. Wake Forest kicked theirs off last year and he heard good stories from them. He said Wake Forest had higher ridership than expected. He said he was elected to be Secretary Treasurer of Central Pines for the coming fiscal year. Finally, regarding the Apex Greenway Crossing at Sunset Lake Rd., he is concerned about a crosswalk there because it's at the bottom of the hill with 45 mph speed limit. It's a little bit of a blind spot. As we prepare for this in October, he would like to work with them to find a solution to protect pedestrians.

Mayor Mayefskie said he received a text from former Council member Aaron Wolff that Holly Springs High School's hockey team made it to the finals. He went to the game and those kids can skate. He is excited to see how they do next year. He said the Town Hall Annex will be gone in a couple of years, but he wondered if there was support for the Arts Council to be able to use it as a canvas to begin art as a start to our festival street. He likes the idea of a mural there. He asked for Council's thoughts. Council liked the idea. Council member Hewetson asked if it could be connected to the sesquicentennial. There was general consensus on this idea. Mayor Mayefskie said the speed limit on NC 55 is 55 mph and he would like to see traffic keep moving.

MANAGER'S REPORT

Randy Harrington, Town Manager, said he had four things, the first of which was a Development Services update.

9. Preview of Upcoming Development Services Land Use Cases

Sean Ryan, Development Services, said he was here to present the quarterly update to Council on upcoming Land Use cases. He discussed the following new applications:

- Daventry – Conditional Zoning District
- Seasons @ Wilbon – Conditional Zoning District
- Duke Substation – Conditional Zoning District

Mr. Ryan then reminded the public that we are in a transition period where some rezoning applications are considered under the Legacy Process with the public hearing near the end of the process, and others are considered under the New Process with the public hearing earlier in the process. He said upcoming public hearings include two under the Legacy Process: 4500 Old Holly Springs Apex, and Sunset Lake Commons Apartments, and one under the New Process, 4016 Berman Edge Road. He said the following projects are waiting for revisions: 1100 Piney Grove Wilbon Rd. (legacy) and 600 Grigsby Ave., Chase Bank (Sunset Lake Rd.) and Powell Place (Rouse Rd.) under the new process.

Mr. Ryan said that other planning initiatives are the update of Comprehensive Plan Sections 4, 5, and 6 [pull the section names off the slides] which are in an ongoing data collection, stakeholder engagement, with public engagement over the summer. He updated Council on CAMPO's Blueprint for

Safety and their Regional Safety Summit. Holly Springs is represented by Development Services, Utilities and Infrastructure, and Public Safety. The results of the summit are being incorporated into the Blueprint for Safety plan. Mr. Ryan gave an update on the 2055 Metropolitan Transportation Plan development. He said that two private development projects that are nearing completion are the Rex Road Elementary School, and Peterson Station. He said our retail vacancy rate is very low.

Mr. Harrington thanked the Council for their work on the budget and said that it is more than a simple vote. A lot of work went into it, starting month ago. He thanked staff and Corey Petersohn in particular. He said the Supervisor Summit is Friday to help elevate staff's leadership skills and make sure that we are serving the public in the best manner possible. Finally, the E.G. Peters Band will be playing at Summers at the Springs on June 13th at the Cultural Center.

CLOSED SESSION: none.

Adjournment: MPT Berry made a motion to adjourn at 7:38 pm. It was seconded by Council member Forrest and passed with a unanimous vote.

Respectfully submitted on Tuesday, July 15, 2025.

Linda C. McKinney

Linda C. McKinney, Town Clerk

Addenda pages as referenced in these minutes follow and are a part of the official record.

Mayor and Council Workshop
6 p.m. June 10, 2025
Law Enforcement Center, and livestream

MINUTES

The Holly Springs Town Council met in a workshop session on Tuesday, June 10, 2025 at the Law Enforcement Center and via livestreaming. Mayor Mayefskie presided, calling the meeting to order at 6:00 p.m. A quorum was established as the Mayor and three Council members were present in the room as the meeting opened.

Council Members Present in the room: Mayor Sean Mayefskie, Council members Danielle Hewetson, Annie Drees, and Chris Deshazor.

Council Members Absent: Mayor Pro Tem Berry, Council member Tim Forrest.

Staff Members Present in the room: Randy Harrington, Town Manager; Linda McKinney, Town Clerk (recording the minutes); Daniel Weeks, Assistant Town Manager; Scott Chase, Assistant Town Manager; Jay Osborne, Assistant Town Attorney; Jesse Dixon, IT; Corey Petersohn, Director, Office of Budget and Strategic Planning; Cassie Hack, Director, Communications and Marketing; Chris Hills, Director Development Services; Sean Ryan, Development Services; Kendra Parrish, Executive Director of Utilities and Infrastructure; Sandel Lassiter, and Whitney Kimberly Keys, Utilities and Infrastructure; Paige Scott, Director, Public Works.

Mayor Mayefskie called the meeting to order at 6:00 p.m.

1. Overview: Randy Harrington, Town Manager, gave an overview of the meeting agenda. He said that the Town Attorney had had a death in the family. He was out of town and would not be giving his quarterly update tonight.

2. Ting Park and Mims Park Visioning Follow-Up

Chris Hills, Director of Development Services, said this was a chance for Council to finalize their desires for Mims and Ting Park areas and he asked for direction on determining the best path forward. He said that the decision tree is: if this is the right time to seek partners; if so, does the concept plan meet Council's expectations; are the correct properties identified; and what will be the Town's contribution. He said we believe in Placemaking, outlined the benefits of Placemaking to the Town, and said he was seeking direction on what Council thinks is the right thing for Holly Springs. He outlined the Growth Strategy Map and Future Land Use Plan's plans for these areas.

Mr. Hills discussed public private partnerships and the benefits they can bring to the Town in meeting plans for future growth. He reminded Council and the public of the public private partnership that brought Town Hall Commons and The Block on Main to downtown, delineating the public investments and the private investments that were involved.

Mr. Hills listed Town Contribution options, and the situations that each is appropriate for, and reminded Council that if proposals do not meet our needs or expectations, we do not have to move forward. He gave examples of two projects in neighboring municipalities and what methods they used.

Sean Ryan, Development Services, outlined the opportunities at the Ting site to create a sports and entertainment district. He said that Council developed two Concepts (A & B) at the retreat which were combined to form Concept C after looking for ways to maximize town assets.

After Council feedback on that concept, it was refined to Concept C1. The main changes were reducing the height and changing from Hotel to Mixed-Use. This maximizes the Town-owned property and illustrates a mix of desirable uses. It focuses on the pedestrian experience, and enhances public spaces. He asked Council if this plan provided proper direction to potential partners.

Council discussed the importance of keeping the playground, either in its current place or relocating it. They discussed whether a hotel was right for that spot and whether the changed designation of Mixed-Use would preclude a hotel. Staff said that the Request for Proposals (RFP) could specify that a playground must be included, and that if a hotel was proposed it was still up to Council to decide whether or not that was the right use for that place.

Mr. Hills asked if the massing and scale of the buildings about what they would expect for this area. He said staff is not expecting to receive literally this design, but a creative design following these precepts. Questions were asked about parking and staff pointed out the parking deck that would need to be part of the plan. Council consensus was to go with C1.

Mr. Ryan said the three properties to be considered, labeled A, B, and C, were in discussion, but that they are focusing on A and B. Area C is the playground that was mentioned in past discussions. He said staff wants to make sure which parcels Council wants to be considered.

Council discussed options and decided to include all three parcels in an RFP, with C as optional, and a requirement to have a playground.

Mr. Hills said that staff's framework recommendation is, using Concept C1, to focus on areas A & B, with C as a possible lease and to use Land Conveyance at market or reduced rate, based upon infrastructure investments by the private partner, and/or infrastructure reimbursement grants for public infrastructure costs. Randy Harrington said the key framework pieces do not include the Town taking on debt – it is pieces that require the least cash upfront by the Town to accomplish the goal.

Mr. Ryan said that next he wanted to receive direction on the Mims Park area. The Downtown Area Plan calls for this to be "a destination park that provides access to residents and visitors, providing a number of activities for interaction, recreation, and respite." He reminded Council and the public that they created two concepts at the retreat – A and B. These were reconciled into a Concept C. He discussed the various features of this concept, including a permanent home for the Farmers Market, a parking deck, and townhomes along the outer north and eastern edges. He said this maintains the majority of the property for a park, with potential development of about 5 acres at the northeast corner, a library expansion at the current location, and retail and parking on Ballentine. He asked Council if this reflected Council's goals.

Council discussed whether the housing part was what made this a public-private partnership, whether the units could be restricted to owner-occupied rather than rented. They discussed the placement of the parking garage and preserving as many trees as possible. There was discussion about the timing, given Eagles Landing construction.

Mr. Harrington said he's hearing some mixed opinions around this. Mayor Mayefskie asked if Council member Deshazor was ok with getting some ideas from developers. Council member Deshzor said at this point we're just getting ideas, but when they come in we will need to consider everything that is going on and decide what to do. Mr. Harrington said Council will have another chance to say whether or not to move forward with the RFP. He asked if Council wanted to see a draft RFP and then decide whether to move forward. Council member Drees said she hates for staff to do additional work when she knows she will vote against losing five acres of parkland. Mr. Harrington said that recognizing that two council members are absent, and he doesn't know how they feel, staff will move forward and give Council a chance to see what they draft. They can then decide whether to move forward.

Mr. Ryan identified some assets in the downtown area in addition to the Mims Park land. These include the North Town Hall Parking Lot, the Annex Lot, Ballentine Street Yard, and the Avent Ferry stormwater and parking lot which is an additional 4.9 acres. The Wake County property adjacent is 4.85 acres and we would need to stay in coordination with Wake County to be sure that they are in accord. He asked if there was interest in looking at these other properties as part of the RFQ. Council member Deshazor said the library property would need to go through Wake County and would probably be another bond. Mr. Hills said it will not be overnight, but the County is aware that they have other land in the area. He said without the townhomes in the corner these other properties might bring in more partners. Mr. Harrington said the piece that has gotten the most conversation is the Avent Ferry parking because there is vacant land near it, and it has generated the most interest.

Council discussed where town-owned vehicles would be parked, and Mr. Hills said about half of them have moved already. We have an agreement for off-site parking until the Operations Campus comes online. Consensus was to include these areas to see what the level of interest was.

Mr. Hills said that staff's recommended framework for Mims was to identify all assets in and use the Concept C design, use land conveyance at market or reduced rate in addition to developer funded park elements and Town commitment to the downtown plan.

Mr. Hills said that using the "ripeness scale" that Ting is more ready to move forward than Mims. He said that next steps in the partnership process would be to develop a Request for Qualifications (RFQ) over the summer, to issue an RFQ in the fall seeking qualified partners, followed by an RFP, sent only to those identified as qualified partners, for Development Proposals. Possible selection criteria for proposals could be: public investment; concept alignment and plan creativity; partner ability; and maximum potential. He outlined a timeline for the next two years, starting with the RFQ in the fall, and hoping for a Development Agreement and Memorandum of Understanding in the summer or fall of 2026.

3. Operations Campus Additional Upfit Proposal

Kimberly Keyes, Utilities and Infrastructure, said this discussion was to address current space issues and plan for future growth needs while limiting the use of long-term lease agreements. She said that with the decommissioning of the Annex, IT and Parks and Recreation Management were displaced. There are currently two spaces that the Town is leasing – 242 S. Main, where IT and Utilities and Infrastructure are housed; and Village Office Condos where Development Services inspectors, U & I stormwater and erosion control, 311, and fire inspectors are housed. She said that the Operations Campus would have two buildings, an Administration Building and an Operations Building. The construction is on schedule and on budget and is currently going vertical.

Ms. Keyes showed areas in these buildings available for upfit. She said that there is a 2,500 square foot section of the administration building available for growth that could be fitted out now, (area A) and about 4,200 square feet in the Operations Building (areas B & C) that could be upfitted now instead of waiting for Phase 2. She said that staff investigated upfitting the entirety of the second floor of the Administration Building as an option. While it would be cheaper to upfit now than later, and be less disruptive to the first-floor occupants, it would delay the entire project by 12 months and cost about $4 million. Upfitting a portion of the second floor is not suitable as the building was mechanically designed to be fully upfitted at once. Staff's recommendation of upfitting the three areas mentioned would add 6,700 square feet of usable space, cost $950,000, and have minimal impact on the schedule.

Corey Petersohn, Office of Budget, Strategy, and Innovation, said that possible funding sources include the remaining bond premium, interest earnings on cash within the project, with

a total of about $1 million in available funds, net of debt issuance costs. There would be no need to use fund balance or additional debt issuance.

Council member Hewetson asked about the funds currently budgeted for the leases, and Mr. Harrington said it is Operating not Capital, so it would be rolled in to the operating costs of the Ops Campus buildings. Mayor Mayefskie asked which departments would be housed in these spaces and Mr. Harrington said we are still working on who would go there, trying to maximize space. He said we have the bond premium of about $1 million that can only be used on this facility, so we are trying to match that. He said that they talked to the Town's financial advisors about this and if we could get the cost down to $3 million and the timeline shortened there might be a scenario where it would be to the Town's benefit. He said he thought it was worth a few weeks of work, and staff would bring it back to Council in July or August. Council asked when we would need the second floor and whether we could rent it out until the Town needed it. Mr. Harrington said he expected we would have five to seven years before we needed it, and it was conceptionally possible to rent it out in the meantime. He said staff will work on it more and follow up with Council.

4. Town Clerk Quarterly Update

Linda McKinney, Town Clerk, said Council had asked for an update on the cemetery. She said in the average year 35 plots are sold, about half to residents and half to nonresidents. There have been spikes (as in 2021) when more than that are sold, but if the average holds, we have about 8 to 10 years of supply left. Of the 372 plots available as of May 30th, only 21 have been "pinned" so we need to mark the remainder. There were 521 plots that had been purchased but were unoccupied as of May 30th. Some of these may never be used, as they were purchased decades ago, but we can't count on that, as occasionally heirs appear and request burial. She explained that a small section of the oldest part of the cemetery is reserved for graves that are relocated from family cemeteries during development. She said the "Rose" section would require extensive regrading before burials could take place there. Planning for the future of the cemetery, Council could decide that when all currently available plots are sold the cemetery will close to new purchases and conduct burials in currently owned plots as well as maintaining the grounds. Grading the Rose section could extend the supply of plots approximately five more years beyond the current estimate. Another option would be to add a columbarium for the inurnment of ashes (currently allowed two to a plot). This could be located on the outside of the driveway loop west side of the cemetery. If continuing to have a town-owned option is important to Council, then purchasing additional land for a second cemetery is another option.

The second item for discussion is the Mayor and Council's annual retreat for 2026. There are two possible sets of dates for this, and three possible venues. Should Council choose to hold the retreat on Weds. Feb. 11th – Frid. Feb. 13th it could be at the Rizzo Center or the Graylyn. Holding it on Thurs. Feb. 5th – Sat. Feb. 7th it could be at the Rizzo Center or at The Carolina Inn.

Consensus was to hold the retreat on Feb. 5-7 at the Rizzo.

6. Open Discussion: none**.**

7. Closed Session: none.

8. Adjournment:

Motion to adjourn was made by Council member Deshazor seconded by Council member Hewetson and passed with a unanimous vote. The June 10, 2025 workshop meeting of the Holly Springs Town Council was adjourned at 7:35 pm.

Respectfully submitted on Tuesday, July 15, 2025.

Linda C. McKinney

Linda McKinney
Town Clerk

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 8.

Consent Agenda
Title: Monthly Budget Amendments and Grants
Strategic Priority Area: Vibrant Community
Growth Management & Economic Vitality
Staff Resource: Corey Petersohn, Budget, Innovation, and Strategy

Action(s):

- Receive the following Town Manager approved budget amendments:
  - **Amendment 1** - Police Department End of Year Lapse Salary Adjustment
  - **Amendment 2** - Fire Department End of Year Lapse Salary Adjustment

- Approve the following budget amendments and adopt the associated capital project/reserve ordinances:
  - **Amendment 3** - Town Hall Commons Lease Utility Fund Cost Allocation
  - **Amendment 4** - Utilities and Infrastructure Vehicle Upfit
  - **Amendment 5** - Parks and Recreation Capital Reserve Ordinance (25-26)
  - **Amendment 6** - System Development Fee Capital Reserve Ordinance (25-27)
  - **Amendment 7** - Streets Capital Reserve Ordinance (25-28)

Explanation:

- The budget ordinance for the Town authorizes the Town Manager to approve inter-department budget amendments within the same fund, up to $50,000 with notification to Council within the following month.
- Each month, when applicable, the Budget Department will provide a copy of these approved amendments:
  - **Amendment 1** - Police Department End of Year Lapse Salary Adjustment - this amendment transfers lapse salary in Fiscal Year 2024-2025 to the Police Department for potential overtime and holiday pay through the end of the fiscal year. This amendment does not increase the overall budget.
  - **Amendment 2** - Fire Department End of Year Lapse Salary Adjustment - this amendment transfers lapse salary in Fiscal Year 2024-2025 to the Fire Department for potential overtime and holiday pay through the end of the fiscal year. This amendment does not increase the overall budget.
- Any amendments that change the overall budget or transfers between funds require Town Council approval:
  - **Amendment 3** - Town Hall Commons Lease Utility Fund Cost Allocation - this amendment transfers the Utility Fund's portion of the Town Hall Commons Lease to

the General Fund for financial accounting purposes in Fiscal Year 2025-2026. This amendment does not change the lease and does not change the overall operating budget net of transfers.
    - **Amendment 4** - Utilities and Infrastructure Vehicle Upfit - this amendment reappropriates funds remaining in Fiscal Year 2024-2025 to Fiscal Year 2025-2026 that were intended for tags and upfit of two Utilities and Infrastructure vehicles purchased but awaiting final delivery. The upfit cannot occur until the vehicles are delivered.
- The following amendments are all updates to the Town's capital reserve funds. These funds operate like savings accounts for future capital projects associated with the funds respective revenue purpose. Each fund holds revenues that are dedicated for certain types of expenditures (e.g. Parks and Recreation fee-in-lieu payments for future development of park projects).
- Funds are not spent from capital reserve funds but instead transferred to other project funds. These ordinances do not appropriate any new projects and transfers are only executed when approved by Town Council for a capital project purpose.
    - **Amendment 5** - Parks and Recreation Capital Reserve Ordinance (25-26) - This ordinance appropriates actual received revenue through the end of last fiscal year for revenues that are associated with this Capital Reserve Fund. This ordinance does not appropriate any new projects and only recognizes received revenues.
    - **Amendment 6** - System Development Fee Capital Reserve Ordinance (25-27) - This ordinance appropriates actual received revenue through the end of last fiscal year for revenues that are associated with this Capital Reserve Fund. This ordinance does not appropriate any new projects and only recognizes received revenues.
    - **Amendment 7** - Streets Capital Reserve Ordinance (25-28) - This ordinance appropriates actual received revenue through the end of last fiscal year for revenues that are associated with this Capital Reserve Fund. This ordinance does not appropriate any new projects and only recognizes received revenues.

Background:

- Capital Project and Reserve Ordinances appropriate all revenues included within the fund. Included in the packet is a summary document detailing all changes to the capital reserve funds.

Funding Source(s):

- Amendments 1 & 2: Operating Budget (FY2024-2025)
- Amendment 3 & 4: Operating Budget (FY2025-2026)
- Amendment 5, 6, & 7: Community Investment Plan - Capital Reserve Revenues

Attachment(s):

1. Amendment 1 - Police Department End of Year Lapse Salary Adjustment
2. Amendment 2 - Fire Department End of Year Lapse Salary Adjustment
3. Amendment 3 - Town Hall Commons Lease Utility Fund Cost Allocation
4. Amendment 4 - Utilities and Infrastructure Vehicles Upfit
5. Summary of Ordinance Changes for July 15 2025
6. Amendment 5 - Parks and Recreation Capital Reserve Ordinance (25-26)
7. Amendment 6 - System Development Fee Capital Reserve Ordinance (25-27)

8. Amendment 7 - Streets Capital Reserve Ordinance (25-28)

Town of Holly Springs
FY2024-25 Budget Amendment Request

BE IT ORDAINED by the Town Council of the Town of Holly Springs, North Carolina, that the following amendment be made to the annual budget ordinance for the fiscal year ending June 30, 2025.

Department: Administration **Date:** 6/30/2025

Reason for Budget Amendment:

Shifting existing lapse salary for anticipated remaining salaries, benefits, and overtime expenses in the Police Department to close out FY25.

Expense			
Account #	***Account Description***	***Increase***	***Decrease***
10-450-010-01.01	General Fund - U&I - Salaries		$ 50,000
10-418-18-01.03	General Fund - Police - Overtime	$ 50,000	
	Total Expense:	**$ 50,000**	**$ 50,000**

Revenue			
Account #	***Account Description***	***Increase***	***Decrease***
	Total Revenue:	**$ -**	**$ -**

Department Head Signature (or electronic submission)

Town Manager Signature (if necessary)

Town Manager has authorized Department Directors to transfer operating funds within their department.
Town Manager is authorized to approve transfers between departments within the same fund up to $50,000.
All inter-departmental transfers will be reported to Town Council by the following month.
Amendments that change the total budget or departmental transfers over $50,000 require Town Council approval.

Town of Holly Springs
FY2024-25 Budget Amendment Request

BE IT ORDAINED by the Town Council of the Town of Holly Springs, North Carolina, that the following amendment be made to the annual budget ordinance for the fiscal year ending June 30, 2025.

Department: Administration **Date:** 6/30/2025

Reason for Budget Amendment:

Shifting existing lapse salary for anticipated remaining salaries, benefits, and overtime expenses in the Fire Department to close out FY25.

Expense			
Account #	***Account Description***	***Increase***	***Decrease***
10-450-010-01.01	General Fund - U&I - Salaries		$ 40,000
10-420-01.03	General Fund - Fire - Overtime	$ 40,000	
	Total Expense:	**$ 40,000**	**$ 40,000**

Revenue			
Account #	***Account Description***	***Increase***	***Decrease***
	Total Revenue:	**$ -**	**$ -**

Department Head Signature (or electronic submission)

Town Manager Signature (if necessary)

Town Manager has authorized Department Directors to transfer operating funds within their department.
Town Manager is authorized to approve transfers between departments within the same fund up to $50,000.
All inter-departmental transfers will be reported to Town Council by the following month.
Amendments that change the total budget or departmental transfers over $50,000 require Town Council approval.

Town of Holly Springs
FY2025-26 Budget Amendment Request

BE IT ORDAINED by the Town Council of the Town of Holly Springs, North Carolina, that the following amendment be made to the annual budget ordinance for the fiscal year ending June 30, 2026.

Department: Budget **Date:** 7/15/2025

Reason for Budget Amendment:

Transfering funds from the Utility Fund to the General Fund for the cost allocation of the Town Hall Commons lease. This amendment does not increase the overall expenditures (net of tranfers).

Expense			
Account #	***Account Description***	***Increase***	***Decrease***
30-410-46.01	Utility Fund - Central Services - Leases		$ 70,680
30-95	Utility Fund - Transfer Out	$ 70,680	
10-410-46.03	General Fund - Central Services - Leases	$ 70,680	
	Total Expense:	**$ 141,360**	**$ 70,680**

Revenue			
Account #	***Account Description***	***Increase***	***Decrease***
10-355.01	General Fund - Transfer In	$ 70,680	
	Total Revenue:	**$ 70,680**	**$ -**

Department Head Signature (or electronic submission)

Town Manager Signature (if necessary)

Town Manager has authorized Department Directors to transfer operating funds within their department.
Town Manager is authorized to approve transfers between departments within the same fund up to $50,000.
All inter-departmental transfers will be reported to Town Council by the following month.
Amendments that change the total budget or departmental transfers over $50,000 require Town Council approval.

Town of Holly Springs
FY2025-26 Budget Amendment Request

BE IT ORDAINED by the Town Council of the Town of Holly Springs, North Carolina, that the following amendment be made to the annual budget ordinance for the fiscal year ending June 30, 2026.

Department: Utilities and Infrastructure **Date:** 7/15/2025

Reason for Budget Amendment:

Reappropriating remaining funds from FY25 to FY26 for tags and upfit of two vehicles purchased in FY25 that are yet to be delivered. Upfit and tags cannnot be acquired until the vehicle is delivered.

Expense			
Account #	***Account Description***	***Increase***	***Decrease***
30-450-005-90.02	Utility Fund - U&I - Capital Vehicle	$ 3,000	
30-450-050-90.02	Utility Fund - U&I - Capital Vehicle	$ 4,000	
	Total Expense:	**$ 7,000**	**$ -**

Revenue			
Account #	***Account Description***	***Increase***	***Decrease***
30-360.08	Utility Fund - Approp from Fund Balance	$ 7,000	
	Total Revenue:	**$ 7,000**	**$ -**

Department Head Signature (or electronic submission)

Town Manager Signature (if necessary)

Town Manager has authorized Department Directors to transfer operating funds within their department.
Town Manager is authorized to approve transfers between departments within the same fund up to $50,000.
All inter-departmental transfers will be reported to Town Council by the following month.
Amendments that change the total budget or departmental transfers over $50,000 require Town Council approval.

Summary or Ordinance Changes for July 15, 2025, Town Council

Parks and Recreation Capital Reserve Ordinance

Current Ordinance Appropriation	**$16,531,957**
Parks and Recreation Fees-in-Lieu	$3,274,945
Interest on Investment	$111,075
Parks and Recreation Capital Reserve Ordinance (25-26)	**$19,917,977**

System Development Fee Capital Reserve Ordinance

Current Ordinance Appropriation	**$41,179,431**
System Development Fees	$7,908,372
Interest on Investment	$612,436
System Development Fee Capital Reserve Ordinance (25-27)	**$49,700,239**

Streets Capital Reserve Ordinance

Current Ordinance Appropriation	**$9,573,860**
Transfers from General Fund in FY26 Budget	$442,910
Interest on Investment	$76,311
Streets Capital Reserve Ordinance (25-28)	**$10,093,081**

Ordinance No. 25-26
Date Submitted: July 15, 2025
Date Adopted: July 15, 2025

Parks and Recreation Capital Reserve Fund
HOLLY SPRINGS, NORTH CAROLINA

BE IT ORDAINED by the Town Council of Holly Springs, North Carolina, that, pursuant to Section 18 of Chapter 159 of the General Statutes of North Carolina, the following capital reserve fund ordinance is hereby adopted:

SECTION I: The Town Council hereby creates a capital reserve fund for the purpose of acquiring land, making capital improvements to land and facilities, purchasing, planning, and constructing capital equipment or facilities for parks and recreation purposes.

SECTION II: This fund will remain operational until closed by resolution or ordinance of the governing body.

SECTION III: Parks and Recreation Development Fees shall be deposited directly into this fund effective July 15, 2025.

SECTION IV: The following amounts are appropriated for the capital reserve fund:

Parks and Recreation Capital Reserve Fund	
Expenditures:	
Transfers Out	19,917,977
Total	**19,917,977**

SECTION V: The following revenues are anticipated to be available to complete these projects:

Parks and Recreation Capital Reserve Fund	
Revenues:	
Parks and Recreation Revenues	19,917,977
Total	**19,917,977**

SECTION VI: Copies of this ordinance shall be furnished to the Clerk to the Town Council, and to the Budget Officer and the Finance Officer for direction in carrying out this project.

SECTION VII: All ordinances in conflict with this ordinance are hereby repealed or amended to reflect the controlling nature of this Ordinance.

The provisions of this ordinance shall become effective July 15, 2025, in accordance with the laws of the State of North Carolina.

Adopted this, the 15th day of July 2025.

Town of Holly Springs by

_____
Sean Mayefskie, Mayor

ATTEST:

_____
Linda McKinney, Town Clerk

Ordinance No. 25-27
Date Submitted: July 15, 2025
Date Adopted: July 15, 2025

System Development Fee Capital Reserve Fund
HOLLY SPRINGS, NORTH CAROLINA

BE IT ORDAINED by the Town Council of Holly Springs, North Carolina, that, pursuant to Section 18 of Chapter 159 of the General Statutes of North Carolina, the following capital reserve fund ordinance is hereby adopted:

SECTION I: The Town Council hereby creates a capital reserve fund for the purpose of acquiring land, making capital improvements to land and facilities, purchasing and constructing capital equipment or facilities for water, reclaimed water, and waste water system purposes.

SECTION II: This fund will remain operational until closed by resolution or ordinance of the governing body.

SECTION III: Water, Reclaimed Water, and Sewer System Development Fees shall be deposited directly into this fund effective July 15, 2025.

SECTION IV: The following amounts are appropriated for the capital reserve fund:

System Development Fee Capital Reserve Fund	
Expenditures:	
Transfers Out	49,700,239
Total	**49,700,239**

SECTION V: The following revenues are anticipated to be available to complete these projects:

System Development Fee Capital Reserve Fund	
Revenues:	
System Development Fee Revenues	49,700,239
Total	**49,700,239**

SECTION VI: Copies of this ordinance shall be furnished to the Clerk to the Town Council, and to the Budget Officer and the Finance Officer for direction in carrying out this project.

SECTION VII: All ordinances in conflict with this ordinance are hereby repealed or amended to reflect the controlling nature of this Ordinance.

The provisions of this ordinance shall become effective July 15, 2025, in accordance with the laws of the State of North Carolina.

Adopted this, the 15th day of July 2025.

Town of Holly Springs by

_____
Sean Mayefskie, Mayor

ATTEST:

_____
Linda McKinney, Town Clerk

Ordinance No. 25-28
Date Submitted: July 15, 2025
Date Adopted: July 15, 2025

Street Capital Reserve Fund
HOLLY SPRINGS, NORTH CAROLINA

BE IT ORDAINED by the Town Council of Holly Springs, North Carolina, that, pursuant to Section 18 of Chapter 159 of the General Statutes of North Carolina, the following capital reserve fund ordinance is hereby adopted:

SECTION I: The Town Council hereby creates a capital reserve fund for the purpose of acquiring land, making capital improvements to land and facilities, and purchasing, constructing, or maintaining capital equipment or facilities for street projects purposes.

SECTION II: This fund will remain operational until closed by resolution or ordinance of the governing body.

SECTION III: General fund revenues as identified will be transferred into this fund effective July 15, 2025.

SECTION IV: The following amounts are appropriated for the capital reserve fund:

Street Capital Reserve Fund	
Expenditures:	
Transfers Out	10,093,081
Total	**10,093,081**

SECTION V: The following revenues are anticipated to be available to complete these projects:

Street Capital Reserve Fund	
Revenues:	
Transfers In	10,093,081
Total	**10,093,081**

SECTION VI: Copies of this ordinance shall be furnished to the Clerk to the Town Council, and to the Budget Officer and the Finance Officer for direction in carrying out this project.

SECTION VII: All ordinances in conflict with this ordinance are hereby repealed or amended to reflect the controlling nature of this Ordinance.

The provisions of this ordinance shall become effective July 15, 2025, in accordance with the laws of the State of North Carolina.

Adopted this, the 15th day of July 2025.

Town of Holly Springs by

_____
Sean Mayefskie, Mayor

ATTEST:

_____
Linda McKinney, Town Clerk

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 9.

Consent Agenda
Title: Avent Ferry Pedestrian Improvement Project (TOHS Proj. 23-009)
Strategic Priority Area: Growth Management & Economic Vitality
Staff Resource: Michael Leonas, Utilities and Infrastructure, Dirk Siebenbrodt, Utilities and Infrastructure

Action(s):

- Award the Avent Ferry Pedestrian Improvement construction contract to Lanier Construction Co. Inc. in the lump sum amount of $452,431 and allowance for contingencies (if necessary) of up to $67,865 for a total construction project budget of $520,296.
- Authorize the Town Manager to approve any change orders or contracts that are within the approved project budget and consistent with the project scope.

Explanation:

- The purpose of this project is to fill the sidewalk gap along Avent Ferry Road (AFR) between the Rex Hospital Campus and the Downtown Area (near the Block on Main) by providing a safe bike and pedestrian route and improving access between medical services, residential zones and the downtown commercial district.
- The project consists of an 8' wide, 1,155 linear feet of concrete sidewalk along the eastern side of AFR. It includes raised boardwalk sections, utility adjustments and pedestrian crossing safety measures.
- Design and ROW acquisition for the project were done in-house, saving $150,000. These savings directly reduced the overall project cost and allowed more of the available funding to be used for construction and without reducing the scope of the pedestrian improvements.
- The informal bid submittal deadline for the project was June 16, 2025. The Town's Purchasing staff received two proposals, with the lowest, responsive, and responsible bidder being Lanier Construction Co. Inc.
- Construction is anticipated to start in September 2025, with completion anticipated in December 2025. The contract duration is 120 calendar days.

Background:

- The Avent Ferry Road (AVR) Pedestrian Improvement project is designed to enhance pedestrian connectivity between NC 55 and Downtown Holly Springs. Pedestrian improvements to Downtown were originally part of the AVR realignment project, funded by the 2018 Transportation Bond. This project included the realignment of AVR from Cotten Lane to Stinson Avenue via Pine Avenue. The intent was to create a new cross-

town connection from AVR to Bass Lake Road with the purpose of reducing downtown congestion.

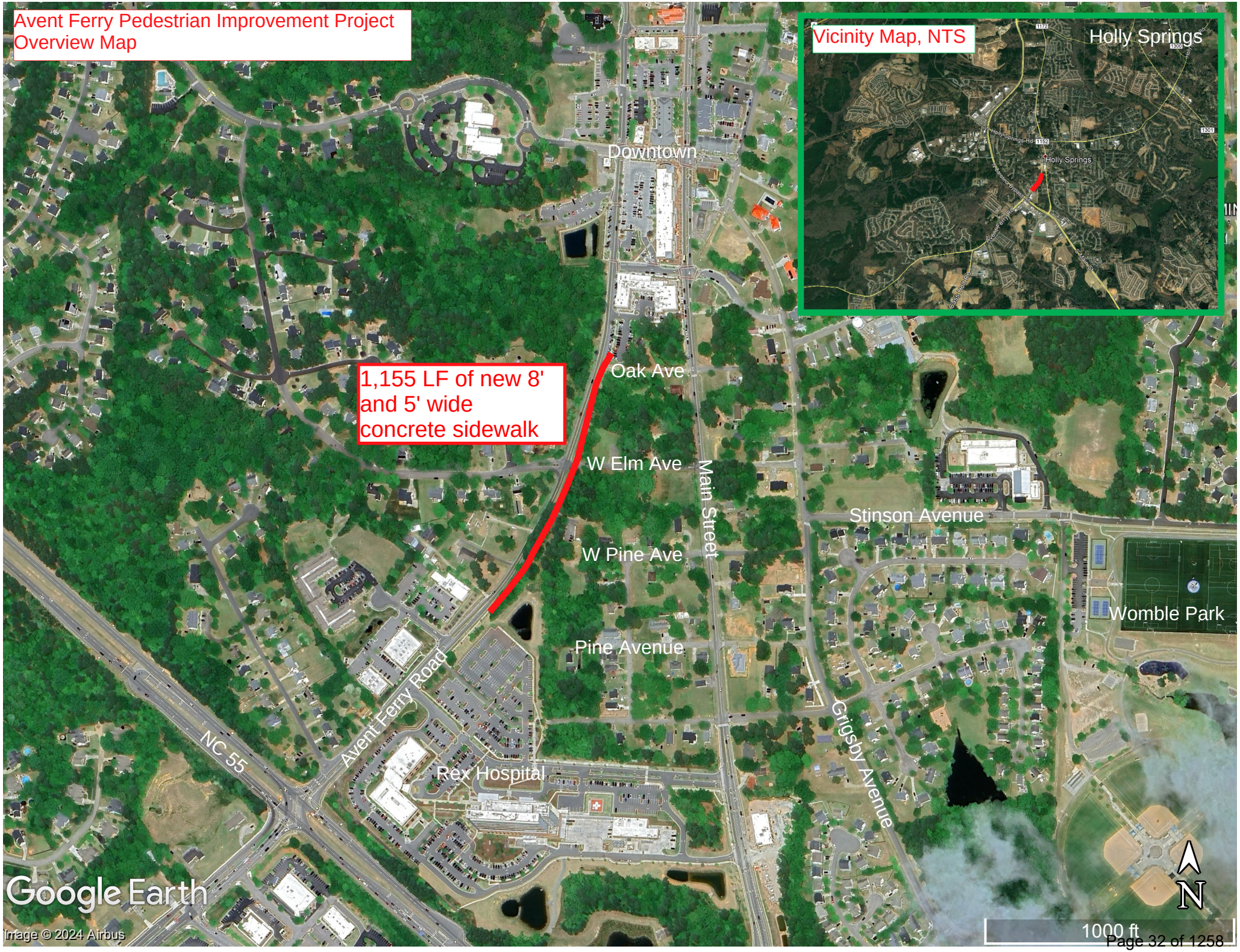
- As part of the original downtown realignment scope, the Town was awarded a $1,000,000 Locally Administered Projects Program (LAPP) grant to support sidewalk and pedestrian upgrades.
- However, based on Town Council transportation priorities, Holly Springs Road Widening, the Main Street and NC 55 Right Turn Lanes, funding from the 2018 Transportation Bond was reallocated, and the original scope modified to focus on pedestrian improvements for Downtown.
- To expedite delivery of the pedestrian improvements and avoid the extended timeline and added costs associated with federal LAPP requirements, Town Council gave concurrence at the March 12, 2024, Town Council Workshop to forgo the use of LAPP funding.
- Following this scope reduction to pedestrian-only improvements, $611,000 remained available for anticipated construction expenses.

Funding Source(s):

Community Investment Plan - Transportation Bond

Attachment(s):

1. 23-009 Project Map
2. Construction Contract


Avent Ferry Pedestrian Improvement Project
Overview Map
Vicinity Map, NTS
Holly Springs
Holly Springs
1,155 LF of new 8' and 5' wide concrete sidewalk
Downtown
Oak Ave
W Elm Ave
Main Street
Stinson Avenue
W Pine Ave
Womble Park
Pine Avenue
Avent Ferry Road
NC 55
Rex Hospital
Grigsby Avenue
Google Earth
Image © 2024 Airbus
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1000 ft

CONTRACT FOR CONSTRUCTION OF A SMALL PROJECT

Prepared by

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

Issued and Published Jointly by

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National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

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CONTRACT FOR CONSTRUCTION OF A SMALL PROJECT

This Contract is by and between the Town of Holly Springs, NC (Owner) and Lanier Construction Co. Inc. (Contractor).

Owner and Contractor hereby agree as follows:

ARTICLE 1 - THE WORK

1.01 Work

A. Work includes all labor, materials, equipment, services, and documentation necessary to construct the Project defined herein. The Work may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

B. The Contractor shall complete all Work as specified or indicated in the Contract Documents. The Project is generally described as follows:

1. The work for the Avent Ferry Pedestrian Improvement Project includes the construction of an approximately 1,155 LF long sidewalk, consisting of concrete sidewalk sections and raised boardwalk sections. Furthermore, a small retaining wall, new signing and striping is proposed, as well as grading, erosion control and other required measures. Please review the CD plan set ("Labeled Construction Drawings Town of Holly Springs Avent Ferry Pedestrian Improvement Project and dated 04/30/25 by Dirk Siebenbrodt".) for more information and details.

2. Besides being in the Town of Holly Springs ROW, the Site of the Work is crossing 5 properties, and requires 4 permanent ROW easements and 5 temporary construction easements. The designated work areas are being described in greater detail in the Contract Documents but is generally located along the eastern side of Avent Ferry Road, starting in the south at 781 Avent Ferry Road and ending in the north at 408 South Main Street. The work area is inside Town limits, in Holly Springs, NC 27540.

3. The raised boardwalk sections require a licensed structural engineer to design, sign and seal the design drawings. After a contractor is selected, he/she shall select and work with a structural engineer to provide this service. More construction duration time has been added to the construction duration to reflect that.
The boardwalk drawings will need to be submitted to the Engineer for review. In addition, the boardwalk drawings must also be submitted, reviewed and permitted through the Town of Holly Springs Code Enforcement Department. Any permitting fees for the boardwalk will either be waived or be reimbursed by the Town. Any questions in this regard can be send to dirk.siebenbrodt@hollyspringsnc.gov, directed to the Town of Holly Springs Code Enforcement Department (tel.: 919-577-3111), or discussed at the pre-construction meeting.

4. A retaining wall Is proposed near the northern tie-in point at Station 11+50.00, as shown on Sheet 1.7. The retaining wall shall be cast-in-place, 2' max. in height above the ground. No geogrid or other tiebacks are allowed inside the TOHS ROW and/or the easement.

C. Section 40000 (Special Conditions) of the contract contains additional requirements.

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ARTICLE 2 - CONTRACT DOCUMENTS

2.01 Intent of Contract Documents

A. It is the intent of the Contract Documents to describe a functionally complete project. The Contract Documents do not indicate or describe all of the Work required to complete the Project. Additional details required for the correct installation of selected products are to be provided by the Contractor and coordinated with the Owner and Engineer. This Contract supersedes prior negotiations, representations, and agreements, whether written or oral. The Contract Documents are complementary; what is required by one part of the Contract Documents is as binding as if required by other parts of the Contract Documents.

B. During the performance of the Work and until final payment, Contractor and Owner shall submit all matters in question concerning the requirements of the Contract Documents, or relating to the acceptability of the Work under the Contract Documents to the Engineer. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

C. Engineer will render a written clarification, interpretation, or decision on the issue submitted, or initiate a modification to the Contract Documents.

D. Contractor, and its subcontractors and suppliers, shall not have or acquire any title to or ownership rights to any of the Drawings, Specifications, or other documents (including copies or electronic media editions) prepared by Engineer or its consultants.

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2.02 Contract Documents Defined

A. The Contract Documents consist of the following documents:

1. Performance Bond (if applicable)
2. Payment Bond (if applicable)
3. This Contract
4. Addenda (if applicable)
5. Payment Applications Forms
6. HS Minority Program (if applicable)
7. E-Verify Affidavit
8. Technical Specifications
9. Construction Drawing Set

ARTICLE 3 - ENGINEER

3.01 Engineer

A. The Engineer for this Project is the Town of Holly Springs Utilities and Infrastructure Department.

ARTICLE 4 - CONTRACT TIMES

4.01 Contract Times

A. The Work will be substantially completed 90 days from the Notice to Proceed and completed and ready for final payment within 120 days from the Notice to Proceed.

There are no known Town events that take place along the project corridor during the contract time.

4.02 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence in the performance of the Contract, and that Owner will incur damages if Contractor does not complete the Work according to the requirements of Paragraph 4.01. Because such damages for delay would be difficult and costly to determine, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner $500 for each day that expires after the Contract Time for substantial completion. If the Contractor achieves substantial completion but has not completely performed such that final payment cannot be made, the Contractor shall pay $250 for each day after substantial completion until such time as the Contractor has fully performed all contract obligations.

4.03 Delays in Contractor's Progress

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to

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an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor or their subcontractors or suppliers.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times.

D. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor or Contractor's subcontractors or suppliers.

4.04 Progress Schedules

A. Contractor shall develop a progress schedule and submit to the Engineer for review and comment before starting Work on the Site. The Contractor shall modify the schedule in accordance with the comments provided by the Engineer.

B. The Contractor shall update and submit the progress schedule to the Engineer each month. The Owner may withhold payment if the Contractor fails to submit the schedule.

ARTICLE 5 - CONTRACT PRICE

5.01 Payment

A. Owner shall pay Contractor in accordance with the Contract Documents, the lump sum amount of $ 452,431.00 for all Work.

ARTICLE 6 - BONDS AND INSURANCE

6.01 Bonds

A. Before starting Work, Contractor shall furnish a performance bond and a payment bond from surety companies that are duly licensed or authorized to issue bonds in the required amounts in the jurisdiction in which the Project is located. Each bond shall be in an amount equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until the completion of the correction period specified in Paragraph 7.12 but, in any case, not less than one year after the date when final payment becomes due.

6.02 Insurance

A. Before starting Work, Contractor shall furnish evidence of insurance from companies that are duly licensed or authorized in the jurisdiction in which the Project is located with a minimum AM Best rating of A-VII or better. Contractor shall provide insurance in accordance with the following:

1. Contractor shall provide coverage for not less than the following amounts, or greater

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where required by Laws and Regulations:

a. Workers' Compensation:

State:	Statutory
Employer's Liability:	
Bodily Injury, each Accident	$ _____
Bodily Injury By Disease, each Employee	$ _____
Bodily Injury/Disease Aggregate	$ _____

b. Commercial General Liability:

General Aggregate	$ 5,000,000.00
Products - Completed Operations Aggregate	$ _____
Personal and Advertising Injury	$ _____
Each Occurrence (Bodily Injury and Property Damage)	$ _____

c. Automobile Liability herein:

Bodily Injury:	
Each Person	$ _____
Each Accident	$ _____
Property Damage:	
Each Accident	$ _____
Combined Single Limit of:	$ _____

d. Excess or Umbrella Liability:

Per Occurrence	$ _____
General Aggregate	$ 5,000,000.00

e. Contractor's Pollution Liability:

Each Occurrence	$ _____
General Aggregate	$ _____

B. All insurance policies required to be purchased and maintained will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the insured and additional insured, and in conformity with paragraph 6.01(A).

C. Automobile liability insurance provided by Contractor shall provide coverage against claims

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for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

D. Contractor's commercial general liability policy shall be written on a 1996 or later ISO commercial general liability occurrence form and include the following coverages and endorsements:

1. Products and completed operations coverage maintained for three years after final payment;
2. Blanket contractual liability coverage to the extent permitted by law;
3. Broad form property damage coverage; and
4. Severability of interest; underground, explosion, and collapse coverage; personal injury coverage.

E. The Contractor's commercial general liability and automobile liability, umbrella or excess, and pollution liability policies shall include and list Owner and Engineer and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each as additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis.

1. Additional insured endorsements will include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
2. Contractor shall provide ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent for design professional additional insureds.

F. Umbrella or excess liability insurance shall be written over the underlying employer's liability, commercial general liability, and automobile liability insurance. Subject to industry-standard exclusions, the coverage afforded shall be procured on a "follow the form" basis as to each of the underlying policies. Contractor may demonstrate to Owner that Contractor has met the combined limits of insurance (underlying policy plus applicable umbrella) specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policies and an umbrella or excess liability policy.

G. The Contractor shall provide property insurance covering physical loss or damage during construction to structures, materials, fixtures, and equipment, including those materials, fixtures, or equipment in storage or transit.

H. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 15.

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ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

7.01 Supervision and Superintendence

A. Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, safety, and procedures of construction.

B. Contractor shall assign a competent resident superintendent who is to be present at all times during the execution of the Work. This resident superintendent shall not be replaced without written notice to and approval by the Owner and Engineer except under extraordinary circumstances.

C. Contractor shall at all times maintain good discipline and order at the Site. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday to Friday, 7:00 am to 4:00 pm. Work until 6:00 pm during the week will be granted if work necessitates, but these occurrences shall be kept to a minimum. Work on Saturday from 8:00 am to 6:00 pm is allowed, but shall be requested by Wednesday of the week and to be kept to a minimum. No Sunday work is allowed.

7.02 Other Work at the Site

A. In addition to and apart from the Work of the Contractor, other work may occur at or adjacent to the Site. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

7.03 Services, Materials, and Equipment

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be new, of good quality and shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable supplier, except as otherwise may be provided in the Contract Documents.

7.04 Subcontractors and Suppliers

A. Contractor may retain subcontractors and suppliers for the performance of parts of the Work. Such subcontractors and suppliers must be acceptable to Owner.

7.05 Quality Management

A. Contractor is fully responsible for the managing quality to ensure Work is completed in accordance with the Contract Documents.

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7.06 Licenses, Fees and Permits

A. Contractor shall pay all license fees and royalties and assume all costs incident to performing the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others.

B. Contractor shall obtain and pay for all construction permits and licenses unless otherwise provided in the Contract Documents.

7.07 Laws and Regulations; Taxes

A. Contractor shall give all notices required by and shall comply with all local, state, and federal Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages if Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations.

C. Contractor shall pay all applicable sales, consumer, use, and other similar taxes Contractor is required to pay in accordance with Laws and Regulations.

7.08 Record Documents

A. Contractor shall maintain one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved shop drawings in a safe place at the Site. Contractor shall annotate them to show changes made during construction. Contractor shall deliver these record documents to Engineer upon completion of the Work.

7.09 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work.

B. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. All persons on the Site or who may be affected by the Work;

2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. Other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and underground facilities not designated for removal, relocation, or replacement in the course of construction.

C. All damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by Contractor, or anyone for whose acts the Contractor may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Contract Documents or to the acts or omissions of Owner or Engineer and not attributable, directly or

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indirectly, in whole or in part, to the fault or negligence of Contractor).

D. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

E. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor shall act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.10 Shop Drawings, Samples, and Other Submittals

A. Contractor shall review and coordinate the shop drawing and samples with the requirements of the Work and the Contract Documents and shall verify all related field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information.

B. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

C. With each submittal, Contractor shall give Engineer specific written notice, in a communication separate from the submittal, of any variations that the shop drawing or sample may have from the requirements of the Contract Documents.

D. Engineer will provide timely review of shop drawings and samples.

E. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs.

F. Engineer's review and approval of a separate item does not indicate approval of the assembly in which the item functions.

G. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of shop drawings and submit, as required, new samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

H. Shop drawings are not Contract Documents.

7.11 Warranties and Guarantees

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

7.12 Correction Period

A. If within one year after the date of substantial completion, any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by

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Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly and without cost to Owner, correct such defective Work.

7.13 Indemnification

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any subcontractor, any supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts they may be liable.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 Owner's Responsibilities

A. Except as otherwise provided in the Contract Documents, Owner shall issue all communications to Contractor through Engineer.

B. Owner shall make payments to Contractor as provided in this Contract.

C. Owner shall provide Site and easements required to construct the Project.

D. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, unless stated elsewhere in the Contract Documents, Owner shall have sole authority and responsibility for such coordination.

E. The Owner shall be responsible for performing inspections and tests required by applicable codes.

F. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

G. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

H. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 Engineer's Status

A. Engineer will be Owner's representative during construction. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction

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are set forth in this Contract.

B. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any subcontractor, any supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

C. Engineer will make visits to the Site at intervals appropriate to the various stages of construction. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work.

D. Engineer has the authority to reject Work if Contractor fails to perform Work in accordance with the Contract Documents.

E. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work.

F. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

ARTICLE 10 - CHANGES IN THE WORK

10.01 Authority to Change the Work

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work.

10.02 Change Orders

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in the Work which are: (a) ordered by Owner or (b) agreed to by the parties or (c) resulting from the Engineer's decision, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

3. Changes in the Contract Price or Contract Times or other changes which embody the substance of any final binding results under Article 12.

B. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

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ARTICLE 11 - DIFFERING SUBSURFACE OR PHYSICAL CONDITIONS

11.01 Differing Conditions Process

A. If Contractor believes that any subsurface or physical condition including but not limited to utilities or other underground facilities that are uncovered or revealed at the Site either differs materially from that shown or indicated in the Contract Documents or is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract Documents then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. After receipt of written notice, Engineer will promptly:

1. Review the subsurface or physical condition in question;
2. Determine necessity for Owner obtaining additional exploration or tests with respect to the condition;
3. Determine whether the condition falls within the differing site condition as stated herein;
4. Obtain any pertinent cost or schedule information from Contractor;
5. Prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and
6. Advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

ARTICLE 12 - CLAIMS AND DISPUTE RESOLUTION

12.01 Claims Process

A. The party submitting a claim shall deliver it directly to the other party to the Contract and the Engineer promptly (but in no event later than 10 days) after the start of the event giving rise thereto.

B. The party receiving a claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the claim through the exchange of information and direct negotiations. All actions taken on a claim shall be stated in writing and submitted to the other party.

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C. If efforts to resolve a claim are not successful, the party receiving the claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the claim within 45 days, the claim is deemed denied.

D. If the dispute is not resolved to the satisfaction of the parties, Owner or Contractor shall give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction unless the Owner and Contractor both agree to an alternative dispute resolution process.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION OF DEFECTIVE WORK

13.01 Tests and Inspections

A. Owner and Engineer will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access.

B. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

C. If any Work that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense.

13.02 Defective Work

A. Contractor shall ensure that the Work is not defective.

B. Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. The Contractor shall promptly correct all such defective Work.

E. When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. If the Work is defective or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated.

ARTICLE 14 - PAYMENTS TO CONTRACTOR

14.01 Progress Payments

A. The Contractor shall prepare a schedule of values that will serve as the basis for progress payments. The schedule of values will be in a form of application for payment acceptable to Engineer. The unit price breakdown submitted with the bid will be used for unit price work. Break lump sum items into units that will allow for measurement of Work in progress.

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14.02 Applications for Payments:

A. Contractor shall submit an application for payment in a form acceptable to the Engineer, no more frequently than monthly, to Engineer. Applications for payment will be prepared and signed by Contractor. Contractor shall provide supporting documentation required by the Contract Documents. Payment will be paid for Work completed as of the date of the application for payment.

B. Beginning with the second application for payment, each application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior applications for payment.

14.03 Retainage

A. The Owner shall retain 5% of each progress payment until the Work is substantially complete.

14.04 Review of Applications

A. Within 10 days after receipt of each application for payment, the Engineer will either indicate in writing a recommendation for payment and present the application for payment to Owner or return the application for payment to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. The Contractor will make the necessary corrections and resubmit the application for payment.

B. Engineer will recommend reductions in payment (set-offs) which, in the opinion of the Engineer, are necessary to protect Owner from loss because the Work is defective and requires correction or replacement.

C. The Owner is entitled to impose set-offs against payment based on any claims that have been made against Owner on account of Contractor's conduct in the performance of the Work, incurred costs, losses, or damages on account of Contractor's conduct in the performance of the Work, or liquidated damages that have accrued as a result of Contractor's failure to complete the Work.

14.05 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

14.06 Substantial Completion

A. The Contractor shall notify Owner and Engineer in writing that the Work is substantially complete and request the Engineer issue a certificate of substantial completion when Contractor considers the Work ready for its intended use. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Engineer will make an inspection of the Work with the Owner and Contractor to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor and Owner in writing giving the reasons therefor.

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C. If Engineer considers the Work substantially complete or upon resolution of all reasons for non-issuance of a certificate identified in 14.06.B, Engineer will deliver to Owner a certificate of substantial completion which shall fix the date of substantial completion and include a punch list of items to be completed or corrected before final payment.

14.07 Final Inspection

A. Upon written notice from Contractor that the entire Work is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.08 Final Payment

A. Contractor may make application for final payment after Contractor has satisfactorily completed all Work defined in the Contract, including providing all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents and other documents.

B. The final application for payment shall be accompanied (except as previously delivered) by:

1. All documentation called for in the Contract Documents;
2. Consent of the surety to final payment;
3. Satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any liens or other title defects, or will so pass upon final payment;
4. A list of all disputes that Contractor believes are unsettled; and
5. Complete and legally effective releases or waivers (satisfactory to Owner) of all lien rights arising out of the Work, and of liens filed in connection with the Work.

C. The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

14.09 Waiver of Claims

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 60 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension.

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15.02 Owner May Terminate for Cause

A. Contractor's failure to perform the Work in accordance with the Contract Documents or other failure to comply with a material term of the Contract Documents will constitute a default by Contractor and justify termination for cause.

B. If Contractor defaults in its obligations, then after giving Contractor and any surety ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. Declare Contractor to be in default, and give Contractor and any surety notice that the Contract is terminated; and

2. Enforce the rights available to Owner under any applicable performance bond.

C. Owner may not proceed with termination of the Contract under Paragraph 15.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

D. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

E. In the case of a termination for cause, if the cost to complete the Work, including related claims, costs, losses, and damages, exceeds the unpaid contract balance, Contractor shall pay the difference to Owner.

15.03 Owner May Terminate for Convenience

A. Upon seven days written notice to Contractor, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for, without duplication of any items:

1. Completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. Expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. Other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

15.04 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner, and provided Owner does not remedy such suspension or failure within that time, either stop the Work until payment is received, or terminate the Contract and recover payment from the Owner.

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ARTICLE 16 - CONTRACTOR'S REPRESENTATIONS

16.01 Contractor Representations

A. Contractor makes the following representations when entering into this Contract:

1. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on:

   a. The cost, progress, and performance of the Work;

   b. The means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and

   c. Contractor's safety precautions and programs.

5. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

6. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

7. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

8. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

9. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that, without exception, all prices in the Contract are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 17 - MISCELLANEOUS

17.01 Cumulative Remedies

A. The duties and obligations imposed by this Contract and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other

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provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.02 Limitation of Damages

A. Neither Owner, Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

17.03 No Waiver

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

17.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 Contractor's Certifications

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract.

17.06 Controlling Law

A. This Contract is to be governed by the laws of the State of North Carolina.

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IN WITNESS WHEREOF, Owner and Contractor have signed this Contract.

This Contract will be effective on _____ (which is the Effective Date of the Contract).

TOWN OF HOLLY SPRINGS

_____

By: _____

Title: TOWN MANAGER

Attest: _____

Title: TOWN CLERK/DEPUTY TOWN CLERK

THIS INSTRUMENT HAS BEEN AUDITED IN THE MANNER PRESCRIBED BY LAW

_____

FINANCE OFFICER

_____

THIS CONTRACT IS APPROVED AS TO FORM

_____

TOWN ATTORNEY

CONTRACTOR:

_____

By: _____

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

Title: _____

Address, Email, And Phone Number for giving notices:

_____

_____

_____

License No.: _____
(where applicable)

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Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 10.

Consent Agenda
Title: Condemnation Resolution for the Downtown Avent Ferry Sidewalk
Strategic Priority Area: Growth Management & Economic Vitality
Vibrant Community
Staff Resource: John Schifano, Town Attorney, Dirk Siebenbrodt, Utilities and Infrastructure

Action(s):
Adopt Resolution 25-18 to Authorize Eminent Domain Proceedings for the Downtown Avent Ferry Sidewalk

Explanation:

- The Town is constructing pedestrian improvements along Avent Ferry Road from Rex Hospital to Downtown.
- To proceed, property acquisition is required from five parcels; three have not reached voluntary agreements.
- The following property owners will be subject to eminent domain proceedings:
    - Karl and Mary Wells
    - Leo Ventures, LLC
    - Teresa Fussell

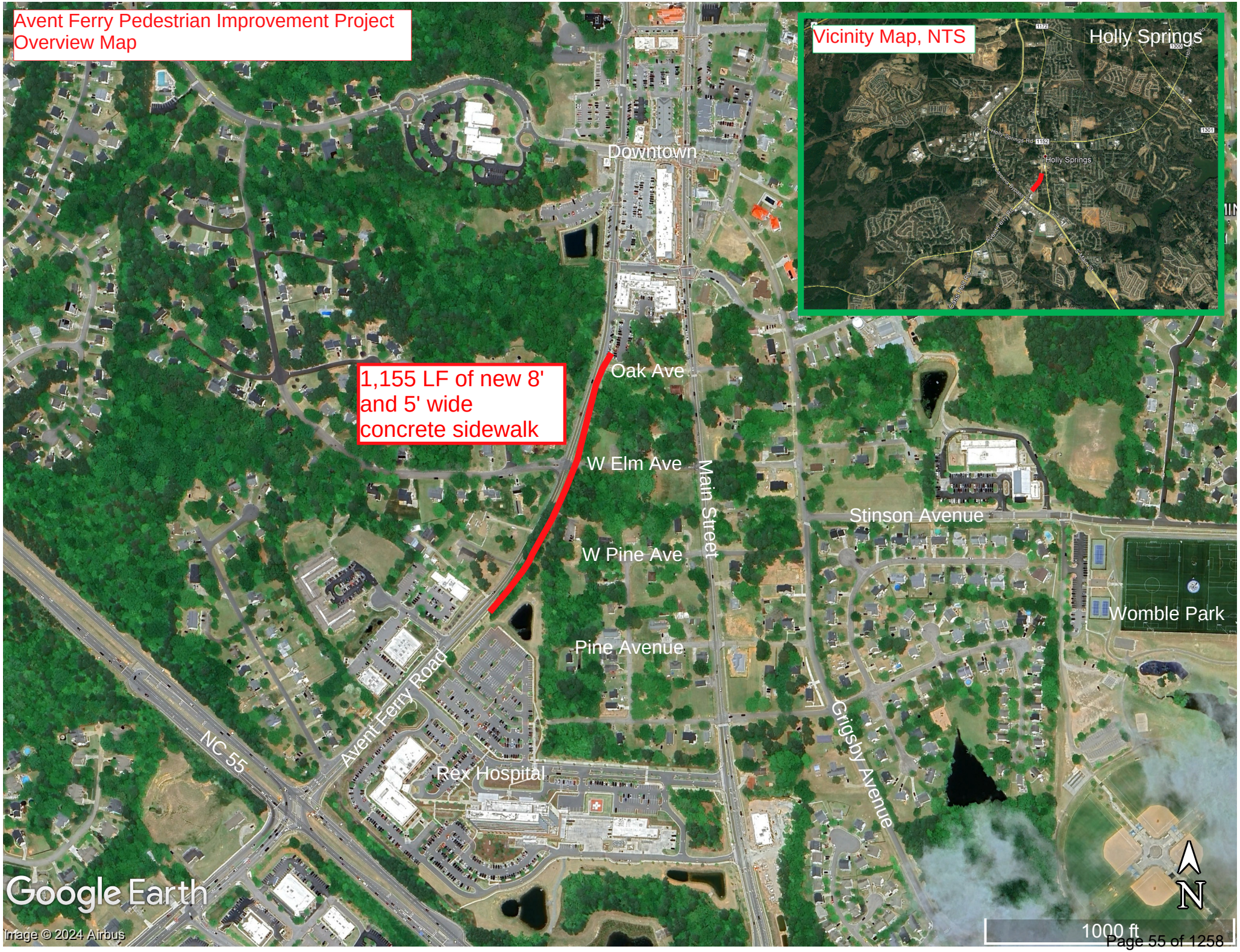
Background:

- Eminent Domain is a civil process allowing the Town to acquire property rights for a public purpose when voluntary agreement cannot be reached.
- In accordance with NC General Statutes §§ 40A and 136, the Town will continue negotiating in good faith to purchase the necessary rights-of-way at fair market value.
- These proceedings allow the project to move forward while any valuation disputes are resolved.

Funding Source(s):

- Community Investment Fund - Transportation Bond

Attachment(s):
1. Avent Ferry Sidewalk Project Map
2. Resolution Template - Avent Ferry Pedestrian Improvements


Avent Ferry Pedestrian Improvement Project
Overview Map
Vicinity Map, NTS
Holly Springs
Downtown
1,155 LF of new 8' and 5' wide concrete sidewalk
Oak Ave
W Elm Ave
Main Street
Stinson Avenue
W Pine Ave
Womble Park
Pine Avenue
Avent Ferry Road
NC 55
Rex Hospital
Grigsby Avenue
Google Earth
Image © 2024 Airbus
N
1000 ft

Resolution No. 25-18
Date Adopted: July 15, 2025
Effective Date: July 15, 2025

RESOLUTION OF THE TOWN OF HOLLY SPRINGS COUNCIL AUTHORIZING CONDEMNATION TO ACQUIRE CERTAIN PROPERTY OF THOSE PERSONS LISTED ON THE ATTACHED EXHIBIT "A" FOR AVENT FERRY PEDESTRIAN IMPROVEMENTS

WHEREAS, the governing body of the Town of Holly Springs hereby determines that it is necessary and in the public interest to acquire certain property owned by those persons or entities listed on Exhibit "A" for the following public purpose: 1) opening, widening, extending or improving a public road known as Avent Ferry Road for the purpose of making pedestrian improvements extending to Rex Hospital; and

WHEREAS, the proper officials and representatives of the Town of Holly Springs have been unable to acquire the needed interests in the properties by negotiated conveyance; and

WHEREAS, the Town is authorized pursuant to N.C.G.S. §§ 40A and 136 utilizing the procedures contained within those statutes to acquire such interests in property for the public purpose heretofore stated.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF HOLLY SPRINGS, NORTH CAROLINA:

1. The Town of Holly Springs shall acquire by condemnation, for the purposes stated above, the property and interests described in Exhibit "A"; and

2. The attorneys representing the Town of Holly Springs are directed to initiate the necessary proceedings under Chapters 40A and 136 of the North Carolina General Statutes to acquire the property herein described; and

3. This resolution shall take effect immediately.

Adopted by the Holly Springs Town Council on this, the 15th day of July, 2025.

Town of Holly Springs by

_____
Sean Mayefskie, Mayor

ATTEST:

_____
Linda McKinney, Town Clerk

EXHIBIT A

EXHIBIT A TO CONTRACT

Tract: **0**

Owner : Karl and Mary Wells

Owner Address: 5000 SUNSET LAKE RD
APEX NC 27539-8789

Property Address: 505 Avent Ferry Road
Holly Springs, NC 27540

A. Description of Entire Tract:

PIN: 0648899937

Tax ID: 0057261

Legal Description: BEING that approximate 0.82 acre tract known by the above Wake County PIN and TaxID, and being further described in a Deed found at Deed Book 008019, Page 00362, Wake County Registry.

B. Interest Acquired By Town Description of Area Affected:

Legal Interest Conveyed: **Sidewalk Easement**

a perpetual right, privilege, and easement, now and hereafter, to construct, improve, replace, inspect, repair, maintain and use a public sidewalk for related pedestrian accesses and usages, fifteen feet in width, across the property described, together with the perpetual right, privilege and easement, now and hereafter for public egress and ingress across said easement.

Legal Description of area conveyed

Beginning at a point on the eastern right-of-way of Avent Ferry Road, said point being the northwestern most point of lot described in Deed Book 8019, Page 362 in the Wake County Register of Deeds;

THENCE South 65 degrees 18 minutes 42 seconds East for a distance of 9.45 feet to a point;

THENCE South 23 degrees 11 minutes 10 seconds West for a distance of 29.57 feet to a point;

THENCE along a curve to the right having a radius of 31.00 feet and an arc length of 22.29 feet, being subtended by a chord of South 43 degrees 47 minutes 00 seconds West for a distance of 21.81 feet to a point;

THENCE along a curve to the left having a radius of 19.00 feet and an arc length of 12.07 feet, being subtended by a chord of South 46 degrees 11 minutes 00 seconds West for a distance of 11.87 feet to a point;

THENCE South 27 degrees 59 minutes 10 seconds West for a distance of 87.52 feet to a point;

THENCE along a curve to the right having a radius of 206.00 feet and an arc length of 8.12 feet, being subtended by a chord of South 29 degrees 06 minutes 54 seconds West for a distance of 8.12 feet to a point;

THENCE South 30 degrees 14 minutes 39 seconds West for a distance of 100.67 feet to a point;

THENCE South 88 degrees 22 minutes 06 seconds West for a distance of 3.27 feet to a point on the eastern right-of-way of Avent Ferry Road;

THENCE with said right-of-way the following courses and distances: North 30 degrees 20 minutes 19 seconds East for a distance of 104.47 feet to a point;

THENCE North 29 degrees 28 minutes 23 seconds East for a distance of 95.82 feet to a point;

THENCE along a curve to the left having a radius of 1260.00 feet and an arc length of 58.91 feet, being subtended by a chord of North 25 degrees 58 minutes 01 seconds East for a distance of 58.90 feet to the point and place of beginning.

Together with and subject to covenants, easements, and restrictions of record.

Said property contains 904 square feet more or less.

SquareFoot:	904

Legal Interest Conveyed: **Temporary Construction Easement**

a right, privilege, and easement, for a period of 365 days from the start of initial construction by the Town or its agents, for a temporary construction easement allowing for egress and ingress, removal of vegetation, sloping, grading, digging and earthwork, and all other activities incident to construction in the easement area, said easement area as described in the legal description.

Legal Description of area conveyed

Commencing at a point on the eastern right-of-way of Avent Ferry Road, said point being the northwestern most point of lot described in Deed Book 8019, Page 362 in the Wake County Register of Deeds; THENCE South 65 degrees 18 minutes 42 seconds East for a distance of 9.45 feet to the beginning;

THENCE South 65 degrees 18 minutes 42 seconds East for a distance of 7.60 feet to a point;
THENCE South 22 degrees 42 minutes 08 seconds West for a distance of 40.70 feet to a point;
THENCE South 58 degrees 31 minutes 33 seconds West for a distance of 28.52 feet to a point;
THENCE South 23 degrees 58 minutes 03 seconds West for a distance of 14.72 feet to a point;
THENCE South 25 degrees 47 minutes 49 seconds West for a distance of 44.49 feet to a point;
THENCE South 22 degrees 07 minutes 18 seconds West for a distance of 61.26 feet to a point;
THENCE South 31 degrees 58 minutes 29 seconds West for a distance of 40.66 feet to a point;
THENCE South 38 degrees 15 minutes 03 seconds West for a distance of 27.81 feet to a point;
THENCE South 88 degrees 22 minutes 06 seconds West for a distance of 10.75 feet to a point;
THENCE North 30 degrees 14 minutes 39 seconds East for a distance of 100.67 feet to a point;
THENCE along a curve to the left having a radius of 206.00 feet and an arc length of 8.12 feet, being subtended by a chord of North 29 degrees 06 minutes 54 seconds East for a distance of 8.12 feet to a point;
THENCE North 27 degrees 59 minutes 10 seconds East for a distance of 87.52 feet to a point;
THENCE along a curve to the right having a radius of 19.00 feet and an arc length of 12.07 feet, being subtended by a chord of North 46 degrees 11 minutes 00 seconds East for a distance of 11.87 feet to a point;
THENCE along a curve to the left having a radius of 31.00 feet and an arc length of 22.29 feet, being subtended by a chord of North 43 degrees 47 minutes 00 seconds East for a distance of 21.81 feet to a point;
THENCE North 23 degrees 11 minutes 10 seconds East for a distance of 29.57 feet to the point and place of beginning.

Together with and subject to covenants, easements, and restrictions of record.

Said property contains 2,345 square feet more or less.

SquareFoot:	2345

C. Statement of Authority

The Town of Holly Springs hereby acquires the above described estates in the land of the defendant(s) pursuant to N.C.G.S. 40A-3(b)(1) for the Opening, widening, extending, or improving roads, streets, alleys, and sidewalks.

Project Description:	Project extending the sidewalk from Rex Hospital to Town Hall

EXHIBIT A TO CONTRACT

Tract: **0**

Owner : Leo Ventures, LLC

Owner Address: 213 W. Ballentine Street
Holly Springs, NC 27540

Property Address: 408 S. Main Street
Holly Springs, NC 27540

A. Description of Entire Tract:

PIN: 0649901581

Tax ID: 0026772

Legal Description: BEING that approximate 1.46 acre tract known by the above Wake County PIN and TaxID, and being further described in a Deed found at Deed Book 22-E, Page 2216, Wake County Registry.

B. Interest Acquired By Town Description of Area Affected:

Legal Interest Conveyed: **Sidewalk Easement**

a perpetual right, privilege, and easement, now and hereafter, to construct, improve, replace, inspect, repair, maintain and use a public sidewalk for related pedestrian accesses and usages, fifteen feet in width, across the property described, together with the perpetual right, privilege and easement, now and hereafter for public egress and ingress across said easement.

Legal Description of area conveyed

Beginning at an existing iron pipe at the intersection of the eastern right-of-way of Avent Ferry Road and the southern right-of-way of Oak Avenue (undeveloped), said point being the northwestern most point of lot recorded in Book of Maps 1985, Page 245 in the Wake County Register of Deeds;

THENCE North 88 degrees 59 minutes 33 seconds East for a distance of 11.24 feet to a point;

THENCE South 10 degrees 22 minutes 36 seconds West for a distance of 9.63 feet to a point;

THENCE South 18 degrees 54 minutes 29 seconds West for a distance of 305.41 feet to a point;

THENCE along a curve to the left having a radius of 45.12 feet and an arc length of 17.78 feet, being subtended by a chord of South 09 degrees 48 minutes 12 seconds West for a distance of 17.67 feet to a point;

THENCE along a curve to the right having a radius of 56.00 feet and an arc length of 19.66 feet, being subtended by a chord of South 08 degrees 26 minutes 49 seconds West for a distance of 19.56 feet to a point;

THENCE South 18 degrees 30 minutes 10 seconds West for a distance of 6.19 feet to a point on the northern right-of-way of Elm Avenue;

THENCE South 88 degrees 47 minutes 15 seconds West for a distance of 19.55 feet to a point at the

intersection of the eastern right-of-way of Avent Ferry Road and the northern right-of-way of Elm Avenue;

THENCE with the eastern right-of-way of Avent Ferry Road North 18 degrees 54 minutes 08 seconds East for a distance of 360.70 feet to the point and place of beginning.

Together with and subject to covenants, easements, and restrictions of record.

Said property contains 4,475 square feet more or less.

SquareFoot:	4475

Legal Interest Conveyed: **Temporary Construction Easement**

a right, privilege, and easement, for a period of 365 days from the start of initial construction by the Town or its agents, for a temporary construction easement allowing for egress and ingress, removal of vegetation, sloping, grading, digging and earthwork, and all other activities incident to construction in the easement area, said easement area as described in the legal description.

Legal Description of area conveyed

Commencing at an existing iron pipe at the intersection of the eastern right-of-way of Avent Ferry Road and the southern right-of-way of Oak Avenue (undeveloped), said point being the northwestern most point of lot recorded in Book of Maps 1985, Page 245 in the Wake County Register of Deeds; THENCE along the southern right-of-way of Oak Avenue (undeveloped) North 88 degrees 59 minutes 33 seconds East for a distance of 11.24 feet to the beginning;

THENCE continuing with said right-of-way North 88 degrees 59 minutes 33 seconds East for a distance of 7.37 feet to a point;

THENCE South 15 degrees 36 minutes 11 seconds West for a distance of 15.07 feet to a point;

THENCE South 19 degrees 15 minutes 18 seconds West for a distance of 169.23 feet to a point;

THENCE South 75 degrees 38 minutes 02 seconds East for a distance of 6.58 feet to a point;

THENCE South 14 degrees 21 minutes 58 seconds West for a distance of 14.00 feet to a point;

THENCE North 75 degrees 38 minutes 02 seconds West for a distance of 7.65 feet to a point;

THENCE South 18 degrees 44 minutes 15 seconds West for a distance of 53.01 feet to a point;

THENCE South 71 degrees 15 minutes 30 seconds East for a distance of 14.93 feet to a point;

THENCE South 18 degrees 44 minutes 30 seconds West for a distance of 51.00 feet to a point;

THENCE South 25 degrees 17 minutes 01 seconds West for a distance of 35.53 feet to a point;

THENCE South 13 degrees 51 minutes 25 seconds West for a distance of 18.44 feet to a point on the northern right-of-way of Elm Avenue;

THENCE with the northern right-of-way of Elm Avenue South 88 degrees 47 minutes 15 seconds West for a distance of 12.68 feet to a point;

THENCE leaving said right-of-way North 18 degrees 30 minutes 10 seconds East for a distance of 6.19 feet to a point;

THENCE along a curve to the left having a radius of 56.00 feet and an arc length of 19.66 feet, being subtended by a chord of North 08 degrees 26 minutes 49 seconds East for a distance of 19.56 feet to a point;

THENCE along a curve to the right having a radius of 45.12 feet and an arc length of 17.78 feet, being subtended by a chord of North 09 degrees 48 minutes 12 seconds East for a distance of 17.67 feet to a point;

THENCE North 18 degrees 54 minutes 29 seconds East for a distance of 305.41 feet to a point;

THENCE North 10 degrees 22 minutes 36 seconds East for a distance of 9.63 feet to the point and place of beginning.

Together with and subject to covenants, easements, and restrictions of record.

Said property contains 3,476 square feet more or less.

SquareFoot:	3476

C. Statement of Authority

The Town of Holly Springs hereby acquires the above described estates in the land of the defendant(s) pursuant to N.C.G.S. 40A-3(b)(1) for the Opening, widening, extending, or improving roads, streets, alleys, and sidewalks.

Project Description: Project extending the sidewalk from Rex Hospital to Town Hall

EXHIBIT A TO CONTRACT

Tract: **0**

Owner : Teresa Fussell

Owner Address: 416 Center Street
PO BOX 851
APEX NC 27502-0851

Property Address: 0 W. Elm Street
Holly Springs, NC 27540

A. Description of Entire Tract:

PIN: 0649900122

Tax ID: 0005454

Legal Description: BEING that approximate 0.77 acre tract known by the above Wake County PIN and TaxID, and being further described in a Deed found at Deed Book 011157, Page 00161, Wake County Registry.

B. Interest Acquired By Town Description of Area Affected:

Legal Interest Conveyed: **Sidewalk Easement**

a perpetual right, privilege, and easement, now and hereafter, to construct, improve, replace, inspect, repair, maintain and use a public sidewalk for related pedestrian accesses and usages, fifteen feet in width, across the property described, together with the perpetual right, privilege and easement, now and hereafter for public egress and ingress across said easement.

Legal Description of area conveyed

Beginning at a point at the intersection of the eastern right-of-way of Avent Ferry Road and the southern right-of-way of Elm Avenue, said point being the northwestern most point of lot recorded in Deed Book 11157, Page 161 in the Wake County Register of Deeds;

THENCE with the southern right-of-way of Elm Avenue North 89 degrees 52 minutes 50 seconds East for a distance of 14.05 feet to a point;

THENCE leaving said right-of-way South 29 degrees 07 minutes 47 seconds West for a distance of 8.19 feet to a point;

THENCE along a curve to the left having a radius of 44.00 feet and an arc length of 7.79 feet, being subtended by a chord of South 28 degrees 15 minutes 19 seconds West for a distance of 7.78 feet to a point;

THENCE South 23 degrees 11 minutes 10 seconds West for a distance of 98.04 feet to a point;

THENCE North 65 degrees 18 minutes 42 seconds West for a distance of 9.45 feet to a point in the eastern right-of-way of Avent Ferry Road;

THENCE with the right-of-way of Avent Ferry Road along a curve to the left having a radius of 1260.00 feet and an arc length of 108.18 feet, being subtended by a chord of North 22 degrees 10 minutes 05 seconds East for a distance of 108.15 feet to the point and place of beginning.

Together with and subject to covenants, easements, and restrictions of record.

Said property contains 1,082 square feet more or less.

SquareFoot: 1082

Legal Interest Conveyed: **Temporary Construction Easement**

a right, privilege, and easement, for a period of 365 days from the start of initial construction by the Town or its agents, for a temporary construction easement allowing for egress and ingress, removal of vegetation, sloping, grading, digging and earthwork, and all other activities incident to construction in the easement area, said easement area as described in the legal description.

Legal Description of area conveyed

Commencing at a point at the intersection of the eastern right-of-way of Avent Ferry Road and the southern right-of-way of Elm Avenue, said point being the northwestern most point of lot recorded in Deed Book 11157, Page 161 in the Wake County Register of Deeds; THENCE with the southern right-of-way of Elm Avenue North 89 degrees 52 minutes 50 seconds East for a distance of 14.05 feet to the beginning;

THENCE continuing with the southern right-of-way of Elm Avenue North 89 degrees 52 minutes 50 seconds East for a distance of 5.68 feet to a point;
THENCE South 22 degrees 46 minutes 11 seconds West for a distance of 116.38 feet to a point;
THENCE North 65 degrees 18 minutes 42 seconds West for a distance of 7.60 feet to a point;
THENCE North 23 degrees 11 minutes 10 seconds East for a distance of 98.04 feet to a point;
THENCE along a curve to the right having a radius of 44.00 feet and an arc length of 7.79 feet, being subtended by a chord of North 28 degrees 15 minutes 19 seconds East for a distance of 7.78 feet to a point;
THENCE North 29 degrees 07 minutes 47 seconds East for a distance of 8.19 feet to the point and place of beginning.

Together with and subject to covenants, easements, and restrictions of record.

Said property contains 814 square feet more or less.

SquareFoot: 814

C. Statement of Authority

The Town of Holly Springs hereby acquires the above described estates in the land of the defendant(s) pursuant to N.C.G.S. 40A-3(b)(1) for the Opening, widening, extending, or improving roads, streets, alleys, and sidewalks.

Project Description:	Project extending the sidewalk from Rex Hospital to Town Hall

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 11.

Consent Agenda
Title: Condemnation Resolution for Main Street Sidewalk Project
Strategic Priority Area: Growth Management & Economic Vitality
Vibrant Community
Staff Resource: John Schifano, Town Attorney, Tim Athy, Utilities and Infrastructure

Action(s):
Adopt Resolution 25-19 to authorize Eminent Domain Proceedings for the Main Street Sidewalk Project

Explanation:

- The town is installing a public sidewalk along N. Main Street from the Trellis Apartment complex to Arbor Creek.
- To proceed, the town has been negotiating for the purchase of property rights at fair market value.
- Negotiations with the following property owners have not been successful and will be subject to eminent domain proceedings:
    - Trellis Point Apartments
    - A & A Building, LLC

Background:

- Eminent Domain is a civil process allowing the Town to acquire property rights for a public purpose when voluntary agreement cannot be reached.
- In accordance with NC General Statutes §§ 40A and 136, the Town will continue negotiating in good faith to purchase the necessary rights-of-way at fair market value.
- These proceedings allow the project to move forward while any valuation disputes are resolved.

Funding Source(s):

- Community Investment Fund - Transportation Bond

Attachment(s):
1. Main Street sidewalk project map
2. Resolution Template - Main Street Sidewalk


GB Alford Hwy
Cachet St
N Main St
Commons Dr
Daneway Dr
Katha Dr
McClain St
Richardson St
55
Arbor Creek
BYP
55
Easton St
N Main St
Arbor Crest Rd
Morena Dr
Vine St
55
GB Alford Hwy
Pkwy
Tennis Ct
N Main St
Steedmont Dr

Resolution No. 25-19
Date Adopted: July 15, 2025
Effective Date: July 15, 2025

RESOLUTION OF THE TOWN OF HOLLY SPRINGS TOWN COUNCIL AUTHORIZING CONDEMNATION TO ACQUIRE CERTAIN PROPERTY OF THOSE PERSONS LISTED ON THE ATTACHED EXHIBIT "A" FOR MAIN STREET SIDEWALK PROJECT

WHEREAS, the governing body of the Town of Holly Springs hereby determines that it is necessary and in the public interest to acquire certain property owned by those persons listed on Exhibit "A" for the following public purpose: opening, widening, extending, or improving roads, streets, alleys, and sidewalks along Main Street between Arbor Creek Drive and Trellis Pointe Drive; and

WHEREAS, the proper officials or representatives of the Town of Holly Springs have been unable to acquire the needed interest in this property by negotiated conveyance; and

WHEREAS, the Town is authorized pursuant to N.C.G.S. §§ 40A and 136 utilizing the procedures contained within those statutes to acquire such interest in property for the public purpose heretofore stated.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF HOLLY SPRINGS, NORTH CAROLINA:

1. The Town of Holly Springs shall acquire by condemnation, for the purposes stated above, the property and interests described on Exhibit "A"; and

2. The attorneys representing the Town of Holly Springs are directed to initiate the necessary proceedings under Chapter 40A and 136 of the North Carolina General Statutes to acquire the property described herein; and

3. This resolution shall take effect immediately.

Adopted by the Holly Springs Town Council on this, the 15th day of July, 2025.

Town of Holly Springs by

_____
Sean Mayefskie, Mayor

ATTEST:

_____
Linda McKinney, Town Clerk

EXHIBIT A

EXHIBIT A TO CONTRACT

Tract: **0**

Owner : A & A BUILDING LLC

Owner Address: 4237 LOUISBURG RD STE 110

RALEIGH NC 27604-4348

Property Address: 100 Arbor Creek Drive
Holly Springs, NC 27540

A. Description of Entire Tract:

PIN: 0740906305

Tax ID: 0229510

Legal Description: BEING that approximate 1.11 acre tract known by the above Wake County PIN and TaxID, and being further described in a Deed found at Deed Book 015978, Page 01248, Wake County Registry.

B. Interest Acquired By Town Description of Area Affected:

Legal Interest Conveyed: **Right of Way for Streets**

an interest in fee simple absolute in the lands of the Grantor(s) as described in the Legal Description for the purpose of constructing, maintaining, using, egress and ingress, removal of vegetation, sloping, grading, digging and earthwork, and all other activities incident to roadway construction and usage for a public roadway in perpetuity, including the placement of any and all utilities, said construction and maintenance to be performed in the sole discretion of the Town, according to the standards of the Grantee, as amended from time to time.

Legal Description of area conveyed

Legal Description for the new Right-of-Way along S.R. 6107 (N. Main St.) and Arbor Creek Dr. across the property of A & A Building, LLC. (Wake County; DB 15978 PG 1248; PB 1996 PG 1414; PIN: 740906305; REID: 229510).
Beginning at a point on the existing Right-of-Way of S.R. 6107 (N. Main St.); said point being located N13°19'15"E a distance of 1,228.29' from an existing survey control point named GPS-2 (Rebar & Plastic Cap) and having NC State Plane coordinates (NAD83/2011) N 699,262.278 E 2,049,244.105; thence, along the existing Right-of-Way of S.R. 6107 (N. Main St.), N11°03'01"E a distance of 43.40' to an existing iron pipe in the Right-of-Way of Arbor Creek Dr.; thence, along the existing Right-of-Way of Arbor Creek Dr., 81°38'04"E a distance of 12.32' to the new Right-of-Way point; Thence, along the new Right-of-Way line, S26°41'00"W a distance of 45.67' to the point and place of beginning and having an area of 0.006 AC (267 SFT).

SquareFoot: 267

Legal Interest Conveyed: **Temporary Construction Easement**

a right, privilege, and easement, for a period of 365 days from the start of initial construction by the Town or its agents, for a temporary construction easement allowing for egress and ingress, removal of vegetation, sloping, grading, digging and earthwork, and all other activities incident to construction in the easement area, said easement area as described in the legal description.

Legal Description of area conveyed

Legal Description for the new Temporary Construction Easement along S.R. 6107 (N. Main St.) across the property of A & A Building, LLC. (Wake County; DB 15978 PG 1248; PB 1996 PG 1414; PIN: 740906305; REID: 229510).
Beginning at a point on the existing Right-of-Way of S.R. 6107 (N. Main St.); said point being located N13°33'55"E a distance of 1,109.02' from an existing survey control point named GPS-2 (Rebar & Plastic Cap) and having NC State Plane coordinates (NAD83/2011) N 699,262.278 E 2,049,244.105; thence, along the new temporary construction easement line, S04°22'48"W a distance of 128.80' to a point on the property line of A & A Building, LLC. (DB 15978 PG 1248); thence, along said property line, N81°05'39”W a distance of 15.24' to a existing iron pipe in the existing Right-of-Way of S.R. 6107 (N. Main St.); thence, along said existing Right-of-Way, N11°11'37"E a distance of 108.51' to a point; thence, continuing along said existing Right-of-Way, N11°03'01”E a distance of 19.98' to the point and place of beginning and having an area of 0.022 AC (976 SFT).

SquareFoot:	976

C. Statement of Authority

The Town of Holly Springs hereby acquires the above described estates in the land of the defendant(s) pursuant to N.C.G.S. 40A-3(b)(1) for the Opening, widening, extending, or improving roads, streets, alleys, and sidewalks.

Project Description: Main Street Sidewalk Connector (Arbor Creek Drive to TrellisPointe Drive)

EXHIBIT A TO CONTRACT

Tract: **0**

Owner : A & A BUILDING LLC

Owner Address: 4237 LOUISBURG RD STE 110

RALEIGH NC 27604-4348

Property Address: 0 Main Street
Holly Springs, NC 27540

A. Description of Entire Tract:

PIN: 0649994892

Tax ID: 0235433

Legal Description: BEING that approximate 3.61 acre tract known by the above Wake County PIN and TaxID, and being further described in a Deed found at Deed Book 015978, Page 01248, Wake County Registry.

B. Interest Acquired By Town Description of Area Affected:

Legal Interest Conveyed: **Right of Way for Streets**

an interest in fee simple absolute in the lands of the Grantor(s) as described in the Legal Description for the purpose of constructing, maintaining, using, egress and ingress, removal of vegetation, sloping, grading, digging and earthwork, and all other activities incident to roadway construction and usage for a public roadway in perpetuity, including the placement of any and all utilities, said construction and maintenance to be performed in the sole discretion of the Town, according to the standards of the Grantee, as amended from time to time.

Legal Description of area conveyed

Legal Description for the new Right-of-Way along S.R. 6107 (N. Main St.) across the property of A & A Building, LLC. (Wake County; DB 15978 PG 1248; PB 1997 PG 1339; PIN: 649994892; REID: 235433).
Beginning at a point on the existing Right-of-Way of S.R. 6107 (N. Main St.); said point being located N26°35'54"E a distance of 172.96' from an existing survey control point named GPS-2 (Rebar & Plastic Cap) and having NC State Plane coordinates (NAD83/2011) N 699,262.278 E 2,049,244.105; thence, leaving said existing Right-of-Way, and along the new Right-of-Way line, S02°50'40"W a distance of 7.78' to a point on the property line of A & A Building, LLC and Trellis Pointe, LLC (DB 8014 PG 622); thence, along said property line, S82°34'23"W a distance of 1.19' to an existing iron pipe in the existing Right-of-way of S.R. 6107 (N. Main St.); thence, along said existing Right-of-Way, N11°11'37"E a distance of 8.08' to the point and place of beginning and having an area of 0.0001 AC (5 SFT).

SquareFoot: 5

Legal Interest Conveyed: **Temporary Construction Easement**

a right, privilege, and easement, for a period of 365 days from the start of initial construction by the Town or its agents, for a temporary construction easement allowing for egress and ingress, removal of vegetation, sloping, grading, digging and earthwork, and all other activities incident to construction in the easement area, said easement area as described in the legal description.

Legal Description of area conveyed

Legal Description for the new Temporary Construction Easement along S.R. 6107 (N. Main St.) across the property of A & A Building, LLC. (Wake County; DB 15978 PG 1248; PB 1997 PG 1339; PIN: 649994892; REID: 235433).
Beginning at a point on the existing Right-of-Way of S.R. 6107 (N. Main St.); said point being located N26°35'54"E a distance of 172.96' from an existing survey control point named GPS-2 (Rebar & Plastic Cap) and having NC State Plane coordinates (NAD83/2011) N 699,262.278 E 2,049,244.105; thence, along said existing Right-of-Way, N11°11'37"E a distance of 812.83' to an existing iron pipe on the property line of A & A Building, LLC. (DB 15978 PG 1248); Thence, along said property line, S81°05'39"E a distance of 15.24' to a point; Thence, leaving said property line along the new temporary construction easement line, S04°22'48"W a distance of 52.85' to a point; thence along said new temporary construction easement line for the following calls, S09°49'20"W a distance of 221.12' to a point; thence S11°24'23"W a distance of 95.00' to a point; thence S17°44'48"W a distance of 135.83' to a point; thence S04°51'14"E a distance of 250.00' to a point; thence S85°27'40"W a distance of 36.40' to a point; thence S16°36'03"W a distance of 54.73' to a point on the property line of A & A Building, LLC and Trellis Pointe, LLC (DB 8014 PG 622); thence, along said property line, S82°34'23"W a distance of 40.86' to a point on the new Right-of-Way line; thence along said new Right-of-Way line, N02°50'40"E a distance of 7.78' to the point and place of beginning and having an area of 0.585 AC (25,469 SFT).

SquareFoot:	25469

C. Statement of Authority

The Town of Holly Springs hereby acquires the above described estates in the land of the defendant(s) pursuant to N.C.G.S. 40A-3(b)(1) for the Opening, widening, extending, or improving roads, streets, alleys, and sidewalks.

Project Description: Main Street Sidewalk Connector (Arbor Creek Drive to TrellisPointe Drive)

EXHIBIT A

Tract: **0**

Owner : TRELLIS POINTE LLC

Owner Address: 701 EXPOSITION PL STE 101

RALEIGH NC 27615-3356

Property Address: 1000 Vine Street
Holly Springs, NC 27540

A. Description of Entire Tract:

PIN: 0649996160

Tax ID: 0235430

Legal Description: BEING that approximate 15.4 acre tract known by the above Wake County PIN and TaxID, and being further described in a Deed found at Deed Book 008014, Page 00622, Wake County Registry.

B. Interest Acquired By Town Description of Area Affected:

Legal Interest Conveyed: **Right of Way for Streets**

an interest in fee simple absolute in the lands of the Grantor(s) as described in the Legal Description for the purpose of constructing, maintaining, using, egress and ingress, removal of vegetation, sloping, grading, digging and earthwork, and all other activities incident to roadway construction and usage for a public roadway in perpetuity, including the placement of any and all utilities, said construction and maintenance to be performed in the sole discretion of the Town, according to the standards of the Grantee, as amended from time to time.

Legal Description of area conveyed

Legal Description for the new Right-of-Way along S.R. 6107 (N. Main St.) and Trellis Pointe Dr. across the property of Trellis Pointe, LLC (Wake County; DB 8014 PG 622; PIN: 649996160; REID: 235430).
Beginning at a point on the existing Right-of-Way of Trellis Pointe Dr.; said point being located N51°55'45"E a distance of 122.89' from an existing survey control point named GPS-2 (Rebar & Plastic Cap) and having NC State Plane coordinates (NAD83/2011) N 699,262.278 E 2,049,244.105; thence, leaving said existing Right-of-Way, and along the new Right-of-Way line, N59°37’46”W a distance of 26.16’ to a point; thence, continuing along the new Right-of-Way line, N02°50’40”E a distance of 57.95’ to a point on the property line of Trellis Pointe, LLC and A & A Building, LLC (DB 15978 PG 1248); thence along said property line S82°34’23”W a distance of 1.19’ to an existing iron pipe in the existing Right-of-Way of S.R. 6107 (N. Main St.); thence, along said existing Right-of-Way, S11°11’37”W a distance of 65.72’ to a point on the existing Right-of-Way of Trellis Pointe Dr.; thence, along said existing Right-of-Way, S78°43’22”E a distance of 24.16’ to a point; Thence along a curve to the left, with a radius of 229.00’ and a chord bearing and distance of S79°59’06”E and 10.09’ to the point and place of beginning and having an area of 0.011 AC (500 SFT).

SquareFoot: 500

Legal Interest Conveyed: **Permanent Drainage Easement**

a perpetual right, privilege and easement allow for surface water to accumulate in the said easement area and to allow any necessary drainage structures either underground or above ground to include but not by limitation rip-rap, concrete piping, metal piping, or other natural vegetative material, together with the right of ingress and egress across the land of the Grantor(s) at such times and in such a manner as required by the Grantee to maintain, if applicable, said area in accordance with the standards set forth by the Grantee, as amended from time to time.

Legal Description of area conveyed

Legal Description for the new Permanent Drainage Easement along S.R. 6107 (N. Main St.) and across the property of Trellis Pointe, LLC (Wake County; DB 8014 PG 622; PIN: 649996160; REID: 235430).
Beginning at a point on the new Right-of-Way line across Trellis Pointe, LLC.; said point being located N27°43'33"E a distance of 165.58' from an existing survey control point named GPS-2 (Rebar & Plastic Cap) and having NC State Plane coordinates (NAD83/2011) N 699,262.278 E 2,049,244.105; thence, leaving said new Right-of-Way, and along the new permanent drainage easement line, N82°47'07"E a distance of 40.71' to a point; thence, continuing along said new easement line, S11°24'23"W a distance of 45.00' to a point; thence, continuing along said new easement line, N78°35'37"W a distance of 33.76' to a point on the new Right-of-Way line; thence along said new Right-of-Way N02°50'40"E a distance of 32.36' to the point and place of beginning and having an area of 0.032 AC (1,408 SFT).

SquareFoot:	1408

Legal Interest Conveyed: **Temporary Construction Easement**

a right, privilege, and easement, for a period of 365 days from the start of initial construction by the Town or its agents, for a temporary construction easement allowing for egress and ingress, removal of vegetation, sloping, grading, digging and earthwork, and all other activities incident to construction in the easement area, said easement area as described in the legal description.

Legal Description of area conveyed

Legal Description for the new Temporary Construction Easement #1 along S.R. 6107 (N. Main St.) and Trellis Pointe Dr. across the property of Trellis Pointe, LLC (Wake County; DB 8014 PG 622; PIN: 649996160; REID: 235430).
Beginning at a point on the existing Right-of-Way of S.R. 6107 (N. Main St.); said point being located N75°52'04"E a distance of 50.83' from an existing survey control point named GPS-2 (Rebar & Plastic Cap) and having NC State Plane coordinates (NAD83/2011) N 699,262.278 E 2,049,244.105; thence, along said existing Right-of-Way, N11°11'37"E a distance of 26.21' to a point on the existing Right-of-Way of Trellis Pointe Dr.; thence, along said existing Right-of-Way, S78°43'22"E a distance of 4.35' to a point; thence, leaving said existing Right-of-Way and along the new temporary construction Easement, S11°24'23"W a distance of 26.22' to a point; thence, continuing along the new temporary construction easement, N78°35'37"W a distance of 4.25' to the point and place of beginning and having an area of 0.003 AC (113 SFT).

Legal Description for the new Temporary Construction Easement #2 along S.R. 6107 (N. Main St.) across the property of Trellis Pointe, LLC (Wake County; DB 8014 PG 622; PIN: 649996160; REID: 235430).
Beginning at a point on the new Right-of-Way line across Trellis Pointe, LLC.; said point being located N27°43'33"E a distance of 165.58' from an existing survey control point named GPS-2 (Rebar & Plastic Cap) and having NC State Plane coordinates (NAD83/2011) N 699,262.278 E 2,049,244.105; thence, leaving said new Right-of-Way, and along the new permanent drainage easement line, N82°47'07"E a distance of 40.71' to a point; thence, leaving said new permanent drainage easement line and along the new Temporary construction easement line, N16°36'03"E a distance of 0.50' to a point on the property line of Trellis Pointe, LLC and A & A Building, LLC (DB 15978 PG 1248); thence, along said property line, S82°34'23"W a distance of 40.86' to a point on the new Right-of-Way line; thence along said new Right-of-Way line S02°50'40"W a distance of 0.31' to the point and place of beginning and having an area of 0.0004 AC (15 SFT).

SquareFoot:	128

Project Description: Main Street Sidewalk Connector (Arbor Creek Drive to TrellisPointe Drive)

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 12.

Consent Agenda
Title: Condemnation Resolution for the Holly Springs Fuquay-Varina (Sanford) Water Line
Strategic Priority Area: Growth Management & Economic Vitality
Vibrant Community
Organizational Excellence
Staff Resource: Rachel Ingham, Utilities and Infrastructure, John Schifano, Town Attorney

Action(s):
Authorize Resolution 25-32, a Joint Resolution with Fuquay-Varina to acquire easements as needed for a water transmission line.

Explanation:

- The request is to consider the adoption of a joint resolution instructing the respective Town Attorneys to initiate condemnation proceedings to acquire permanent and temporary construction public utility easements for the Holly Springs & Fuquay-Varina (HSFV) (Sanford) Water Line Project. These easements will be jointly owned by the Towns of Holly Springs and Fuquay-Varina as outlined in the resolution.
- The easements are necessary to complete the project, and the town has followed the acquisition process in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act). Despite multiple good-faith efforts to reach a voluntary agreement with the property owners, the Town must now proceed with condemnation and has ordered the appraisals.
- Condemnation is the only remaining option to keep the project on schedule. Construction is anticipated to begin in early 2026, with completion targeted for late 2027.
- The condemnation process allows the town to move forward while ensuring the property owner's rights are protected under the Uniform Act, which guarantees fair compensation based on third-party appraisal.
- Although the towns do not take this step lightly, staff recommends approval of the joint resolution.
- The resolution is scheduled for consideration by the Fuquay-Varina Town Board on July 14, 2025.

Background:

- The Towns of Fuquay-Varina and Holly Springs jointly entered into an Interlocal Agreement on July 23, 2024, for the construction, ownership, management, maintenance and operation of a transmission line and related infrastructure to provide water from the expanded City of Sanford Water Filtration Facility.
- The condemnation process will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, which requires the Town to pay fair market value as

determined by a third-party appraisal. If there is disagreement over the valuation, the matter may be resolved through litigation.

- Legal authority for this action is granted under North Carolina General Statutes § 160A-20.1 and the Interlocal Cooperation Act, which allow municipalities to jointly pursue public infrastructure projects.
- While property owners will receive just compensation, the town has a duty to tax and rate payers and will not pay above fair market value.
- The eminent domain process protects both public and private interests while enabling critical infrastructure to proceed.
- Town staff recommends authorizing the Town Attorney to begin the condemnation process for the Permanent Utility Easement (PUE) and temporary construction easements (TCE) at:
    - Parcel ID 002, PIN 0646485396 (PUE 0.036 acres and TCE 0.017 acres)
    - Parcel ID 003, PIN 0646474950 (PUE 0.807 acres and TCE 0.898 acres)
    - Parcel ID 004, PIN 0646672431 (PUE 1.035 acres and TCE 0.4072 acres)
    - Parcel ID 018, PIN 969500481063 (PUE 1.37 acres and TCE 1.102 acres)
    - Parcel ID 027, PIN 969500791554 (PUE 0.401 acres and TCE 0.167 acres)
    - Parcel ID 028, PIN 969500567630 (PUE 0.682 aces and TCE 0.162 acres)
    - Parcel ID 031, PIN 969500990197 (PUE 0.078 acres)
    - Parcel ID 041, PIN 060600202511 (PUE 0.250 acres and TCE 0.179 acres)
    - Parcel ID 046, PIN 060500292091 (PUE 0.007 acres)
    - Parcel ID 047, PIN 060500283669 (PUE 0.040 acres)
    - Parcel ID 053, PIN 061600432792 (PUE 1.099 acres)
    - Parcel ID 061, PIN 061600742464 (PUE 0.679 acres)
    - Parcel ID 062, PIN 062600151216 (PUE 0.787 aces)
    - Parcel ID 062A,
        - PIN 062600365759 (PUE 0.6591 acres)
        - PIN 0626-46-1234 (PUE 2.277 acres)
    - Parcel ID 063,
        - PIN 062600137646 (PUE 1.7055 acres)
        - PIN 0626-13-7646 (PUE 0.4627 acres)
    - Parcel ID 063A,
        - PIN 062600344921
        - PIN 0626-35-4298 (PUE 0.353 acres)
    - Parcel ID 064,
        - PIN 062600240000
        - PIN 0626-24-0000 (PUE 1.607 acres)
    - Parcel ID 066, PIN 0626493104 (PUE 1.799 acres)
    - Parcel ID 067, PIN 0626777815 (PUE 3.499 acres)
    - Parcel ID 068, PIN 0626862447 (PUE 1.791 acres)
    - Parcel ID 069, PIN 0636084853 (PUE 1.886 acres)
    - Parcel ID 071, PIN 0636298369 (PUE 6.310 acres)
    - Parcel ID 077, PIN 060500895088 (PUE 0.529 acres)

Funding Source(s):

- Community Investment Plan - Revenue Bonds

Attachment(s):

1. Joint Resolution to Condem_Conveyance Easements -Draft from FV w TOHS edits - FINAL2

2. conveyance map
3. 2025.06.23 Condemnation Figures
4. Exhibit A Duncan Cook Holdings LLC 002
5. Exhibit A Duncan Cook Holdings LLC 003
6. Exhibit A Cook_004
7. Exhibit A UG and Company LLC 018
8. Exhibit A White 027
9. Exhibit A Preston 028
10. Exhibit A Douglas 031
11. Exhbit A Griffin 041
12. Exhibit A Winston 046
13. Exhibit A Winston 047
14. Exhibit A Williams 053
15. Exhibit A Tutor 061
16. Exhibit A Hobby 062
17. Exhbit A Hobby 062A
18. Exhibit A Hobby 063
19. Exhbit A Hobby 063A
20. Exhbit A Hobby 064
21. Exhibit A Hobby 066
22. Exhibit A Dickens 067
23. Exhibit A NOLOC LLC 068
24. Exhibit A Atklins Living Trust 069
25. Exhibit A Watson Adcock LLC 071
26. Exhibit A Arnold 077

Resolution No. _____

Fuquay-Varina Board of Commissioners

June 23, 2025

Holly Springs Town Council, Resolution No. 25-32

A JOINT RESOLUTION ADOPTED BY THE BOARD OF COMMISSIONERS OF THE TOWN OF FUQUAY-VARINA, NC AND THE TOWN COUNCIL OF THE TOWN OF HOLLY SPRINGS, NC

WHEREAS, The Town of Fuquay-Varina and the Town of Holly Springs, jointly entered into an Interlocal Agreement on July 23, 2024, for the Construction, Ownership, Management, Maintenance and Operation of a Transmission Line and Appurtenances to provide water to both Towns from the expanded City of Sanford Water Filtration Facility.

WHEREAS, the Board of Commissioners of the Town of Fuquay-Varina and the Town Council of the Town of Holly Springs hereby determine that it is necessary for the public health, safety, and welfare and in the public interest to acquire certain easements in gross for the public purpose of the construction and maintenance of the Sanford Water Filtration Facility Waterline Conveyance Project; and,

WHEREAS, the proper officials or representatives of the Town of Fuquay-Varina and the Town of Holly Springs have been unable to acquire the necessary land and easements over the herein described properties by negotiated conveyance; and

WHEREAS, the Town of Fuquay-Varina and the Town of Holly Springs will equally share ownership of the appurtenant easements.

NOW, THEREFORE BE IT RESOLVED, by the Board of Commissioners of the Town of Fuquay-Varina and the Town Council of the Town of Holly Springs, North Carolina, the following:

1. The Town of Fuquay-Varina and the Town of Holly Springs shall acquire by condemnation, for the purposes stated above, the property interests consisting of permanent utility easements and temporary construction easements as described below and more particularly depicted on Exhibit A, attached hereto and incorporated herein by reference for greater certainty of description:

2. The Town Attorneys for the Town of Fuquay-Varina and the Town of Holly Springs are directed to institute the necessary proceedings or retain outside counsel to institute such proceedings under Chapter 40A and or Chapter 136 of the North Carolina General Statutes and/or appropriate statutory provisions and local acts to acquire the property interests herein described.

				Acquisition Type (Acres)						
Parcel ID	Record Property Owner(s)	County	Property PIN	Fee Simple	Right of Way	PUE	DUE	PDE	TCE	TDE
002	Duncan Cook Holdings, LLC	Wake	0646485396			0.036			0.017	
003	Duncan Cook Holdings, LLC	Wake	0646474950			0.807			0.898	
004	Durward W. Cook and Peggie B. Cook	Wake	0646672431			1.035			0.4072	
018	UG and Company LLC	Chatham	969500481063			1.37			1.102	
027	Joe E. White and Melanie White	Chatham	969500791554			0.401			0.167	
028	Dustin Ray Preston	Chatham	969500567630			0.682			0.162	
031	John and Patricia Douglas	Chatham	969500990197			0.078				
041	Glenna Griffin and Nicholas Francoise A.K.A. Nicholas Franciose	Chatham	060600202511			0.250			0.179	
046	David S. Winston and Lauren A. Winston	Chatham	060500292091			0.007				
047	David S. Winston and Lauren A. Winston	Chatham	060500283669			0.040				
053	Dewey V. Williams ET AL	Chatham	061600432792			1.099				
061	Danny L. Tutor ET AL	Chatham	061600742464			0.679				
062	Colon W. Hobby	Chatham	062600151216			0.787				
062A	Colon W. Hobby	Chatham Harnett	062600365759 0626-46-1234			0.6591 2.277				
063	Gregory W. Hobby and Julie Hobby	Chatham Harnett	062600137646 0626-13-7646			1.7055 0.4627				

063A	Gregory W. Hobby and Julie Hobby	Chatham Harnett	062600344921 0626-35-4298			0.353				
064	Gregory W. Hobby and Julie Hobby	Chatham Harnett	062600240000 0626-24-0000			1.607				
066	Colon W. Hobby	Wake	0626493104			1.799				
067	Randy L. and Kathy Dickens	Wake	0626777815			3.499				
068	NOLOC LLC	Wake	0626862447			1.791				
069	Belvin F. Akins Living Trust	Wake	0636084853			1.886				
071	Watson Adcock, LLC	Wake	0636298369			6.310				
077	Robin C. Arnold	Chatham	060500895088			0.529				

This Resolution of the Town of Fuquay-Varina Board of Commissioners is hereby adopted this 23rd day of June in the year 2025 in Fuquay-Varina, North Carolina.

FUQUAY-VARINA, NORTH CAROLINA

J. Blake Massengill, Mayor

ATTEST

(TOWN SEAL)

Teresa Wilder, Town Clerk

CERTIFICATION BY RECORDING OFFICER

The undersigned duly qualified and acting Town Clerk of the Town of Fuquay-Varina does hereby certify: That the above/attached resolution is a true and correct copy of the resolution authorizing _____ _____, as regularly adopted at a legally convened meeting of the Town Board of Commissioners duly held on the _____ day of _____, 20____; and, further, that such resolution has been fully recorded in the journal of proceedings and records in my office. IN WITNESS WHEREOF, I have hereunto set my hand this _____ day of _____, 20____.

_____

(Signature of Recording Officer)

_____

(Title of Recording Officer)

This Resolution of the Town of Holly Springs Board of Commissioners is hereby adopted this 15th day of July in the year 2025 in Holly Springs, North Carolina.

HOLLY SPRINGS, NORTH CAROLINA

_____

Sean Mayefskie, Mayor

ATTEST

_____

Linda McKinney, Town Clerk

CERTIFICATION BY RECORDING OFFICER

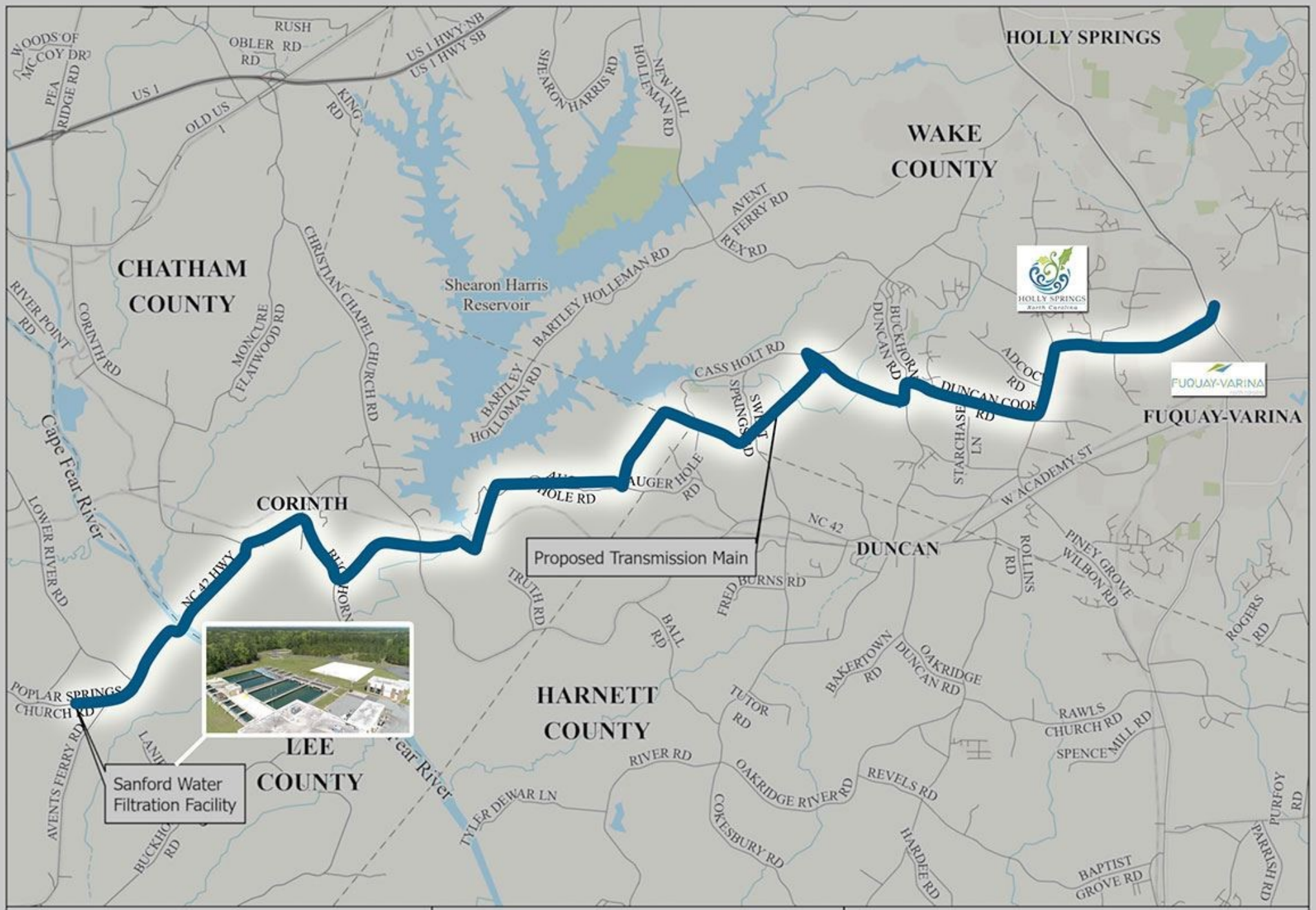
The undersigned duly qualified and acting Town Clerk of the Town of Holly Springs does hereby certify: That the above/attached resolution is a true and correct copy of the resolution authorizing _____ _____, as regularly adopted at a legally convened meeting of the Town Board of Commissioners duly held on the 15th day of July, 2025; and, further, that such resolution has been fully recorded in the journal of proceedings and records in my office. IN WITNESS WHEREOF, I have hereunto set my hand this _____ day of July, 2025.

_____

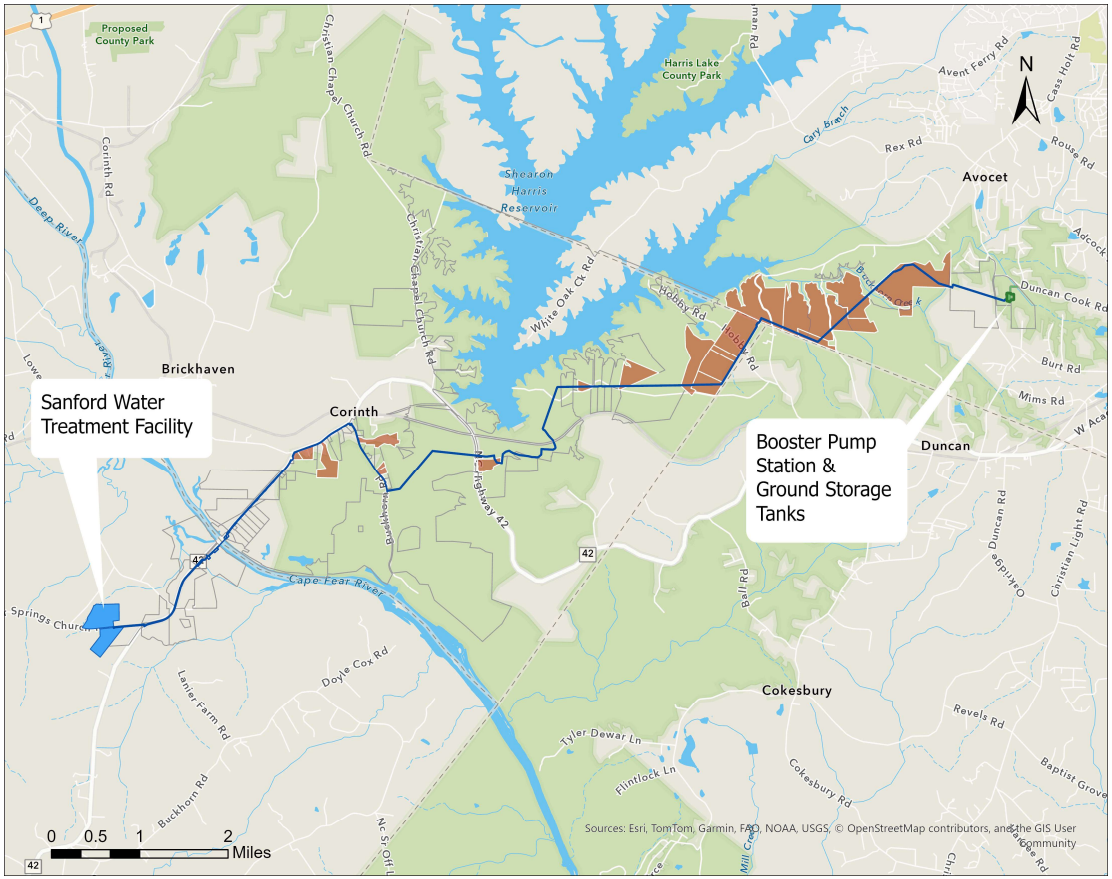
(Signature of Recording Officer)

_____

(Title of Recording Officer)

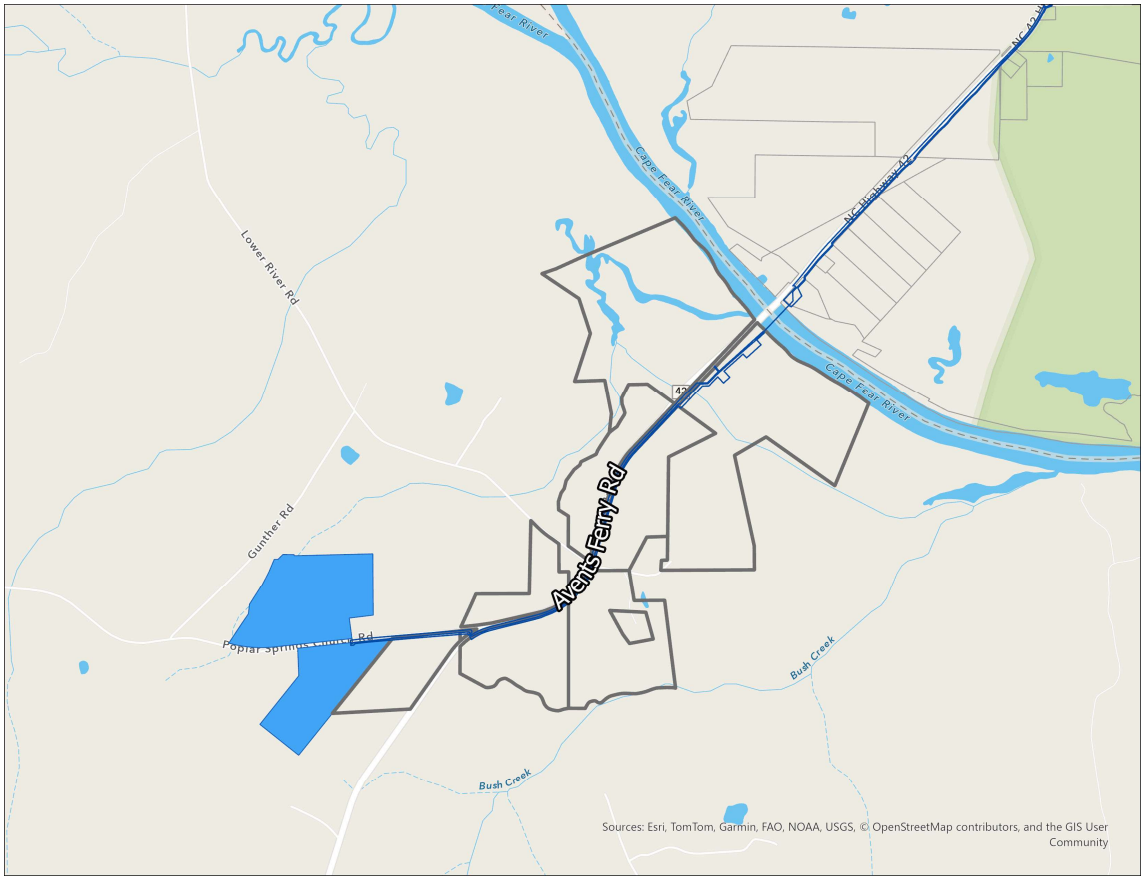

HOLLY SPRINGS
WAKE COUNTY
CHATHAM COUNTY
Shearon Harris Reservoir
FUQUAY-VARINA
CORINTH
DUNCAN
HARNETT COUNTY
LEE COUNTY
Cape Fear River
Proposed Transmission Main
Sanford Water Filtration Facility
US 1 HWY NB
US 1 HWY SB
OLD US 1
RUSH
OBLER RD
KING RD
SHEARON HARRIS RD
HOLLEMAN RD
NEW HILL
AVENT FERRY RD
REX RD
BARTLEY HOLLEMAN RD
CHRISTIAN CHAPEL CHURCH RD
MONCURE FLATWOOD RD
CORINTH RD
RIVER POINT RD
CASS HOLT RD
BUCKHORN DUNCAN RD
ADCOCK RD
DUNCAN COOK RD
STARCHASE LN
W ACADEMY ST
NC 42
FRED BURNS RD
ROLLINS RD
PINEY GROVE WILBON RD
ROGERS RD
BAKERTOWN RD
OAKRIDGE DUNCAN RD
RAWLS CHURCH RD
SPENCE MILL RD
PURFOY RD
PARRISH RD
BAPTIST GROVE RD
HARDEE RD
COATESBURY RD
REVELS RD
OAKRIDGE RIVER RD
TYLER DEWAR LN
RIVER RD
TUTOR RD
BALL RD
TRUTH RD
LOWER RIVER RD
NC 42 HWY
POPLAR SPRINGS CHURCH RD
AVENTS FERRY RD
BUCKHORN RD
N
0 0.75 1.5 3 Miles
1 inch equals 1.5 miles
HOLLY SPRINGS
FUQUAY-VARINA
Hazen
FREESE NICHOLS
Water Conveyance System from City of Sanford WFF to Towns of Fuquay-Varina and Holly Springs
July 2022

Transmission Main – Overview



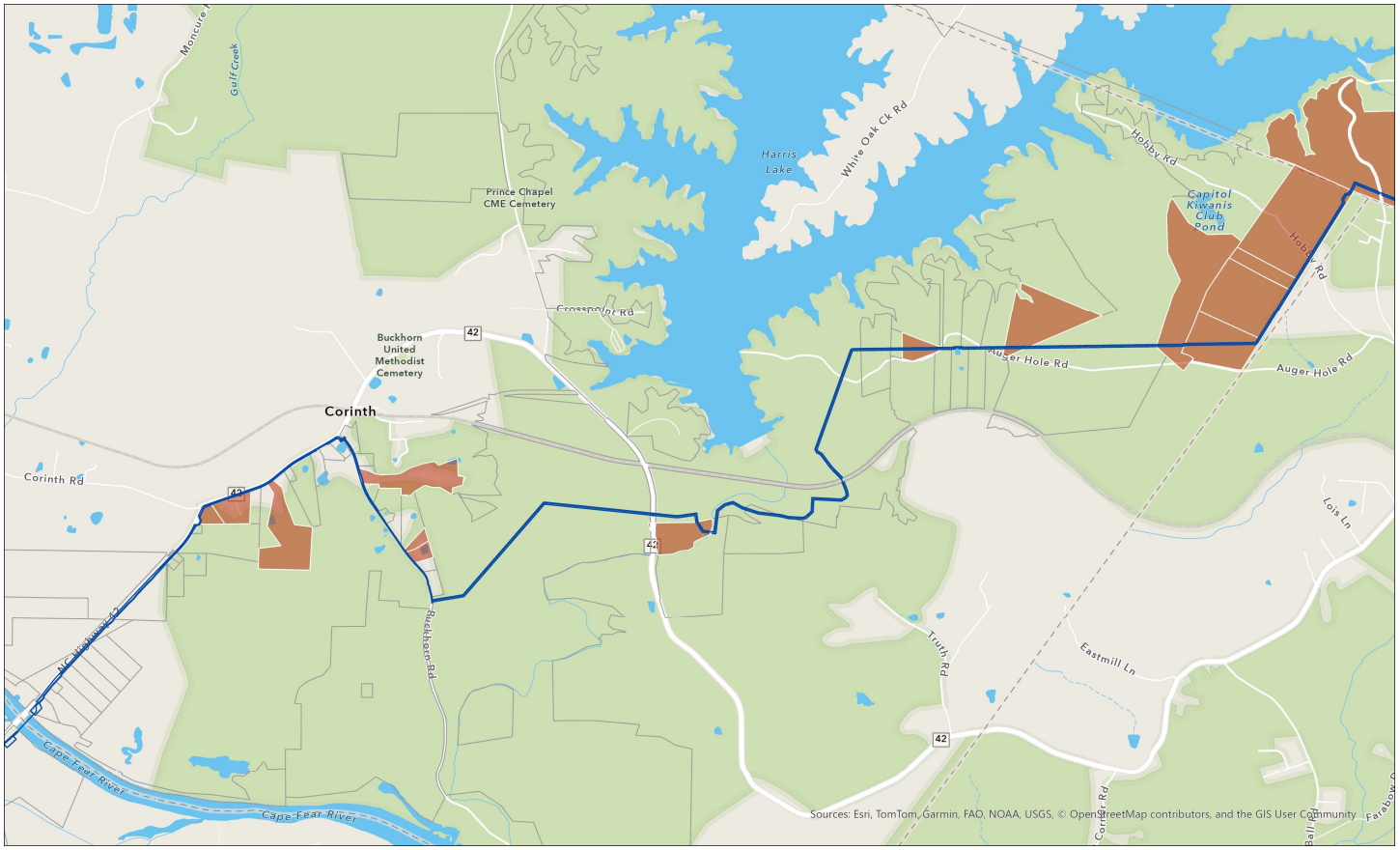
- From the Sanford Water Treatment Facility (Lee County) to the Booster Pump Station & Ground Storage Tank site (Wake County)

Transmission Main – Lee County Parcels

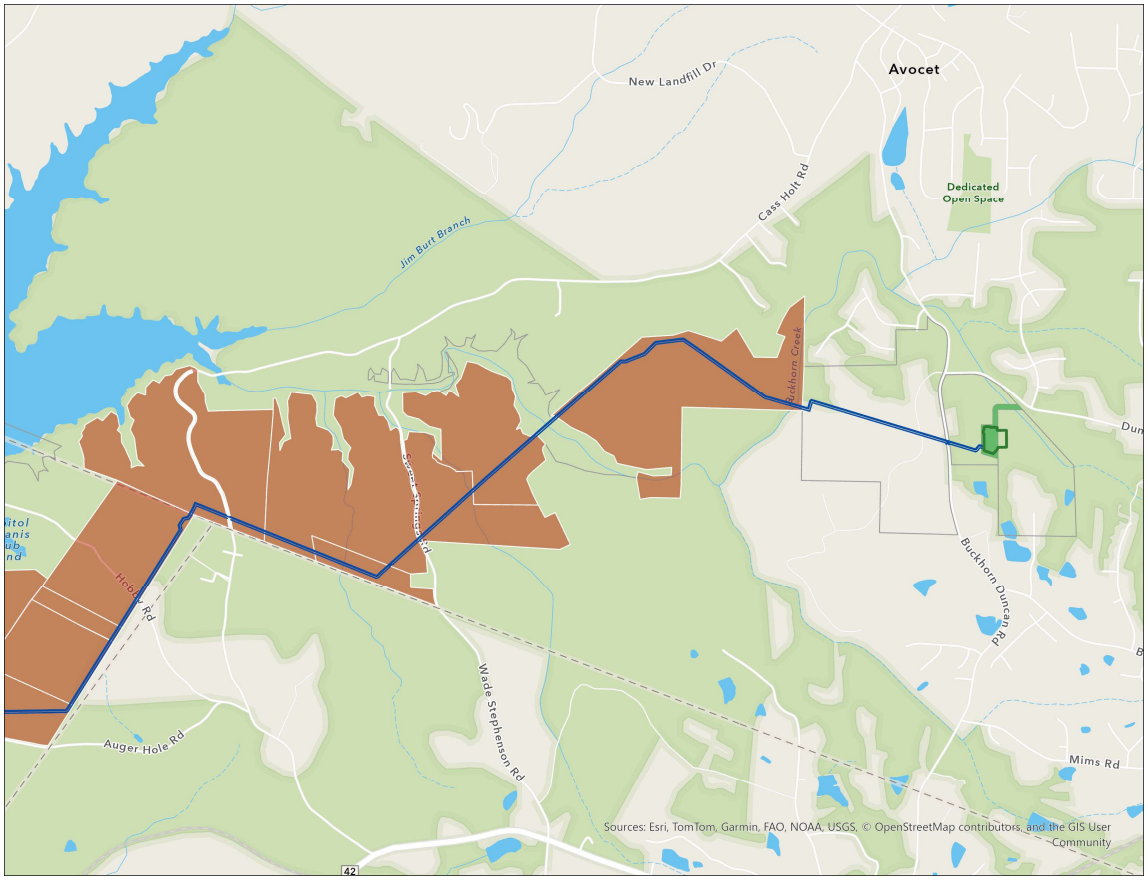


- No condemnation in Lee County

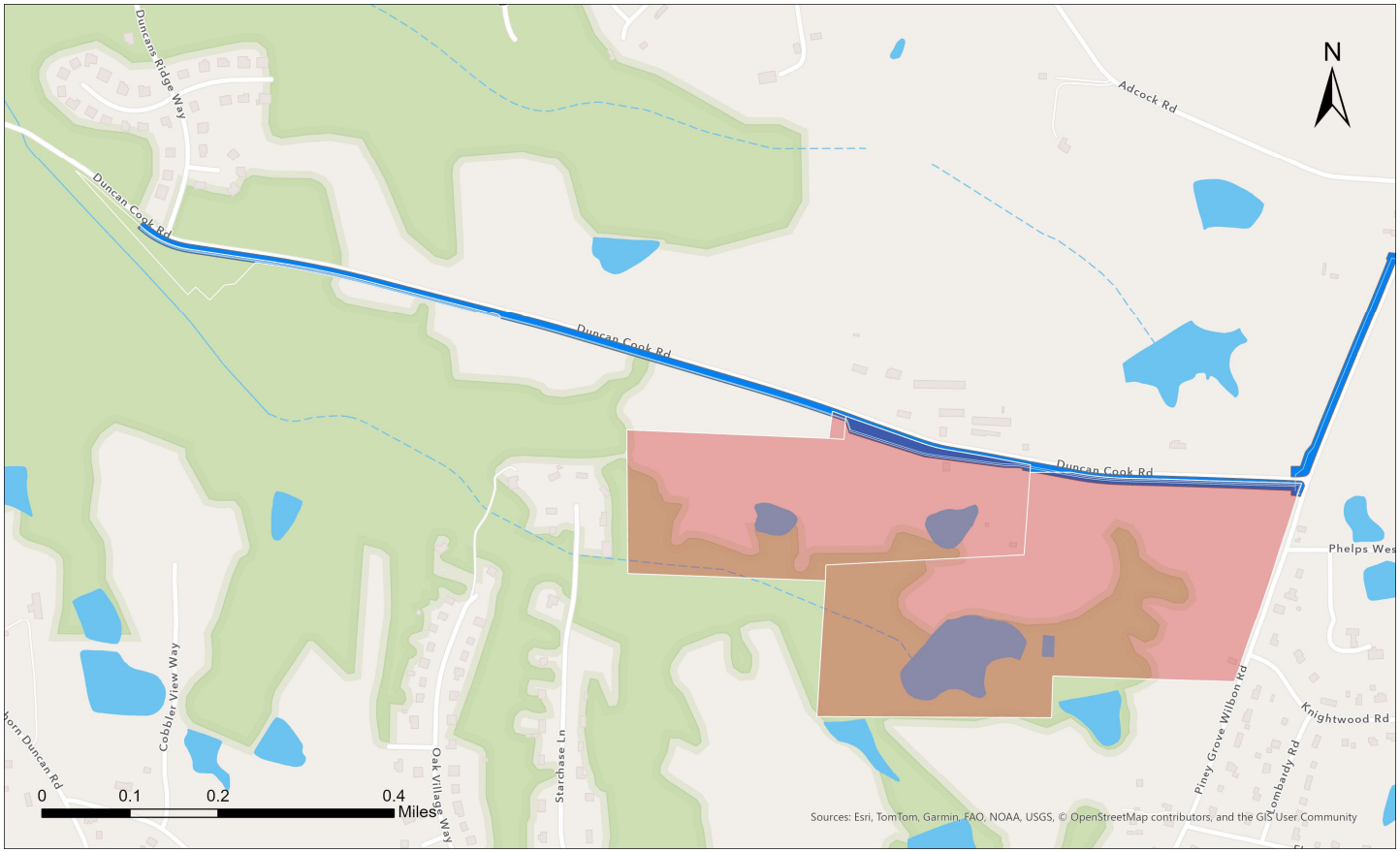
Transmission Main – Chatham County Parcels



Transmission Main – Wake County Parcels



Distribution Main – Wake County Parcels



- From the Booster Pump Station & Ground Storage Tank site to the Holly Springs Distribution System

GRANTOR: DUNCAN COOK HOLDINGS, LLC
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

COMMENCING AT AN EXISTING AXLE MARKING THE SOUTHERN COMMON CORNER OF DUNCAN COOK HOLDINGS, LLC AS RECORDED IN DEED BOOK 19879 PAGE 2680 AND THE TOLL SOUTHEAST LP CO, INC. PROPERTY AS RECORDED IN DEED BOOK 19544 PAGE 124 AND BOOK OF MAPS 2025 PAGE 221 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID EXISTING AXLE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=668,296.09 AND E=2,044,544.85. THENCE LEAVING THE SAID SOUTHERN COMMON CORNER ALONG THE SAID COMMON LINE NORTH 07 DEGREES 22 MINUTES 15 SECONDS EAST FOR A DISTANCE OF 133.08 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT. THENCE CONTINUING ALONG THE SAID COMMON LINE NORTH 07 DEGREES 22 MINUTES 15 SECONDS EAST FOR A DISTANCE OF 20.50 FEET TO A POINT; SAID POINT BEING SOUTH 07 DEGREES 22 MINUTES 15 SECONDS WEST A DISTANCE OF 10.25 FEET FROM AN EXISTING IRON PIPE MARKING THE NORTHERN COMMON CORNER OF THE SAID PROPERTIES AND THE SOUTHERN RIGHT-OF-WAY OF DUNCAN COOK RD (A 60' PUBLIC RIGHT-OF-WAY). THENCE LEAVING THE SAID COMMON LINE SOUTH 69 DEGREES 58 MINUTES 22 SECONDS EAST FOR A DISTANCE OF 49.40 FEET TO A POINT. THENCE SOUTH 70 DEGREES 32 MINUTES 57 SECONDS EAST FOR A DISTANCE OF 28.33 FEET TO A POINT ON THE COMMON LINE OF DUNCAN COOK HOLDINGS, LLC AS REFERENCED ABOVE AND DUNCAN HOLDINGS, LLC AS RECORDED IN DEED BOOK 19879 PAGE 2680. THENCE ALONG THE SAID COMMON LINE OF DUNCAN COOK HOLDINGS, LLC AND DUNCAN COOK HOLDINGS, LLC SOUTH 00 DEGREES 28 MINUTES 27 SECONDS WEST FOR A DISTANCE OF 21.15 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE NORTH 70 DEGREES 32 MINUTES 57 SECONDS WEST FOR A DISTANCE OF 35.30 FEET TO A POINT. THENCE NORTH 69 DEGREES 58 MINUTES 22 SECONDS WEST FOR A DISTANCE OF 45.01 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 1,580 SQUARE FEET IN AREA (0.036 ACRES). REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED SEPTEMBER 20, 2024.

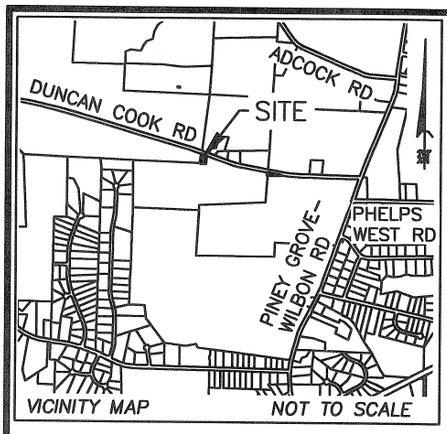
TEMPORARY CONSTRUCTION EASEMENT

COMMENCING AT AN EXISTING AXLE MARKING THE SOUTHERN COMMON CORNER OF DUNCAN COOK HOLDINGS, LLC AS RECORDED IN DEED BOOK 19879 PAGE 2680 AND THE TOLL SOUTHEAST LP CO, INC. PROPERTY AS RECORDED IN DEED BOOK 19544 PAGE 124 AND BOOK OF MAPS 2025 PAGE 221 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID EXISTING AXLE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=668,296.09 AND E=2,044,544.85. THENCE LEAVING THE SAID SOUTHERN COMMON CORNER ALONG THE SAID COMMON LINE NORTH 07 DEGREES 22 MINUTES 15 SECONDS EAST FOR A DISTANCE OF 153.58 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS TEMPORARY CONSTRUCTION EASEMENT. THENCE CONTINUING ALONG THE SAID COMMON LINE NORTH 07 DEGREES 22 MINUTES 15 SECONDS EAST FOR A DISTANCE OF 10.25 FEET TO AN EXISTING IRON PIPE MARKING THE NORTHERN COMMON CORNER OF THE SAID PROPERTIES AND THE SOUTHERN RIGHT-OF-WAY OF DUNCAN COOK RD (A 60' PUBLIC RIGHT-OF-WAY). THENCE ALONG THE

SAID RIGHT-OF-WAY SOUTH 68 DEGREES 48 MINUTES 03 SECONDS EAST FOR A DISTANCE OF 32.29 FEET TO A POINT. THENCE CONTINUING ALONG THE SAID RIGHT-OF-WAY SOUTH 70 DEGREES 35 MINUTES 34 SECONDS EAST FOR A DISTANCE OF 44.31 FEET TO A POINT ON THE COMMON LINE OF DUNCAN COOK HOLDINGS, LLC AS REFERENCED ABOVE AND DUNCAN COOK HOLDINGS, LLC AS RECORDED IN DEED BOOK 19879 PAGE 2680. THENCE ALONG THE SAID COMMON LINE OF DUNCAN COOK HOLDINGS, LLC AND DUNCAN COOK HOLDINGS, LLC SOUTH 00 DEGREES 28 MINUTES 27 SECONDS WEST FOR A DISTANCE OF 10.12 FEET TO A POINT; SAID POINT BEING THE NORTHEAST CORNER OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT. THENCE LEAVING THE SAID COMMON LINE ALONG THE NORTHERN LINE OF THE SAID PERMANENT UTILITY EASEMENT THE FOLLOWING TWO COURSES AND DISTANCES: NORTH 70 DEGREES 32 MINUTES 57 SECONDS WEST FOR 28.33 FEET TO A POINT AND NORTH 69 DEGREES 58 MINUTES 22 SECONDS WEST FOR 49.40 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 738 SQUARE FEET IN AREA (0.017 ACRES). REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED SEPTEMBER 20, 2024.



EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720064600J, EFFECTIVE OCTOBER 03, 2006.

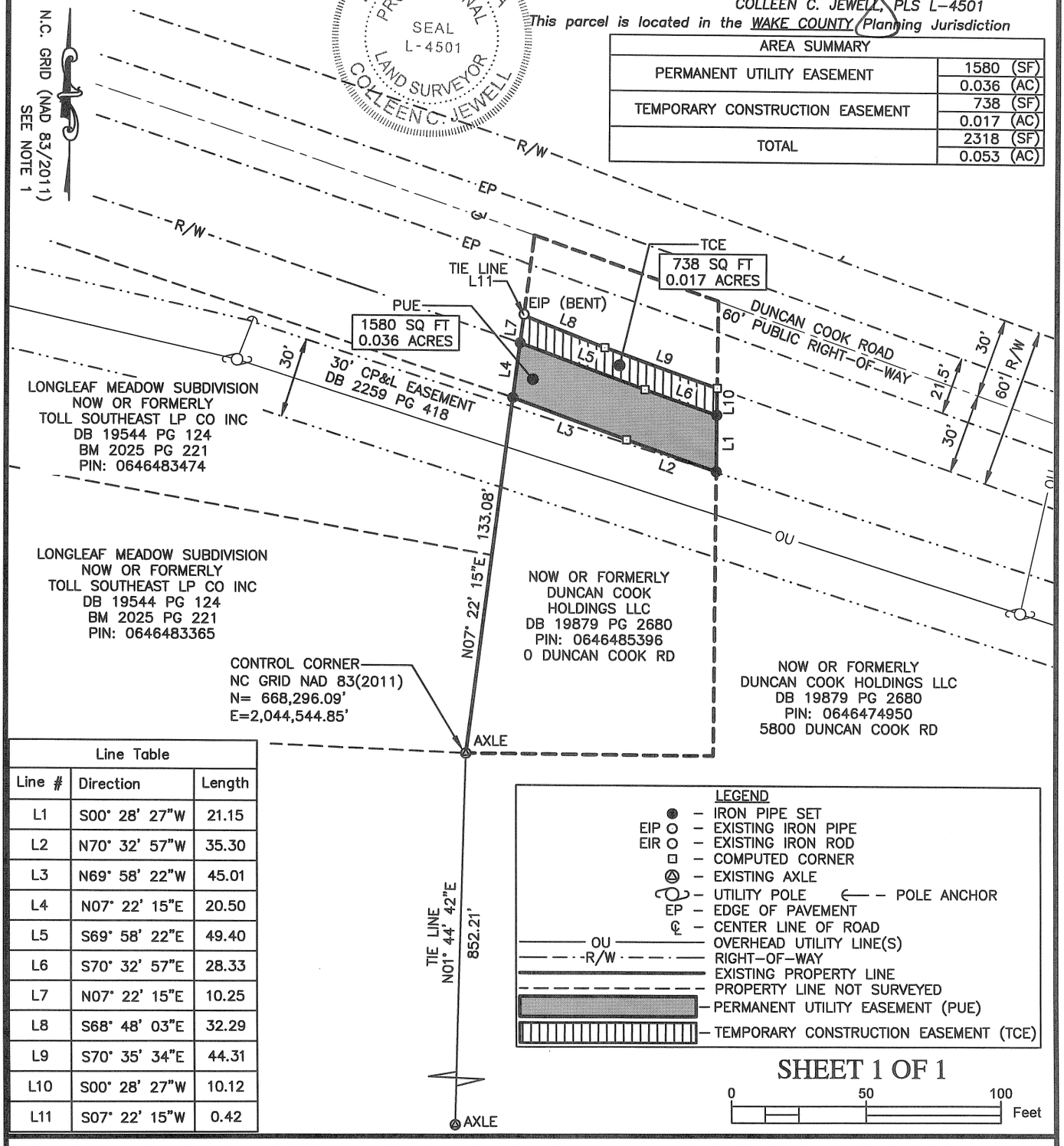
c. 4. This survey is of a proposed easement for public utility as defined in G.S. 62–3.

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

COLLEEN C. JEWELL, PLS L–4501

This parcel is located in the WAKE COUNTY Planning Jurisdiction

AREA SUMMARY	
PERMANENT UTILITY EASEMENT	1580 (SF)
	0.036 (AC)
TEMPORARY CONSTRUCTION EASEMENT	738 (SF)
	0.017 (AC)
TOTAL	2318 (SF)
	0.053 (AC)



Line Table		
Line #	Direction	Length
L1	S00° 28' 27"W	21.15
L2	N70° 32' 57"W	35.30
L3	N69° 58' 22"W	45.01
L4	N07° 22' 15"E	20.50
L5	S69° 58' 22"E	49.40
L6	S70° 32' 57"E	28.33
L7	N07° 22' 15"E	10.25
L8	S68° 48' 03"E	32.29
L9	S70° 35' 34"E	44.31
L10	S00° 28' 27"W	10.12
L11	S07° 22' 15"W	0.42

LEGEND

- ● – IRON PIPE SET
- EIP ○ – EXISTING IRON PIPE
- EIR ○ – EXISTING IRON ROD
- □ – COMPUTED CORNER
- △ – EXISTING AXLE
- – UTILITY POLE ⟵ – POLE ANCHOR
- EP – EDGE OF PAVEMENT
- ℄ – CENTER LINE OF ROAD
- OU – OVERHEAD UTILITY LINE(S)
- R/W – RIGHT–OF–WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT (PUE)
- TEMPORARY CONSTRUCTION EASEMENT (TCE)

SHEET 1 OF 1

0 50 100 Feet

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 20TH DAY OF SEPTEMBER A.D., 2024.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | *AREAS COMPUTED BY COORDINATES.* | *FILE NAME:* 7122–5396 COOK.dwg

Surv'd: LB | *Drawn:* MR | *Chk'd:* CCJ | *Job No.:* 7122 | *Date:* 09/20/24 | *Scale:* 1"=50'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: DUNCAN COOK HOLDINGS, LLC
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
MIDDLE CREEK TNSP., WAKE COUNTY, NORTH CAROLINA

GRANTOR: DUNCAN COOK HOLDINGS, LLC
WAKE COUNTY PIN: 0646474950
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

COMMENCING AT AN EXISTING IRON PIPE MARKING THE EASTERN COMMON CORNER OF DUNCAN COOK HOLDINGS, LLC AS RECORDED IN DEED BOOK 19879 PAGE 2680 AND THE DANNY AND VIRGINIA COOK PROPERTY AS RECORDED IN DEED BOOK 16885 PAGE 1407 AND BOOK OF MAPS 2017 PAGE 1532 IN THE LINE OF THE T.M. ADCOCK FAMILY, LLC PROPERTY AS RECORDED IN DEED BOOK 6377 PAGE 844 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID EXISTING IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=668,532.26 AND E=2,045,782.56. THENCE ALONG THE COMMON LINE OF DUNCAN COOK HOLDINGS, LLC AND T.M. ADCOCK SOUTH 02 DEGREES 50 MINUTES 40 SECONDS WEST FOR A DISTANCE OF 396.67 FEET TO A POINT ON THE SOUTHERN RIGHT-OF-WAY OF DUNCAN COOK RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING A COMMON CORNER OF THE DUNCAN COOK HOLDINGS, LLC PROPERTY AND THE T.M. ADCOCK FAMILY, LLC PROPERTY AS DESCRIBED ABOVE AND BEING THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT. THENCE CONTINUING ALONG THE SAID COMMON LINE SOUTH 02 DEGREES 50 MINUTES 40 SECONDS WEST FOR A DISTANCE OF 30.28 FEET TO A POINT. THENCE NORTH 79 DEGREES 17 MINUTES 57 SECONDS WEST FOR A DISTANCE OF 44.43 FEET TO A POINT. THENCE NORTH 79 DEGREES 19 MINUTES 47 SECONDS WEST FOR A DISTANCE OF 12.59 FEET TO A POINT. THENCE NORTH 79 DEGREES 19 MINUTES 47 SECONDS WEST FOR A DISTANCE OF 23.96 FEET TO A POINT. THENCE NORTH 89 DEGREES 04 MINUTES 49 SECONDS WEST FOR A DISTANCE OF 89.24 FEET TO A POINT. THENCE NORTH 82 DEGREES 23 MINUTES 28 SECONDS WEST FOR A DISTANCE OF 483.46 FEET TO A POINT. THENCE NORTH 72 DEGREES 20 MINUTES 18 SECONDS WEST FOR A DISTANCE OF 273.77 FEET TO A POINT. THENCE NORTH 72 DEGREES 21 MINUTES 45 SECONDS WEST FOR A DISTANCE OF 195.85 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 57 SECONDS WEST FOR A DISTANCE OF 74.15 FEET TO A POINT. THENCE NORTH 70 DEGREES 32 MINUTES 57 SECONDS WEST FOR A DISTANCE OF 5.43 FEET TO A POINT ON THE COMMON LINE OF THE PROPERTY OF DUNCAN COOK HOLDINGS, LLC AS DESCRIBED ABOVE AND THE DURWOOD AND PEGGY COOK PROPERTY AS RECORDED IN DEED BOOK 2050 PAGE 445. THENCE ALONG THE SAID COMMON LINE NORTH 00 DEGREES 28 MINUTES 27 SECONDS EAST FOR A DISTANCE OF 21.15 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE SOUTH 70 DEGREES 32 MINUTES 57 SECONDS EAST FOR A DISTANCE OF 22.09 FEET TO A POINT. THENCE SOUTH 18 DEGREES 22 MINUTES 57 SECONDS EAST FOR A DISTANCE OF 61.40 FEET TO A POINT. THENCE SOUTH 72 DEGREES 21 MINUTES 45 SECONDS EAST FOR A DISTANCE OF 192.94 FEET TO A POINT. THENCE SOUTH 72 DEGREES 20 MINUTES 18 SECONDS EAST FOR A DISTANCE OF 271.14 FEET TO A POINT. THENCE SOUTH 82 DEGREES 23 MINUTES 28 SECONDS EAST FOR A DISTANCE OF 479.07 FEET TO A POINT. THENCE SOUTH 89 DEGREES 04 MINUTES 49 SECONDS EAST FOR A DISTANCE OF 90.05 FEET TO A POINT ON THE SOUTHERN RIGHT-OF-WAY OF DUNCAN COOK RD. THENCE ALONG THE SAID RIGHT-OF-WAY SOUTH 79 DEGREES 19 MINUTES 47 SECONDS EAST FOR A DISTANCE OF 39.11 FEET TO A POINT. THENCE CONTINUING ALONG THE SAID RIGHT-OF-WAY SOUTH 79 DEGREES 17 MINUTES 57 SECONDS EAST FOR A DISTANCE OF 40.31 FEET TO

THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 35,170 SQUARE FEET (0.807 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED SEPTEMBER 20, 2024.

TEMPORARY CONSTRUCTION EASEMENT #1

COMMENCING AT AN EXISTING IRON PIPE MARKING THE EASTERN COMMON CORNER OF DUNCAN COOK HOLDINGS, LLC AS RECORDED IN DEED BOOK 19879 PAGE 2680 AND THE DANNY AND VIRGINIA COOK PROPERTY AS RECORDED IN DEED BOOK 16885 PAGE 1407 AND BOOK OF MAPS 2017 PAGE 1532 IN THE LINE OF THE T.M. ADCOCK FAMILY, LLC PROPERTY AS RECORDED IN DEED BOOK 6377 PAGE 844 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID EXISTING IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=668,532.26 AND E=2,045,782.56. THENCE ALONG THE COMMON LINE OF DUNCAN COOK HOLDINGS AND T.M. ADCOCK SOUTH 02 DEGREES 50 MINUTES 40 SECONDS WEST FOR A DISTANCE OF 396.67 FEET TO A POINT ON THE SOUTHERN RIGHT-OF-WAY OF DUNCAN COOK RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING A COMMON CORNER OF THE DUNCAN COOK HOLDINGS, LLC PROPERTY AND THE T.M. ADCOCK FAMILY, LLC PROPERTY AS DESCRIBED ABOVE. THENCE CONTINUING ALONG THE SAID COMMON LINE SOUTH 02 DEGREES 50 MINUTES 40 SECONDS WEST FOR A DISTANCE OF 30.28 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS TEMPORARY CONSTRUCTION EASEMENT; SAID POINT BEING THE SOUTHEAST CORNER OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT. THENCE CONTINUING ALONG THE COMMON LINE SOUTH 02 DEGREES 50 MINUTES 40 SECONDS WEST FOR A DISTANCE OF 10.09 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE NORTH 79 DEGREES 17 MINUTES 57 SECONDS WEST FOR A DISTANCE OF 45.80 FEET TO A POINT. THENCE NORTH 79 DEGREES 37 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 11.60 FEET TO A POINT. THENCE NORTH 05 DEGREES 04 MINUTES 04 SECONDS EAST FOR A DISTANCE OF 10.11 FEET TO A POINT ON THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT. THENCE ALONG THE SOUTHERN LINE OF THE SAID PERMANENT UTILITY EASEMENT THE FOLLOWING TWO BEARINGS AND DISTANCES: SOUTH 79 DEGREES 19 MINUTES 47 SECONDS EAST FOR 12.59 FEET TO A POINT AND SOUTH 79 DEGREES 17 MINUTES 57 SECONDS EAST FOR 44.43 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 573 SQUARE FEET (0.013 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED SEPTEMBER 20, 2024.

TEMPORARY CONSTRUCTION EASEMENT #2

COMMENCING AT AN EXISTING IRON PIPE MARKING THE EASTERN COMMON CORNER OF DUNCAN COOK HOLDINGS, LLC AS RECORDED IN DEED BOOK 19879 PAGE 2680 AND THE DANNY AND VIRGINIA COOK PROPERTY AS RECORDED IN DEED BOOK 16885 PAGE 1407 AND BOOK OF MAPS 2017 PAGE 1532 IN THE LINE OF THE T.M. ADCOCK FAMILY, LLC PROPERTY AS RECORDED IN DEED BOOK 6377 PAGE 844 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID EXISTING IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=668,532.26 AND E=2,045,782.56. THENCE ALONG THE COMMON LINE OF DUNCAN COOK HOLDINGS AND T.M. ADCOCK SOUTH 02 DEGREES 50 MINUTES 40 SECONDS

WEST FOR A DISTANCE OF 396.67 FEET TO A POINT ON THE SOUTHERN RIGHT-OF-WAY OF DUNCAN COOK RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING A COMMON CORNER OF THE DUNCAN COOK HOLDINGS, LLC PROPERTY AND THE T.M. ADCOCK FAMILY, LLC PROPERTY AS DESCRIBED ABOVE. THENCE ALONG THE SAID RIGHT-OF-WAY THE FOLLOWING TWO BEARINGS AND DISTANCES: NORTH 79 DEGREES 17 MINUTES 57 SECONDS WEST FOR 40.31 FEET TO A POINT AND NORTH 79 DEGREES 19 MINUTES 47 SECONDS WEST FOR 39.11 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS TEMPORARY CONSTRUCTION EASEMENT; SAID POINT BEING A CORNER OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT. THENCE ALONG THE NORTHERN LINE OF THE SAID PERMANENT UTILITY EASEMENT THE FOLLOWING SIX BEARINGS AND DISTANCES: NORTH 89 DEGREES 04 MINUTES 49 SECONDS WEST FOR 90.05 FEET TO A POINT; NORTH 82 DEGREES 23 MINUTES 28 SECONDS WEST FOR 479.07 FEET TO A POINT; NORTH 72 DEGREES 20 MINUTES 18 SECONDS WEST FOR 271.14 FEET TO A POINT; NORTH 72 DEGREES 21 MINUTES 45 SECONDS WEST FOR 192.94 FEET TO A POINT; NORTH 18 DEGREES 22 MINUTES 57 SECONDS WEST FOR A DISTANCE OF 61.40 FEET TO A POINT; NORTH 70 DEGREES 32 MINUTES 57 SECONDS WEST FOR 22.09 FEET TO A POINT ON THE COMMON LINE OF THE DUNCAN COOK HOLDINGS, LLC PROPERTY AS DESCRIBED ABOVE AND THE DURWOOD AND PEGGY COOK PROPERTY AS DESCRIBED IN DEED BOOK 2050 PAGE 445. THENCE ALONG THE SAID COMMON LINE NORTH 00 DEGREES 28 MINUTES 27 SECONDS EAST FOR A DISTANCE OF 10.12 FEET TO A POINT ON THE SOUTHERN RIGHT-OF-WAY OF DUNCAN COOK RD. THENCE ALONG THE SAID RIGHT-OF-WAY THE FOLLOWING FIFTEEN BEARINGS AND DISTANCES:

SOUTH 70 DEGREES 35 MINUTES 34 SECONDS EAST FOR 28.53 FEET TO A POINT;
SOUTH 70 DEGREES 35 MINUTES 34 SECONDS EAST FOR 125.30 FEET TO A POINT;
SOUTH 70 DEGREES 16 MINUTES 04 SECONDS EAST FOR 85.76 FEET TO A POINT;
SOUTH 70 DEGREES 27 MINUTES 56 SECONDS EAST FOR 93.15 FEET TO A POINT;
SOUTH 70 DEGREES 32 MINUTES 16 SECONDS EAST FOR 55.19 FEET TO A POINT;
SOUTH 70 DEGREES 54 MINUTES 36 SECONDS EAST FOR 74.27 FEET TO A POINT;
SOUTH 72 DEGREES 06 MINUTES 01 SECONDS EAST FOR 81.68 FEET TO A POINT;
SOUTH 75 DEGREES 47 MINUTES 04 SECONDS EAST FOR 66.89 FEET TO A POINT;
SOUTH 78 DEGREES 30 MINUTES 48 SECONDS EAST FOR 48.10 FEET TO A POINT;
SOUTH 80 DEGREES 00 MINUTES 37 SECONDS EAST FOR 110.34 FEET TO A POINT;
SOUTH 80 DEGREES 15 MINUTES 45 SECONDS EAST FOR 87.96 FEET TO A POINT;
SOUTH 79 DEGREES 51 MINUTES 36 SECONDS EAST FOR 40.24 FEET TO A POINT;
SOUTH 79 DEGREES 26 MINUTES 22 SECONDS EAST FOR 87.54 FEET TO A POINT;
SOUTH 79 DEGREES 01 MINUTES 18 SECONDS EAST FOR 40.26 FEET TO A POINT;
SOUTH 79 DEGREES 19 MINUTES 47 SECONDS EAST FOR 62.24 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 38,537 SQUARE FEET (0.885 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED SEPTEMBER 20, 2024.

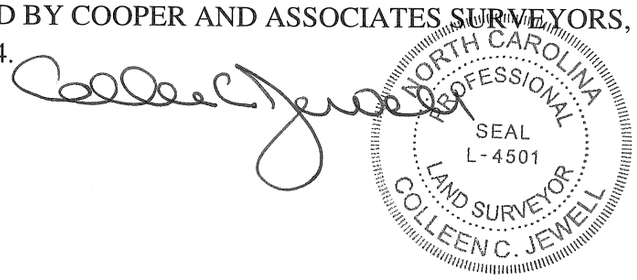
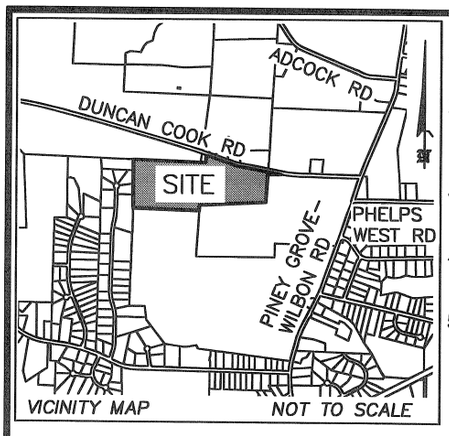


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

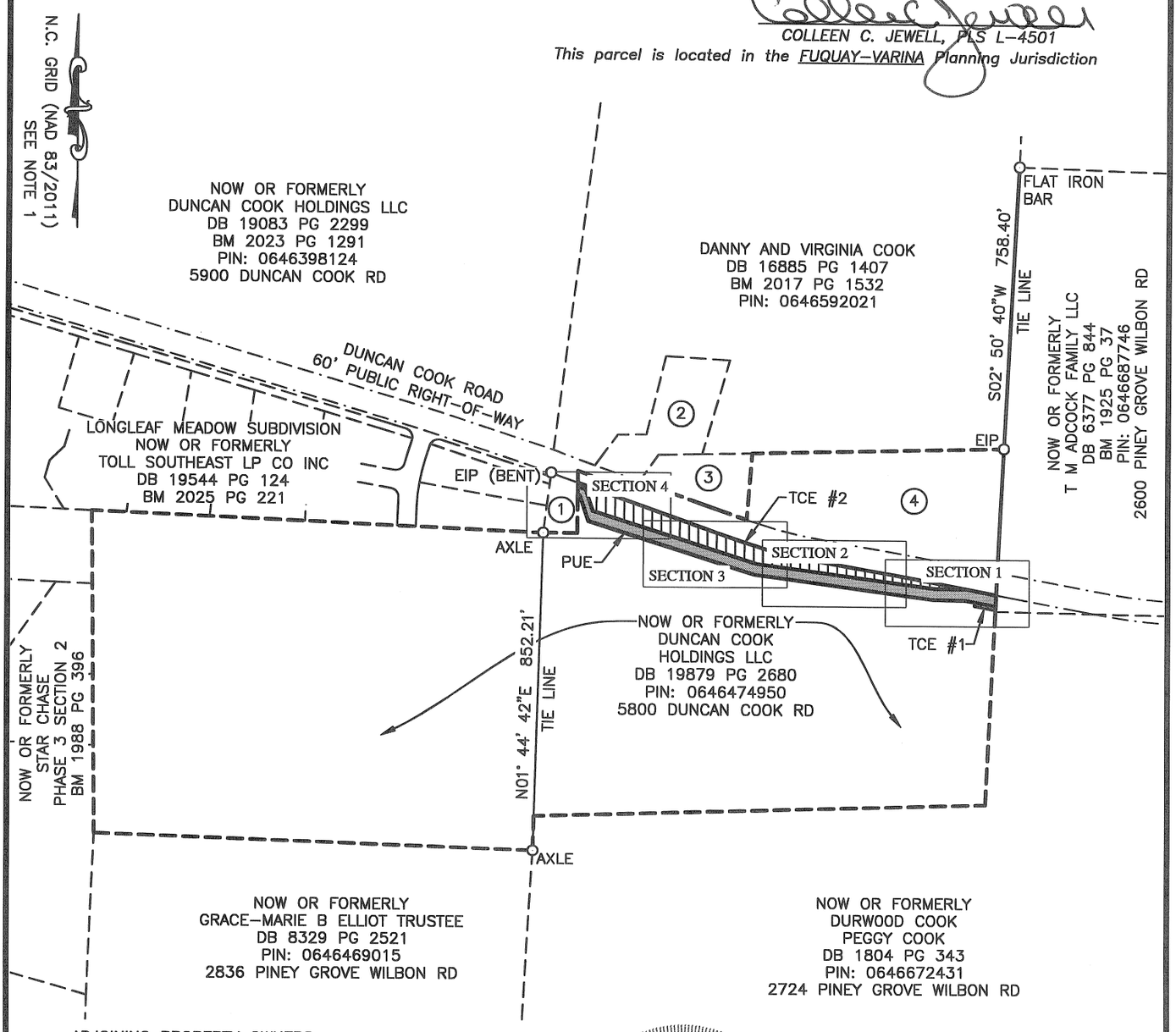
4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720064600J, EFFECTIVE OCTOBER 03, 2006.

c. 4. This survey is of a proposed easement for public utility as defined in G.S. 62–3.

COLLEEN C. JEWELL, PLS L–4501

This parcel is located in the FUQUAY–VARINA Planning Jurisdiction



ADJOINING PROPERTY OWNERS

1. DUNCAN COOK HOLDINGS LLC
   DB 19879 PG 2680
   PIN: 0646485396
2. BETH PINKERTON
   DB 16885 PG 1409
   PIN: 0646488691
3. DURWARD AND PEGGY COOK
   DB 1616 PG 456
   PIN: 0646489445
4. DURWOOD AND PEGGY COOK
   DB 2359 PG 437
   0646379993

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

SHEET 1 OF 3

0 400 800 Feet

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 20TH DAY OF SEPTEMBER A.D., 2024.

SURVEYOR

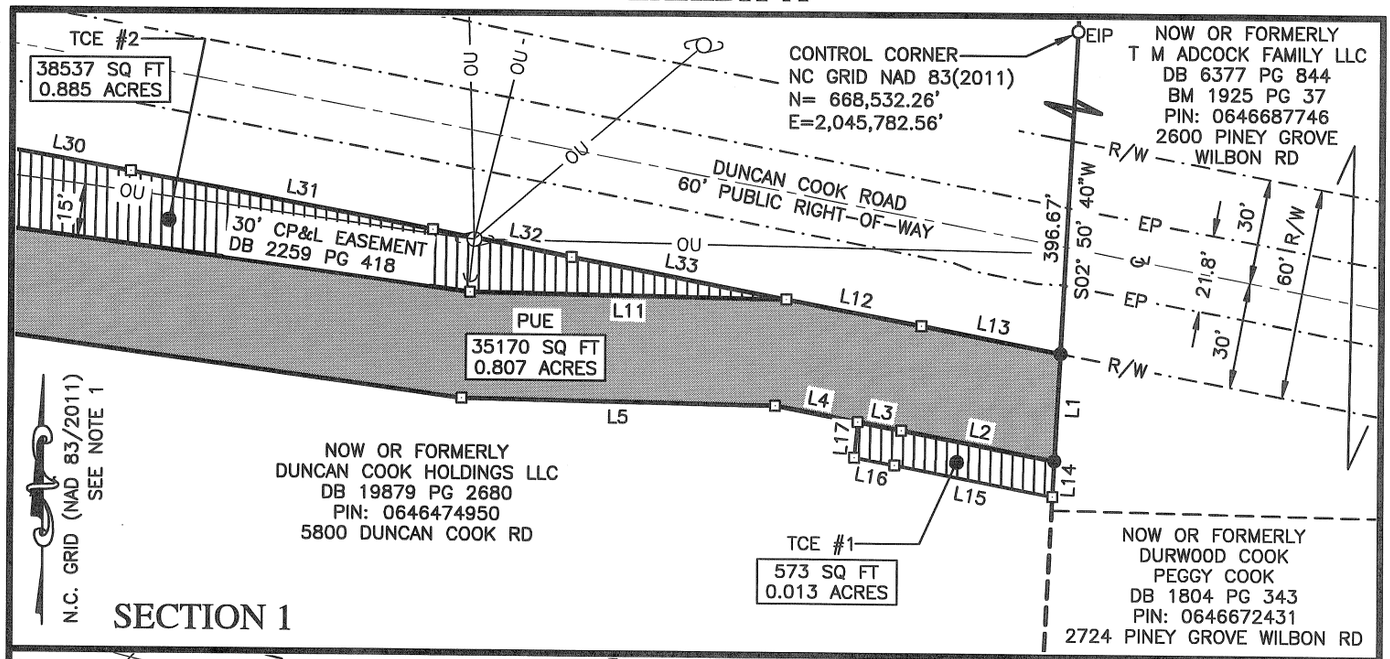
L–4501
LICENSE NUMBER

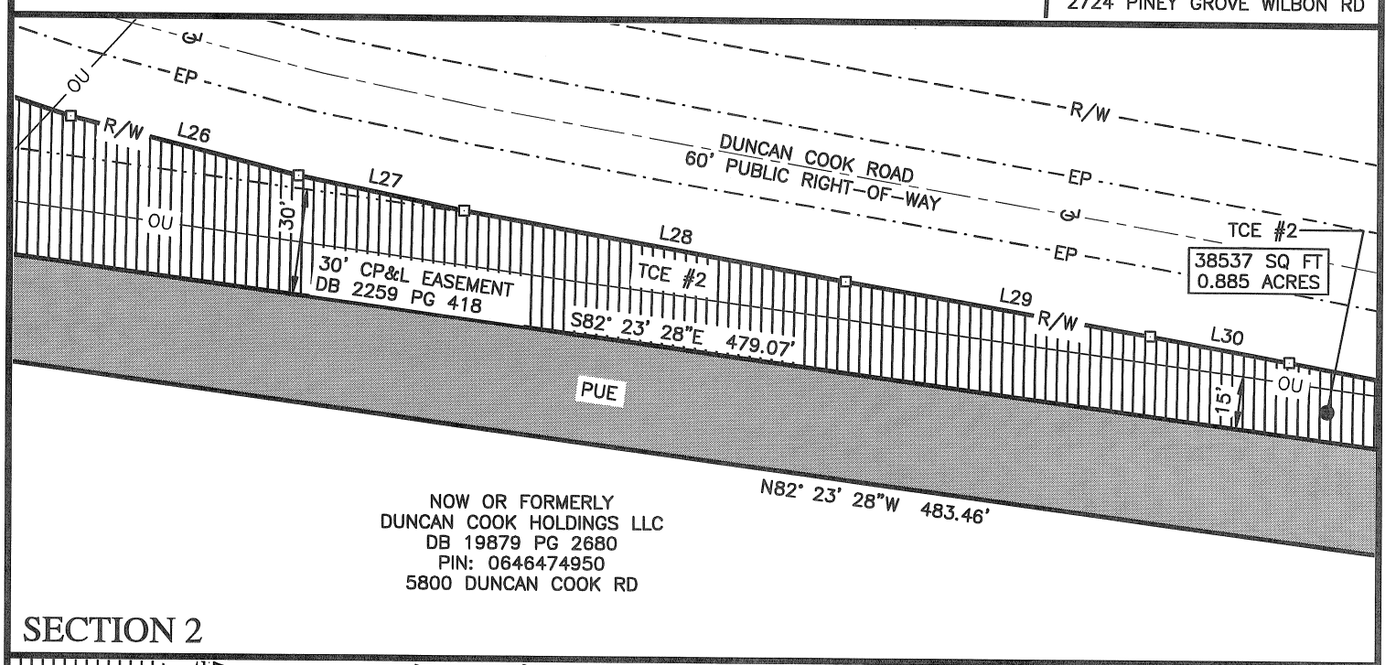
ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.	*AREAS COMPUTED BY COORDINATES.*	*FILE NAME:* 7122–4950 COOK.dwg			
Surv'd: LB	*Drawn:* MR	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 09/20/24	*Scale:* 1"=400'

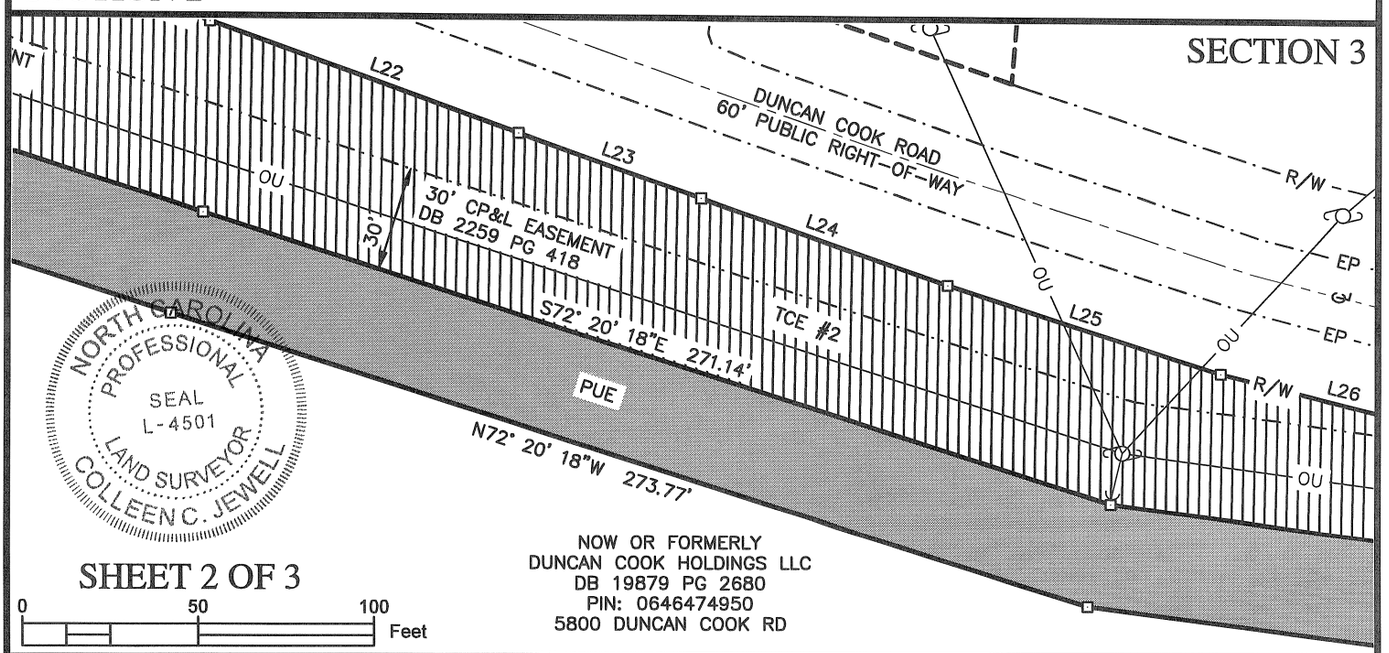
COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: DUNCAN COOK HOLDINGS, LLC
GRANTEE: TOWN OF FUQUAY–VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
MIDDLE CREEK TNSP., WAKE COUNTY, NORTH CAROLINA

EXHIBIT A







NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

SHEET 2 OF 3

0 50 100 Feet

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 20TH DAY OF SEPTEMBER A.D., 2024.

SURVEYOR

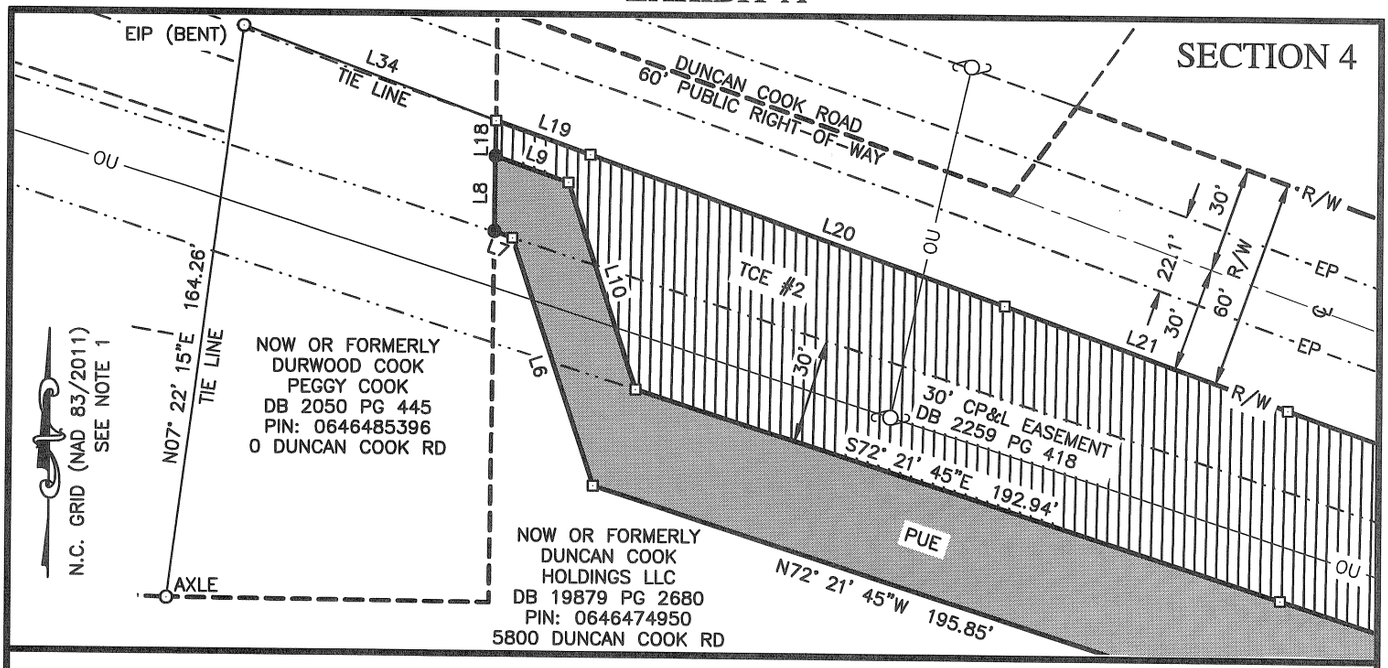
L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.	AREAS COMPUTED BY COORDINATES.	FILE NAME: 7122-4950 COOK.dwg			
Surv'd: LB	Drawn: MR	Chk'd: CCJ	Job No.: 7122	Date: 09/20/24	Scale: 1"=50'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE - (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: DUNCAN COOK HOLDINGS, LLC
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
MIDDLE CREEK TNSP., WAKE COUNTY, NORTH CAROLINA

EXHIBIT A



Line Table		
Line #	Direction	Length
L1	S02° 50' 40"W	30.28
L2	N79° 17' 57"W	44.43
L3	N79° 19' 47"W	12.59
L4	N79° 19' 47"W	23.96
L5	N89° 04' 49"W	89.24
L6	N18° 22' 57"W	74.15
L7	N70° 32' 57"W	5.43
L8	N00° 28' 27"E	21.15
L9	S70° 32' 57"E	22.09
L10	S18° 22' 57"E	61.40
L11	S89° 04' 49"E	90.05
L12	S79° 19' 47"E	39.11
L13	S79° 17' 57"E	40.31
L14	S02° 50' 40"W	10.09
L15	N79° 17' 57"W	45.80
L16	N79° 37' 46"W	11.60
L17	N05° 04' 04"E	10.11

Line Table		
Line #	Direction	Length
L18	N00° 28' 27"E	10.12
L19	S70° 35' 34"E	28.53
L20	S70° 35' 34"E	125.30
L21	S70° 16' 04"E	85.76
L22	S70° 27' 56"E	93.15
L23	S70° 32' 16"E	55.19
L24	S70° 54' 36"E	74.27
L25	S72° 06' 01"E	81.68
L26	S75° 47' 04"E	66.89
L27	S78° 30' 48"E	48.10
L28	S80° 00' 37"E	110.34
L29	S80° 15' 45"E	87.96
L30	S79° 51' 36"E	40.24
L31	S79° 26' 22"E	87.54
L32	S79° 01' 18"E	40.26
L33	S79° 19' 47"E	62.24
L34	S69° 31' 43"E	76.68

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

LEGEND

- ● – IRON PIPE SET
- EIP ○ – EXISTING IRON PIPE
- EIR ○ – EXISTING IRON ROD
- □ – COMPUTED CORNER
- ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- – UTILITY POLE ⟵ – POLE ANCHOR
- EP – EDGE OF PAVEMENT
- ℄ – CENTER LINE OF ROAD
- OU – OVERHEAD UTILITY LINE(S)
- R/W – RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT (PUE)
- TEMPORARY CONSTRUCTION EASEMENT (TCE)

AREA SUMMARY		
PERMANENT UTILITY EASEMENT	35170	(SF)
	0.807	(AC)
TEMPORARY CONSTRUCTION EASEMENT #1	573	(SF)
	0.013	(AC)
TEMPORARY CONSTRUCTION EASEMENT #2	38537	(SF)
	0.885	(AC)
TOTAL	74280	(SF)
	1.705	(AC)

SHEET 3 OF 3

0 50 100 Feet

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 20TH DAY OF SEPTEMBER A.D., 2024.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-4950 COOK.dwg

Surv'd: LB | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 09/20/24 | Scale: 1"=50'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: DUNCAN COOK HOLDINGS, LLC
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
MIDDLE CREEK TNSP., WAKE COUNTY, NORTH CAROLINA

GRANTOR: DURWARD W. AND PEGGIE B. COOK
WAKE COUNTY PIN: 0646672431
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS
AS JOINT TENANTS

PERMANENT UTILITY EASEMENT
OUTSIDE OF RIGHT-OF-WAY

COMMENCING AT AN IRON PIPE SET HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=666,831.49 AND E=2,046,955.10 ON THE COMMON PROPERTY LINE OF THE DURWARD W. AND PEGGIE B. COOK PROPERTY AS RECORDED IN DEED BOOK 1804 PAGE 343 AND THE ELLIOT AND GILCHRIST PROPERTY AS RECORDED IN DEED BOOK 8329 PAGE 2521 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE IS LOCATED NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST A DISTANCE OF 19.73 FEET FROM A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING THE EASTERN COMMON CORNER OF COOK AND ELLIOT AND GILCHRIST AND IS LOCATED SOUTH 88 DEGREES 15 MINUTES 17 SECONDS EAST A DISTANCE OF 1,069.69 FEET FROM AN EXISTING CONCRETE MONUMENT MARKING A COMMON CORNER OF THE SAID PROPERTIES. THENCE ALONG THE SAID COMMON PROPERTY LINE NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST FOR A DISTANCE OF 21.02 FEET TO A POINT. THENCE LEAVING THE SAID COMMON PROPERTY LINE NORTH 19 DEGREES 42 MINUTES 21 SECONDS EAST FOR A DISTANCE OF 84.49 FEET TO A POINT. THENCE NORTH 64 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 22.95 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 58.62 FEET TO A POINT. THENCE NORTH 25 DEGREES 47 MINUTES 02 SECONDS WEST FOR A DISTANCE OF 14.14 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 650.26 FEET TO A POINT. THENCE NORTH 26 DEGREES 37 MINUTES 44 SECONDS WEST FOR A DISTANCE OF 12.73 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 16.85 FEET TO A POINT. THENCE NORTH 63 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 12.84 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 303.71 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 31.54 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT.

THENCE FROM THE SAID POINT AND PLACE OF BEGINNING NORTH 00 DEGREES 06 MINUTES 45 SECONDS WEST FOR A DISTANCE OF 39.06 FEET TO A POINT. THENCE NORTH 87 DEGREES 45 MINUTES 37 SECONDS WEST FOR A DISTANCE OF 397.33 FEET TO A POINT. THENCE NORTH 88 DEGREES 01 MINUTES 59 MINUTES WEST FOR A DISTANCE OF 260.94 FEET TO A POINT. THENCE NORTH 88 DEGREES 23 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 340.32 FEET TO A POINT. THENCE NORTH 88 DEGREES 01 MINUTES 32 SECONDS WEST FOR A DISTANCE OF 54.36 FEET TO A POINT. THENCE NORTH 86 DEGREES 59 MINUTES 25 SECONDS WEST FOR A DISTANCE OF 56.38 FEET TO A POINT. THENCE NORTH 85 DEGREES 16 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 57.28 FEET TO A POINT. THENCE NORTH 82 DEGREES 59 MINUTES 14 SECONDS WEST FOR A DISTANCE OF 57.58 FEET TO A POINT. THENCE NORTH 81 DEGREES 15 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 55.79 FEET TO A POINT. THENCE NORTH 79 DEGREES 49

MINUTES 16 SECONDS WEST FOR A DISTANCE OF 79.36 FEET TO A POINT. THENCE NORTH 79 DEGREES 37 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 88.64 FEET TO A POINT. THENCE NORTH 79 DEGREES 27 MINUTES 59 SECONDS WEST FOR A DISTANCE OF 41.22 FEET TO A POINT ON THE SOUTHERN COMMON PROPERTY LINE OF COOK AS DESCRIBED ABOVE AND THE T.M. ADCOCK FAMILY, LLC PROPERTY AS RECORDED IN DEED BOOK 6377 PAGE 844. THENCE ALONG THE SAID COMMON PROPERTY LINE SOUTH 89 DEGREES 00 MINUTES 17 SECONDS EAST FOR A DISTANCE OF 184.39 FEET TO A POINT ON THE SOUTHERN RIGHT-OF-WAY OF DUNCAN COOK RD (A 60' PUBLIC RIGHT-OF-WAY). THENCE ALONG THE SAID RIGHT-OF-WAY SOUTH 79 DEGREES 49 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 26.82 FEET TO A POINT. THENCE SOUTH 81 DEGREES 15 MINUTES 01 SECONDS EAST FOR A DISTANCE OF 54.96 FEET TO A POINT. THENCE SOUTH 82 DEGREES 59 MINUTES 14 SECONDS EAST FOR A DISTANCE OF 56.53 FEET TO A POINT. THENCE SOUTH 85 DEGREES 16 MINUTES 46 SECONDS EAST FOR A DISTANCE OF 56.23 FEET TO A POINT. THENCE SOUTH 86 DEGREES 59 MINUTES 25 SECONDS EAST FOR A DISTANCE OF 55.66 FEET TO A POINT. THENCE SOUTH 88 DEGREES 01 MINUTES 32 SECONDS EAST FOR A DISTANCE OF 53.99 FEET TO A POINT. THENCE SOUTH 88 DEGREES 23 MINUTES 46 SECONDS EAST FOR A DISTANCE OF 340.32 FEET TO A POINT. THENCE SOUTH 88 DEGREES 01 MINUTES 59 SECONDS EAST FOR A DISTANCE OF 261.11 FEET TO A POINT. THENCE SOUTH 87 DEGREES 49 MINUTES 18 SECONDS EAST FOR A DISTANCE OF 348.57 FEET TO A POINT. THENCE SOUTH 87 DEGREES 21 MINUTES 04 SECONDS EAST FOR A DISTANCE OF 52.41 FEET TO A POINT. THENCE SOUTH 87 DEGREES 21 MINUTES 04 SECONDS EAST FOR A DISTANCE OF 20.03 FEET TO A POINT. THENCE SOUTH 87 DEGREES 21 MINUTES 04 SECONDS EAST FOR A DISTANCE OF 20.14 FEET TO A POINT. THENCE SOUTH 01 DEGREES 39 MINUTES 09 SECONDS WEST FOR A DISTANCE OF 25.85 FEET TO A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD. THENCE ALONG THE SAID RIGHT-OF-WAY SOUTH 19 DEGREES 29 MINUTES 13 SECONDS WEST FOR A DISTANCE OF 26.64 FEET TO A POINT. THENCE LEAVING THE SAID RIGHT-OF-WAY SOUTH 38 DEGREES 24 MINUTES 33 SECONDS WEST FOR A DISTANCE OF 24.21 FEET TO A POINT. THENCE NORTH 81 DEGREES 50 MINUTES 55 SECONDS WEST FOR A DISTANCE OF 20.32 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 44,648 SQUARE FEET (1.0250 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 06, 2025.

PERMANENT UTILITY EASEMENT INSIDE OF RIGHT-OF-WAY (1)

COMMENCING AT AN IRON PIPE SET HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=666,831.49 AND E=2,046,955.10 ON THE COMMON PROPERTY LINE OF THE DURWARD W. AND PEGGIE B. COOK PROPERTY AS RECORDED IN DEED BOOK 1804 PAGE 343 AND THE ELLIOT AND GILCHRIST PROPERTY AS RECORDED IN DEED BOOK 8329 PAGE 2521 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE IS LOCATED NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST A DISTANCE OF 19.73 FEET FROM A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING THE EASTERN COMMON CORNER OF COOK AND ELLIOT AND GILCHRIST AND IS LOCATED SOUTH 88 DEGREES 15 MINUTES 17 SECONDS EAST A DISTANCE OF 1,069.69 FEET FROM AN EXISTING CONCRETE MONUMENT MARKING A COMMON CORNER OF THE SAID PROPERTIES. THENCE

NORTH 19 DEGREES 42 MINUTES 21 SECONDS EAST FOR A DISTANCE OF 69.82 FEET TO A POINT. THENCE NORTH 64 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 23.05 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 75.19 FEET TO A POINT. THENCE NORTH 25 DEGREES 47 MINUTES 02 SECONDS WEST FOR A DISTANCE OF 14.14 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 650.44 FEET TO A POINT. THENCE NORTH 19 DEGREES 00 MINUTES 38 SECONDS EAST FOR A DISTANCE OF 18.49 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 347.14 FEET TO A POINT. THENCE NORTH 38 DEGREES 24 MINUTES 33 SECONDS EAST FOR A DISTANCE OF 24.21 FEET TO A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD. THENCE ALONG THE SAID RIGHT-OF-WAY NORTH 19 DEGREES 29 MINUTES 13 SECONDS EAST FOR A DISTANCE OF 26.64 FEET TO A POINT. THENCE LEAVING THE SAID RIGHT-OF-WAY NORTH 01 DEGREES 39 MINUTES 09 SECONDS EAST FOR A DISTANCE OF 25.85 FEET TO A POINT ON THE SOUTHERN RIGHT-OF-WAY OF DUNCAN COOK RD. THENCE ALONG THE SAID RIGHT-OF-WAY NORTH 87 DEGREES 21 MINUTES 04 SECONDS WEST FOR A DISTANCE OF 20.14 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT.

THENCE CONTINUING ALONG THE SAID RIGHT-OF-WAY NORTH 87 DEGREES 21 MINUTES 04 SECONDS WEST FOR A DISTANCE OF 20.03 FEET TO A POINT. THENCE LEAVING THE SAID RIGHT-OF-WAY NORTH 00 DEGREES 18 MINUTES 58 SECONDS WEST FOR A DISTANCE OF 18.74 FEET TO A POINT. THENCE SOUTH 86 DEGREES 41 MINUTES 49 SECONDS EAST FOR A DISTANCE OF 20.04 FEET TO A POINT. THENCE SOUTH 00 DEGREES 18 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 18.51 FEET TO FEET THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 373 SQUARE FEET (0.0086 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 06, 2025.

PERMANENT UTILITY EASEMENT INSIDE OF RIGHT-OF-WAY (2)

COMMENCING AT AN IRON PIPE SET HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=666,831.49 AND E=2,046,955.10 ON THE COMMON PROPERTY LINE OF THE DURWARD W. AND PEGGIE B. COOK PROPERTY AS RECORDED IN DEED BOOK 1804 PAGE 343 AND THE ELLIOT AND GILCHRIST PROPERTY AS RECORDED IN DEED BOOK 8329 PAGE 2521 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE IS LOCATED NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST A DISTANCE OF 19.73 FEET FROM A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING THE EASTERN COMMON CORNER OF COOK AND ELLIOT AND GILCHRIST AND IS LOCATED SOUTH 88 DEGREES 15 MINUTES 17 SECONDS EAST A DISTANCE OF 1,069.69 FEET FROM AN EXISTING CONCRETE MONUMENT MARKING A COMMON CORNER OF THE SAID PROPERTIES. THENCE NORTH 19 DEGREES 42 MINUTES 21 SECONDS EAST FOR A DISTANCE OF 69.82 FEET TO A POINT. THENCE NORTH 64 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 23.05 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 75.19 FEET TO A POINT. THENCE NORTH 25 DEGREES 47 MINUTES 02 SECONDS WEST FOR A DISTANCE OF 14.14 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST

FOR A DISTANCE OF 650.44 FEET TO A POINT. THENCE NORTH 19 DEGREES 00 MINUTES 38 SECONDS EAST FOR A DISTANCE OF 18.49 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 347.14 FEET TO A POINT. THENCE NORTH 38 DEGREES 24 MINUTES 33 SECONDS EAST FOR A DISTANCE OF 24.21 FEET TO A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD MARKING THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT.

THENCE ALONG THE SAID RIGHT-OF-WAY NORTH 19 DEGREES 29 MINUTES 13 SECONDS EAST FOR A DISTANCE OF 26.64 FEET TO A POINT. THENCE SOUTH 01 DEGREES 39 MINUTES 09 SECONDS WEST FOR A DISTANCE OF 14.43 FEET TO A POINT. THENCE SOUTH 38 DEGREES 24 MINUTES 33 SECONDS WEST FOR A DISTANCE OF 13.63 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 59 SQUARE FEET (0.0014 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 06, 2025.

TEMPORARY CONSTRUCTION EASEMENT OUTSIDE OF RIGHT-OF-WAY (1)

COMMENCING AT AN IRON PIPE SET ON THE COMMON PROPERTY LINE OF THE DURWARD W. AND PEGGIE B. COOK PROPERTY AS RECORDED IN DEED BOOK 1804 PAGE 343 AND THE ELLIOT AND GILCHRIST PROPERTY AS RECORDED IN DEED BOOK 8329 PAGE 2521 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=666,831.49 AND E=2,046,955.10 AND IS LOCATED NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST FOR A DISTANCE OF 19.73 FEET FROM A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING THE EASTERN COMMON CORNER OF COOK AND ELLIOT AND GILCHRIST. THENCE ALONG THE SAID COMMON LINE NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST FOR A DISTANCE OF 21.02 FEET TO A POINT. THENCE NORTH 19 DEGREES 42 MINUTES 21 SECONDS EAST FOR A DISTANCE OF 84.49 FEET TO A POINT. THENCE NORTH 64 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 22.95 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 58.62 FEET TO A POINT. THENCE NORTH 25 DEGREES 47 MINUTES 02 SECONDS WEST FOR A DISTANCE OF 14.14 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 650.26 FEET TO A POINT. THENCE NORTH 26 DEGREES 37 MINUTES 44 SECONDS WEST FOR A DISTANCE OF 12.73 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 16.85 FEET TO A POINT. THENCE NORTH 63 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 12.84 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 303.71 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS TEMPORARY CONSTRUCTION EASEMENT.

THENCE NORTH 00 DEGREES 06 MINUTES 45 SECONDS WEST FOR A DISTANCE OF 59.38 FEET TO A POINT. THENCE NORTH 87 DEGREES 45 MINUTES 37 SECONDS WEST FOR A DISTANCE OF 387.71 FEET TO A POINT. THENCE NORTH 88 DEGREES 01 MINUTES 59 SECONDS WEST FOR A DISTANCE OF 260.89 FEET TO A POINT. THENCE NORTH 88 DEGREES 23 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 340.32 FEET TO A POINT. THENCE NORTH 88 DEGREES 01 MINUTES 32 SECONDS WEST FOR A DISTANCE OF 54.48 FEET TO A POINT. THENCE NORTH 86 DEGREES 59

MINUTES 25 SECONDS WEST FOR A DISTANCE OF 56.62 FEET TO A POINT. THENCE NORTH 85 DEGREES 16 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 57.63 FEET TO A POINT. THENCE NORTH 82 DEGREES 59 MINUTES 14 SECONDS WEST FOR A DISTANCE OF 57.93 FEET TO A POINT. THENCE NORTH 81 DEGREES 15 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 56.07 FEET TO A POINT. THENCE NORTH 79 DEGREES 49 MINUTES 16 SECONDS WEST FOR A DISTANCE OF 79.51 FEET TO A POINT. THENCE NORTH 79 DEGREES 37 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 88.67 FEET TO A POINT. THENCE NORTH 79 DEGREES 27 MINUTES 59 SECONDS WEST FOR A DISTANCE OF 94.52 FEET TO A POINT. THENCE NORTH 79 DEGREES 17 MINUTES 57 SECONDS WEST FOR A DISTANCE OF 6.12 FEET TO A POINT ON THE COMMON PROPERTY LINE OF COOK AS DESCRIBED ABOVE AND THE T.M. ADCOCK FAMILY, LLC PROPERTY AS RECORDED IN DEED BOOK 6377 PAGE 844. THENCE ALONG THE SAID COMMON PROPERTY LINE SOUTH 89 DEGREES 00 MINUTES 17 SECONDS EAST FOR A DISTANCE OF 60.24 FEET TO A POINT; SAID POINT BEING THE NORTHWEST CORNER OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT. THENCE ALONG THE SAID PERMANENT UTILITY EASEMENT THE FOLLOWING TWELVE (13) BEARINGS AND DISTANCES:

SOUTH 79 DEGREES 27 MINUTES 59 SECONDS EAST FOR 41.22 FEET TO A POINT;
SOUTH 79 DEGREES 37 MINUTES 01 SECONDS EAST FOR 88.64 FEET TO A POINT;
SOUTH 79 DEGREES 49 MINUTES 16 SECONDS EAST FOR 79.36 FEET TO A POINT;
SOUTH 81 DEGREES 15 MINUTES 01 SECONDS EAST FOR 55.79 FEET TO A POINT;
SOUTH 82 DEGREES 59 MINUTES 14 SECONDS EAST FOR 57.58 FEET TO A POINT;
SOUTH 85 DEGREES 16 MINUTES 46 SECONDS EAST FOR 57.28 FEET TO A POINT;
SOUTH 86 DEGREES 59 MINUTES 25 SECONDS EAST FOR 56.38 FEET TO A POINT;
SOUTH 88 DEGREES 01 MINUTES 32 SECONDS EAST FOR 54.36 FEET TO A POINT;
SOUTH 88 DEGREES 23 MINUTES 46 SECONDS EAST FOR 340.32 FEET TO A POINT;
SOUTH 88 DEGREES 01 MINUTES 59 SECONDS EAST FOR 260.94 FEET TO A POINT;
SOUTH 87 DEGREES 45 MINUTES 37 SECONDS EAST FOR 397.33 FEET TO A POINT;
SOUTH 00 DEGREES 06 MINUTES 45 SECONDS EAST FOR 39.06 FEET TO A POINT;
SOUTH 18 DEGREES 22 MINUTES 16 SECONDS WEST FOR 31.54 FEET TO THE POINT AND PLACE OF BEGINNING.

THIS EASEMENT CONTAINS 15,641 SQUARE FEET (0.3591 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 06, 2025.

TEMPORARY CONSTRUCTION EASEMENT OUTSIDE OF RIGHT-OF-WAY (2)

COMMENCING AT AN IRON PIPE SET HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=666,831.49 AND E=2,046,955.10 ON THE COMMON PROPERTY LINE OF THE DURWARD W. AND PEGGIE B. COOK PROPERTY AS RECORDED IN DEED BOOK 1804 PAGE 343 AND THE ELLIOT AND GILCHRIST PROPERTY AS RECORDED IN DEED BOOK 8329 PAGE 2521 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE IS LOCATED NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST A DISTANCE OF 19.73 FEET FROM A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING THE EASTERN COMMON CORNER OF COOK AND ELLIOT AND GILCHRIST AND IS LOCATED SOUTH 88 DEGREES 15 MINUTES 17 SECONDS EAST A DISTANCE OF 1,069.69 FEET FROM AN EXISTING CONCRETE MONUMENT MARKING A COMMON CORNER OF THE SAID PROPERTIES. THENCE NORTH 19 DEGREES 42 MINUTES 21 SECONDS EAST FOR A DISTANCE OF 69.82

FOR A DISTANCE OF 23.05 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 75.19 FEET TO A POINT. THENCE NORTH 25 DEGREES 47 MINUTES 02 SECONDS WEST FOR A DISTANCE OF 14.14 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 650.44 FEET TO A POINT. THENCE NORTH 19 DEGREES 00 MINUTES 38 SECONDS EAST FOR A DISTANCE OF 18.49 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 347.14 FEET TO A POINT. THENCE NORTH 38 DEGREES 24 MINUTES 33 SECONDS EAST FOR A DISTANCE OF 24.21 FEET TO A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD. THENCE ALONG THE SAID RIGHT-OF-WAY NORTH 19 DEGREES 29 MINUTES 13 SECONDS EAST FOR A DISTANCE OF 26.64 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS TEMPORARY CONSTRUCTION EASEMENT.

THENCE NORTH 01 DEGREES 39 MINUTES 09 SECONDS EAST FOR A DISTANCE OF 25.85 FEET TO A POINT. THENCE SOUTH 87 DEGREES 21 MINUTES 04 SECONDS EAST FOR A DISTANCE OF 8.27 FEET TO A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD. THENCE ALONG THE SAID RIGHT-OF-WAY SOUTH 19 DEGREES 29 MINUTES 13 SECONDS WEST FOR A DISTANCE OF 27.00 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 107 SQUARE FEET (0.0025 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 06, 2025.

TEMPORARY CONSTRUCTION EASEMENT OUTSIDE OF RIGHT-OF-WAY (3)

COMMENCING AT AN IRON PIPE SET HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=666,831.49 AND E=2,046,955.10 ON THE COMMON PROPERTY LINE OF THE DURWARD W. AND PEGGIE B. COOK PROPERTY AS RECORDED IN DEED BOOK 1804 PAGE 343 AND THE ELLIOT AND GILCHRIST PROPERTY AS RECORDED IN DEED BOOK 8329 PAGE 2521 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE IS LOCATED NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST A DISTANCE OF 19.73 FEET FROM A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING THE EASTERN COMMON CORNER OF COOK AND ELLIOT AND GILCHRIST AND IS LOCATED SOUTH 88 DEGREES 15 MINUTES 17 SECONDS EAST A DISTANCE OF 1,069.69 FEET FROM AN EXISTING CONCRETE MONUMENT MARKING A COMMON CORNER OF THE SAID PROPERTIES. THENCE NORTH 19 DEGREES 42 MINUTES 21 SECONDS EAST FOR A DISTANCE OF 69.82 FEET TO A POINT. THENCE NORTH 64 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 23.05 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 75.19 FEET TO A POINT. THENCE NORTH 25 DEGREES 47 MINUTES 02 SECONDS WEST FOR A DISTANCE OF 14.14 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 650.44 FEET TO A POINT. THENCE NORTH 19 DEGREES 00 MINUTES 38 SECONDS EAST FOR A DISTANCE OF 18.49 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 347.14 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS TEMPORARY CONSTRUCTION EASEMENT. THENCE NORTH 38 DEGREES 24 MINUTES 33 SECONDS EAST FOR A DISTANCE OF 24.21 FEET TO A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD. THENCE ALONG THE SAID RIGHT-

RIGHT-OF-WAY OF PINEY GROVE WILBON RD. THENCE ALONG THE SAID RIGHT-OF-WAY SOUTH 19 DEGREES 29 MINUTES 13 SECONDS WEST FOR A DISTANCE OF 21.33 FEET TO A POINT. THENCE NORTH 81 DEGREES 50 MINUTES 55 SECONDS WEST FOR A DISTANCE OF 8.01 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 84 SQUARE FEET (0.0019 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 06, 2025.

TEMPORARY CONSTRUCTION EASEMENT INSIDE OF RIGHT-OF-WAY

COMMENCING AT AN IRON PIPE SET HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=666,831.49 AND E=2,046,955.10 ON THE COMMON PROPERTY LINE OF THE DURWARD W. AND PEGGIE B. COOK PROPERTY AS RECORDED IN DEED BOOK 1804 PAGE 343 AND THE ELLIOT AND GILCHRIST PROPERTY AS RECORDED IN DEED BOOK 8329 PAGE 2521 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE IS LOCATED SOUTH 88 DEGREES 15 MINUTES 17 SECONDS EAST A DISTANCE OF 1,069.69 FEET FROM AN EXISTING CONCRETE MONUMENT MARKING A COMMON CORNER OF THE SAID PROPERTIES. THENCE NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST A DISTANCE OF 19.73 FEET TO A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING THE EASTERN COMMON CORNER OF COOK AND ELLIOT AND GILCHRIST. THENCE ALONG THE SAID RIGHT-OF-WAY NORTH 19 DEGREES 36 MINUTES 40 SECONDS EAST FOR A DISTANCE OF 187.55 FEET TO A POINT. THENCE NORTH 19 DEGREES 32 MINUTES 27 SECONDS EAST FOR A DISTANCE OF 215.96 FEET TO A POINT. THENCE NORTH 19 DEGREES 36 MINUTES 40 SECONDS EAST FOR A DISTANCE OF 163.22 TO A POINT. THENCE NORTH 18 DEGREES 13 MINUTES 40 SECONDS EAST FOR A DISTANCE OF 259.19 FEET TO A POINT. THENCE NORTH 18 DEGREES 00 MINUTES 00 SECONDS EAST FOR A DISTANCE OF 73.49 FEET TO A POINT. THENCE NORTH 17 DEGREES 22 MINUTES 35 SECONDS EAST FOR A DISTANCE OF 161.71 FEET TO A POINT. THENCE NORTH 18 DEGREES 25 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 122.00 FEET TO THE POINT AND PLACE OF BEGINNING. THENCE NORTH 19 DEGREES 29 MINUTES 13 SECONDS EAST FOR A DISTANCE OF 21.33 FEET TO A POINT. THENCE NORTH 38 DEGREES 24 MINUTES 33 SECONDS EAST FOR A DISTANCE OF 13.63 FEET TO A POINT. THENCE NORTH 01 DEGREES 39 MINUTES 09 SECONDS EAST FOR A DISTANCE OF 14.43 FEET TO A POINT. THENCE NORTH 19 DEGREES 29 MINUTES 13 SECONDS EAST FOR A DISTANCE OF 27.00 FEET TO A POINT. THENCE NORTH 87 DEGREES 21 MINUTES 04 SECONDS WEST FOR A DISTANCE OF 8.27 FEET TO A POINT ON THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT. THENCE NORTH 87 DEGREES 21 MINUTES 04 SECONDS WEST FOR A DISTANCE OF 20.14 FEET TO A POINT. THENCE NORTH 00 DEGREES 18 MINUTES 58 SECONDS WEST FOR A DISTANCE OF 18.51 FEET TO A POINT. THENCE SOUTH 86 DEGREES 41 MINUTES 49 SECONDS EAST FOR A DISTANCE OF 22.91 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 21.20 FEET, AN ARC LENGTH OF 23.42 FEET AND A CHORD BEARING AND DISTANCE OF SOUTH 50 DEGREES 23 MINUTES 13 SECONDS EAST 22.25 FEET. THENCE SOUTH 20 DEGREES 19 MINUTES 38 SECONDS EAST FOR A DISTANCE OF 12.43 FEET TO A POINT. THENCE SOUTH 09 DEGREES 01 MINUTES 39 SECONDS WEST FOR A DISTANCE OF 3.39 FEET TO A POINT. THENCE SOUTH 19 DEGREES 29 MINUTES 00 SECONDS WEST FOR A DISTANCE OF 31.06 FEET TO A POINT. THENCE SOUTH 26 DEGREES 08 MINUTES 45 SECONDS WEST FOR A DISTANCE OF 15.61 FEET TO A POINT. THENCE SOUTH 19 DEGREES 32 MINUTES 00

POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 1,905 SQUARE FEET (0.0437 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 06, 2025.

GRANTOR: DURWARD W. AND PEGGIE B. COOK
WAKE COUNTY PIN: 0646672431
GRANTEE: TOWN OF FUQUAY-VARINA

PERMANENT UTILITY EASEMENT
OUTSIDE OF RIGHT-OF-WAY

BEGINNING AT AN IRON PIPE SET HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=666,831.49 AND E=2,046,955.10 ON THE COMMON PROPERTY LINE OF THE DURWARD W. AND PEGGIE B. COOK PROPERTY AS RECORDED IN DEED BOOK 1804 PAGE 343 AND THE ELLIOT AND GILCHRIST PROPERTY AS RECORDED IN DEED BOOK 8329 PAGE 2521 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE IS LOCATED NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST A DISTANCE OF 19.73 FEET FROM A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD (A 60' PUBLIC RIGHT-OF-WAY) MARKING THE EASTERN COMMON CORNER OF COOK AND ELLIOT AND GILCHRIST AND IS LOCATED SOUTH 88 DEGREES 15 MINUTES 17 SECONDS EAST A DISTANCE OF 1,069.69 FEET FROM AN EXISTING CONCRETE MONUMENT MARKING A COMMON CORNER OF THE SAID PROPERTIES. THENCE ALONG THE SAID COMMON LINE NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST FOR A DISTANCE OF 21.02 FEET TO A POINT. THENCE NORTH 19 DEGREES 42 MINUTES 21 SECONDS EAST FOR A DISTANCE OF 84.49 FEET TO A POINT. THENCE NORTH 64 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 22.95 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 58.62 FEET TO A POINT. THENCE NORTH 25 DEGREES 47 MINUTES 02 SECONDS WEST FOR A DISTANCE OF 14.14 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 650.26 FEET TO A POINT. THENCE NORTH 26 DEGREES 37 MINUTES 44 SECONDS WEST FOR A DISTANCE OF 12.73 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 16.85 FEET TO A POINT. THENCE NORTH 63 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 12.84 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 303.71 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 31.54 FEET TO A POINT. THENCE SOUTH 81 DEGREES 50 MINUTES 55 SECONDS EAST FOR A DISTANCE OF 20.32 FEET TO A POINT. THENCE SOUTH 18 DEGREES 22 MINUTES 16 SECONDS WEST FOR A DISTANCE OF 347.14 FEET TO A POINT. THENCE SOUTH 19 DEGREES 00 MINUTES 38 SECONDS WEST FOR A DISTANCE OF 18.49 FEET TO A POINT. THENCE SOUTH 19 DEGREES 12 MINUTES 58 SECONDS WEST FOR A DISTANCE OF 650.44 FEET TO A POINT. THENCE SOUTH 25 DEGREES 47 MINUTES 02 SECONDS EAST FOR A DISTANCE OF 14.14 FEET TO A POINT. THENCE SOUTH 19 DEGREES 12 MINUTES 58 SECONDS WEST FOR A DISTANCE OF 75.19 FEET TO A POINT. THENCE SOUTH 64 DEGREES 12 MINUTES 58 SECONDS WEST FOR A DISTANCE OF 23.05 FEET TO A POINT. THENCE SOUTH 19 DEGREES 42 MINUTES 21 SECONDS WEST FOR A DISTANCE OF 69.82 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 24,225 SQUARE FEET (0.5561 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 06, 2025.

TEMPORARY CONSTRUCTION EASEMENT
OUTSIDE OF RIGHT-OF-WAY

BEGINNING AT A POINT ON THE COMMON PROPERTY LINE OF THE DURWARD W. AND PEGGIE B. COOK PROPERTY AS RECORDED IN DEED BOOK 1804 PAGE 343 AND THE ELLIOT AND GILCHRIST PROPERTY AS RECORDED IN DEED BOOK 8329 PAGE 2521 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID POINT IS LOCATED ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD (A 60' PUBLIC RIGHT-OF-WAY). THENCE NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST FOR A DISTANCE OF 19.73 FEET TO AN IRON PIPE SET HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=666,831.49 AND E=2,046,955.10; SAID IRON PIPE MARKS THE SOUTHEAST CORNER OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT AND IS LOCATED SOUTH 88 DEGREES 15 MINUTES 17 SECONDS EAST A DISTANCE OF 1,069.69 FEET FROM AN EXISTING CONCRETE MONUMENT MARKING A COMMON CORNER OF THE SAID PROPERTIES. THENCE NORTH 19 DEGREES 42 MINUTES 21 SECONDS EAST FOR A DISTANCE OF 69.82 FEET TO A POINT. THENCE NORTH 64 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 23.05 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 75.19 FEET TO A POINT. THENCE NORTH 25 DEGREES 47 MINUTES 02 SECONDS WEST FOR A DISTANCE OF 14.14 FEET TO A POINT. THENCE NORTH 19 DEGREES 12 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 650.44 FEET TO A POINT. THENCE NORTH 19 DEGREES 00 MINUTES 38 SECONDS EAST FOR A DISTANCE OF 18.49 FEET TO A POINT. THENCE NORTH 18 DEGREES 22 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 347.14 FEET TO A POINT. THENCE SOUTH 81 DEGREES 50 MINUTES 55 SECONDS EAST FOR A DISTANCE OF 8.01 FEET TO A POINT ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE WILBON RD. THENCE ALONG THE SAID RIGHT-OF-WAY SOUTH 18 DEGREES 25 MINUTES 58 SECONDS WEST FOR A DISTANCE OF 122.00 FEET TO A POINT. THENCE SOUTH 17 DEGREES 22 MINUTES 35 SECONDS WEST FOR A DISTANCE OF 161.71 FEET TO A POINT. THENCE SOUTH 18 DEGREES 00 MINUTES 00 SECONDS WEST FOR A DISTANCE OF 73.49 FEET TO A POINT. THENCE SOUTH 18 DEGREES 13 MINUTES 40 SECONDS WEST FOR A DISTANCE OF 259.19 FEET TO A POINT. THENCE SOUTH 19 DEGREES 36 MINUTES 40 SECONDS WEST FOR A DISTANCE OF 163.22 FEET TO A POINT. THENCE SOUTH 19 DEGREES 32 MINUTES 27 SECONDS WEST FOR A DISTANCE OF 215.96 FEET TO A POINT. THENCE SOUTH 19 DEGREES 36 MINUTES 40 SECONDS WEST FOR A DISTANCE OF 187.55 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 14,110 SQUARE FEET (0.3239 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 06, 2025.

TEMPORARY CONSTRUCTION EASEMENT
INSIDE OF RIGHT-OF-WAY

BEGINNING AT A POINT ON THE COMMON PROPERTY LINE OF THE DURWARD W. AND PEGGIE B. COOK PROPERTY AS RECORDED IN DEED BOOK 1804 PAGE 343 AND THE ELLIOT AND GILCHRIST PROPERTY AS RECORDED IN DEED BOOK 8329 PAGE 2521 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID POINT IS ON THE WESTERN RIGHT-OF-WAY OF PINEY GROVE RD AND IS LOCATED SOUTH 88 DEGREES 15 MINUTES 17 SECONDS EAST FOR A DISTANCE OF 19.73 FEET FROM AN IRON PIPE SET AT THE SOUTHEAST CORNER OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT THAT HAS N.C. GRID COORDINATES (NAD83/2011) IN FEET OF: N=666,831.49 AND E=2,046,955.10. THENCE ALONG THE SAID RIGHT-OF-WAY NORTH 19 DEGREES 36 MINUTES 40 SECONDS EAST FOR A DISTANCE OF 187.55 FEET TO A POINT. THENCE NORTH 19 DEGREES 32 MINUTES 27 SECONDS EAST FOR A DISTANCE OF 215.96 FEET TO A POINT. THENCE NORTH 19 DEGREES 36 MINUTES 40 SECONDS EAST FOR A DISTANCE OF 163.22 TO A POINT. THENCE NORTH 18 DEGREES 13 MINUTES 40 SECONDS EAST FOR A

DISTANCE OF 259.19 FEET TO A POINT. THENCE NORTH 18 DEGREES 00 MINUTES 00 SECONDS EAST FOR A DISTANCE OF 73.49 FEET TO A POINT. THENCE NORTH 17 DEGREES 22 MINUTES 35 SECONDS EAST FOR A DISTANCE OF 161.71 FEET TO A POINT. THENCE NORTH 18 DEGREES 25 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 122.00 FEET TO A POINT. THENCE SOUTH 81 DEGREES 50 MINUTES 55 SECONDS EAST FOR A DISTANCE OF 16.50 FEET TO A POINT. THENCE SOUTH 19 DEGREES 32 MINUTES 00 SECONDS WEST 31.63 FEET TO A POINT. THENCE SOUTH 17 DEGREES 52 MINUTES 20 SECONDS WEST FOR A DISTANCE OF 208.86 FEET TO A POINT. THENCE SOUTH 17 DEGREES 45 MINUTES 37 SECONDS WEST FOR A DISTANCE OF 106.25 FEET TO A POINT. THENCE SOUTH 18 DEGREES 17 MINUTES 24 SECONDS WEST FOR A DISTANCE OF 214.18 FEET TO A POINT. THENCE SOUTH 19 DEGREES 06 MINUTES 08 SECONDS WEST FOR A DISTANCE OF 52.53 FEET TO A POINT. THENCE SOUTH 18 DEGREES 52 MINUTES 54 SECONDS WEST FOR A DISTANCE OF 124.28 FEET TO A POINT. THENCE SOUTH 19 DEGREES 24 MINUTES 24 SECONDS WEST FOR A DISTANCE OF 49.10 TO A POINT. THENCE SOUTH 19 DEGREES 31 MINUTES 15 SECONDS WEST FOR A DISTANCE OF 112.95 FEET TO A POINT. THENCE SOUTH 18 DEGREES 10 MINUTES 09 SECONDS WEST FOR A DISTANCE OF 118.95 FEET TO A POINT. THENCE SOUTH 20 DEGREES 39 MINUTES 34 SECONDS WEST FOR A DISTANCE OF 67.26 FEET TO A POINT. THENCE SOUTH 21 DEGREES 10 MINUTES 08 SECONDS WEST FOR A DISTANCE OF 53.73 FEET TO A POINT. THENCE SOUTH 19 DEGREES 33 MINUTES 53 SECONDS WEST FOR A DISTANCE OF 41.45 FEET TO A POINT ON THE COMMON PROPERTY LINE OF COOK AND ELLIOT AND GILCHRIST AS DESCRIBED ABOVE. THENCE ALONG THE SAID COMMON PROPERTY LINE NORTH 88 DEGREES 15 MINUTES 17 SECONDS WEST FOR A DISTANCE OF 17.07 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 18,912 SQUARE FEET (0.4342 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 06, 2025.

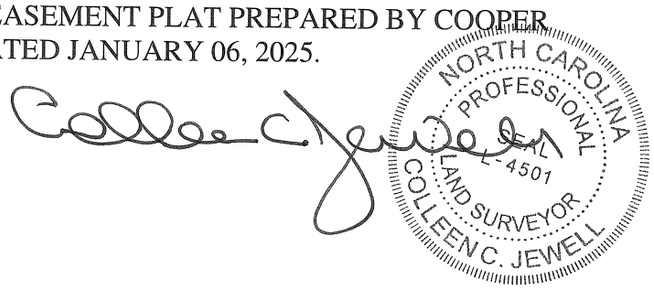
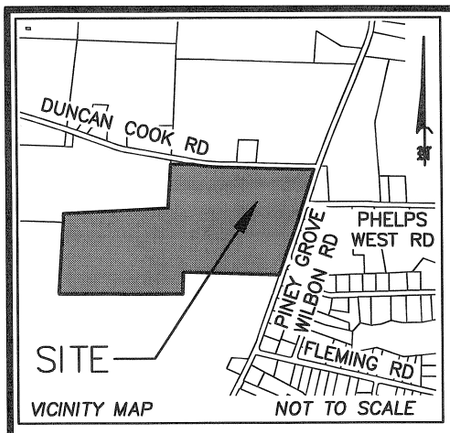


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 02/12/24.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

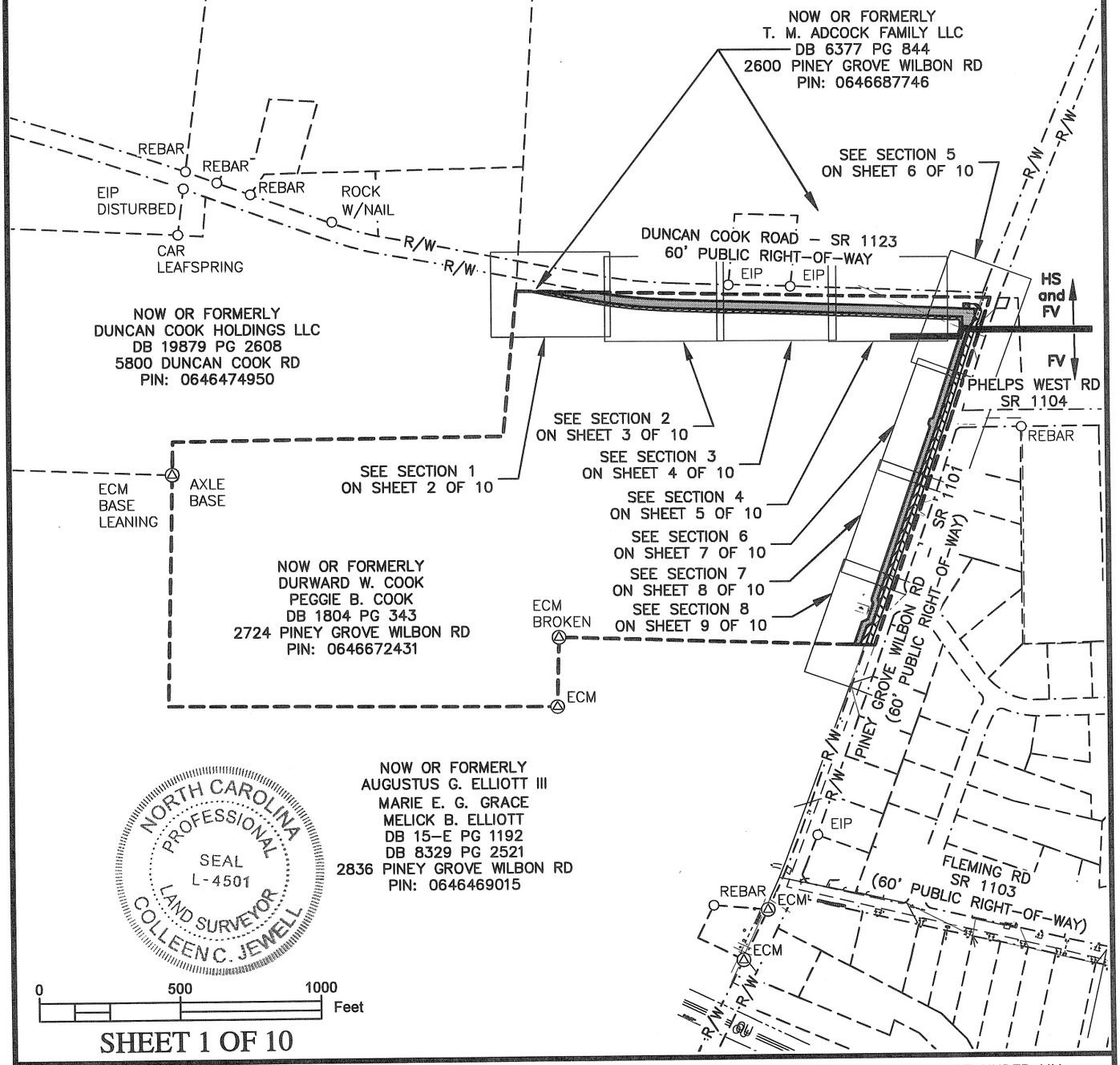
5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720064600J, EFFECTIVE 10/13/06.

c. 4. This survey is of a proposed easement for public utility as defined in G.S. 62–3.

Professional Land Surveyor

This parcel is located in the FUQUAY–VARINA Planning Jurisdiction

N.C. GRID (NAD 83/2011) SEE NOTE 1



NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 500 1000 Feet

SHEET 1 OF 10

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 06TH DAY OF JANUARY A.D., 2025.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122–COOK 2431.dwg

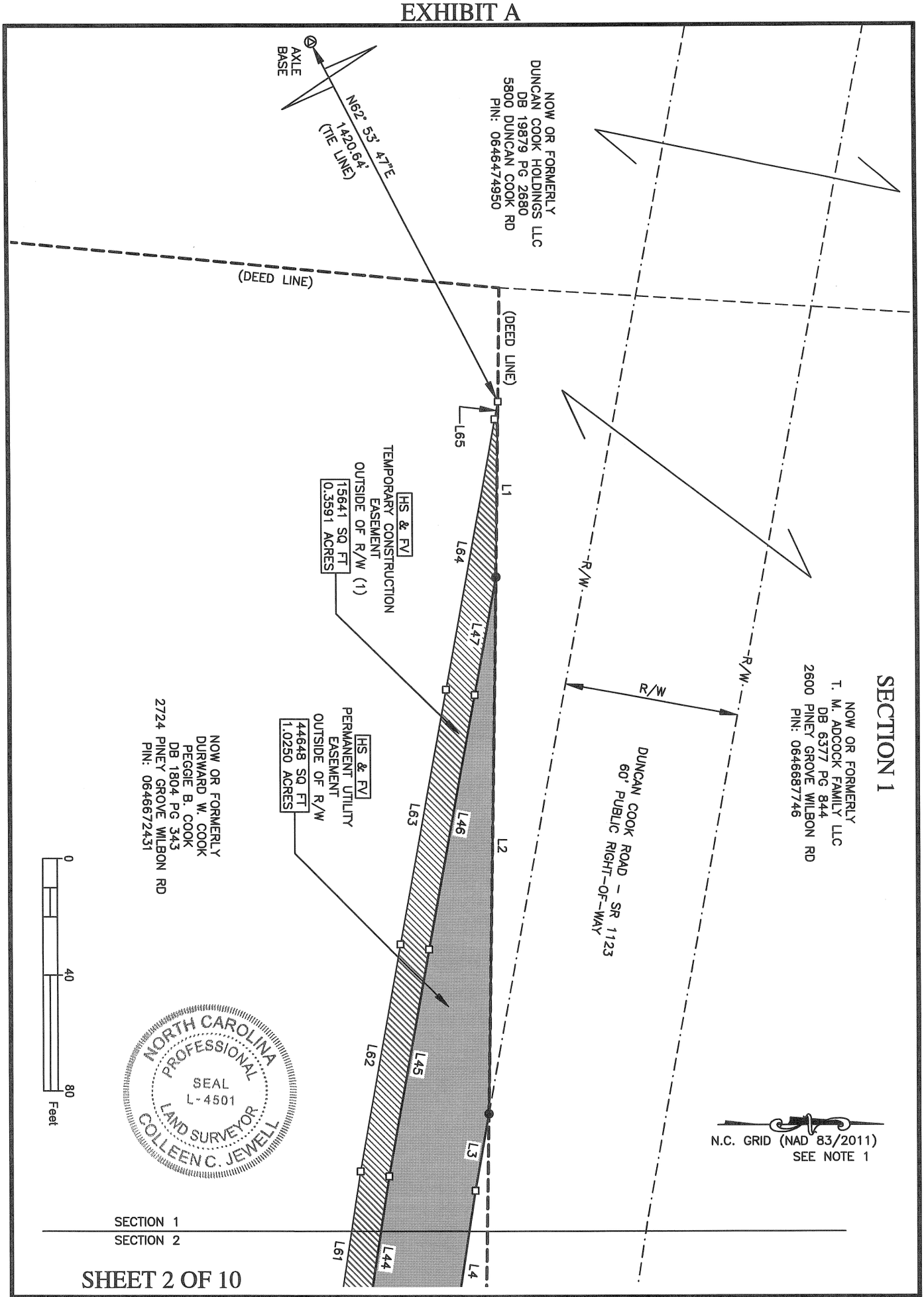
Surv'd: LB | Drawn: CRB | Chk'd: CCJ | Job No.: 7122 | Date: 01/06/25 | Scale: 1" = 500'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: DURWARD W. COOK & PEGGIE B. COOK
GRANTEE: TOWN OF FUQUAY–VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRING TNSP., WAKE COUNTY, NORTH CAROLINA

EXHIBIT A



SHEET 2 OF 10

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 06TH DAY OF JANUARY A.D., 2025.

SURVEYOR

L-4501
LICENSE NUMBER

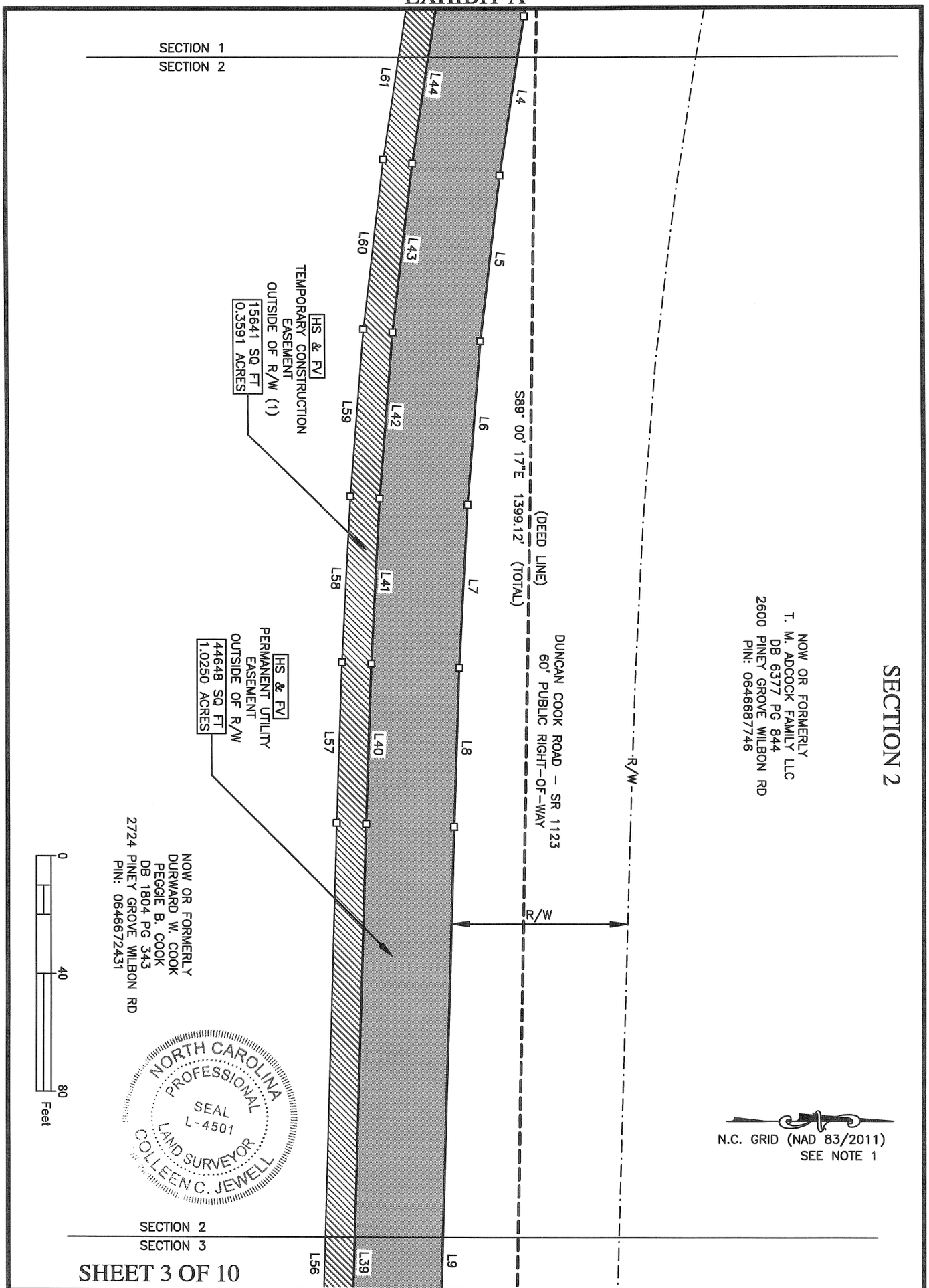
ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.			AREAS COMPUTED BY COORDINATES.	FILE NAME: 7122-COOK 2431.dwg	
Surv'd: LB	Drawn: CRB	Chk'd: CCJ	Job No.: 7122	Date: 01/06/25	Scale: 1" = 40'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE - (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: DURWARD W. COOK & PEGGIE B. COOK
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
HOLLY SPRING TNSP., WAKE COUNTY, NORTH CAROLINA

EXHIBIT A



SHEET 3 OF 10

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 06TH DAY OF JANUARY A.D., 2025.

SURVEYOR

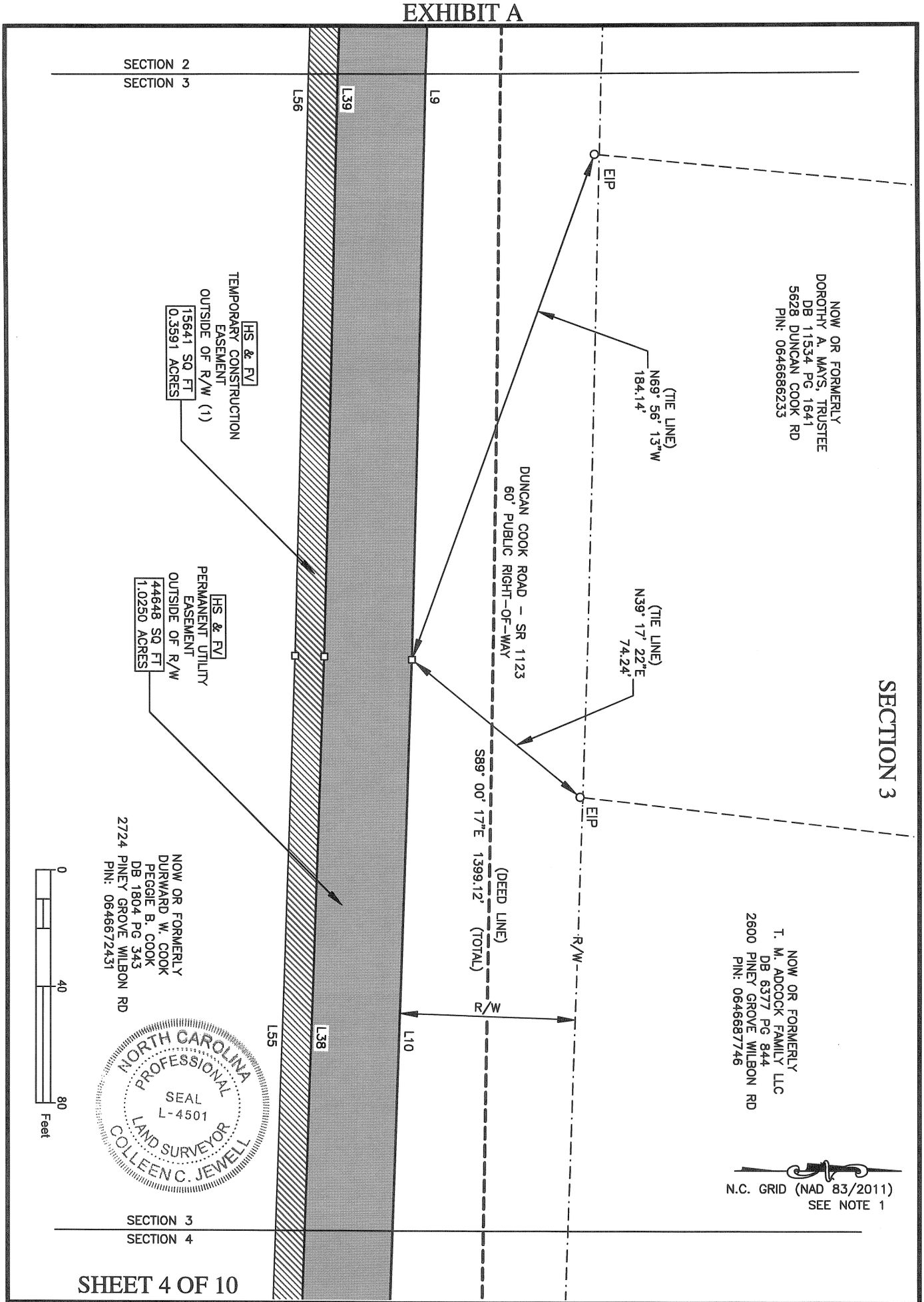
L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.			AREAS COMPUTED BY COORDINATES.	FILE NAME: 7122-COOK 2431.dwg	
Surv'd: LB	Drawn: CRB	Chk'd: CCJ	Job No.: 7122	Date: 01/06/25	Scale: 1" = 40'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE - (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: DURWARD W. COOK & PEGGIE B. COOK
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
HOLLY SPRING TNSP., WAKE COUNTY, NORTH CAROLINA

EXHIBIT A



SHEET 4 OF 10

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EASEMENT PLAT
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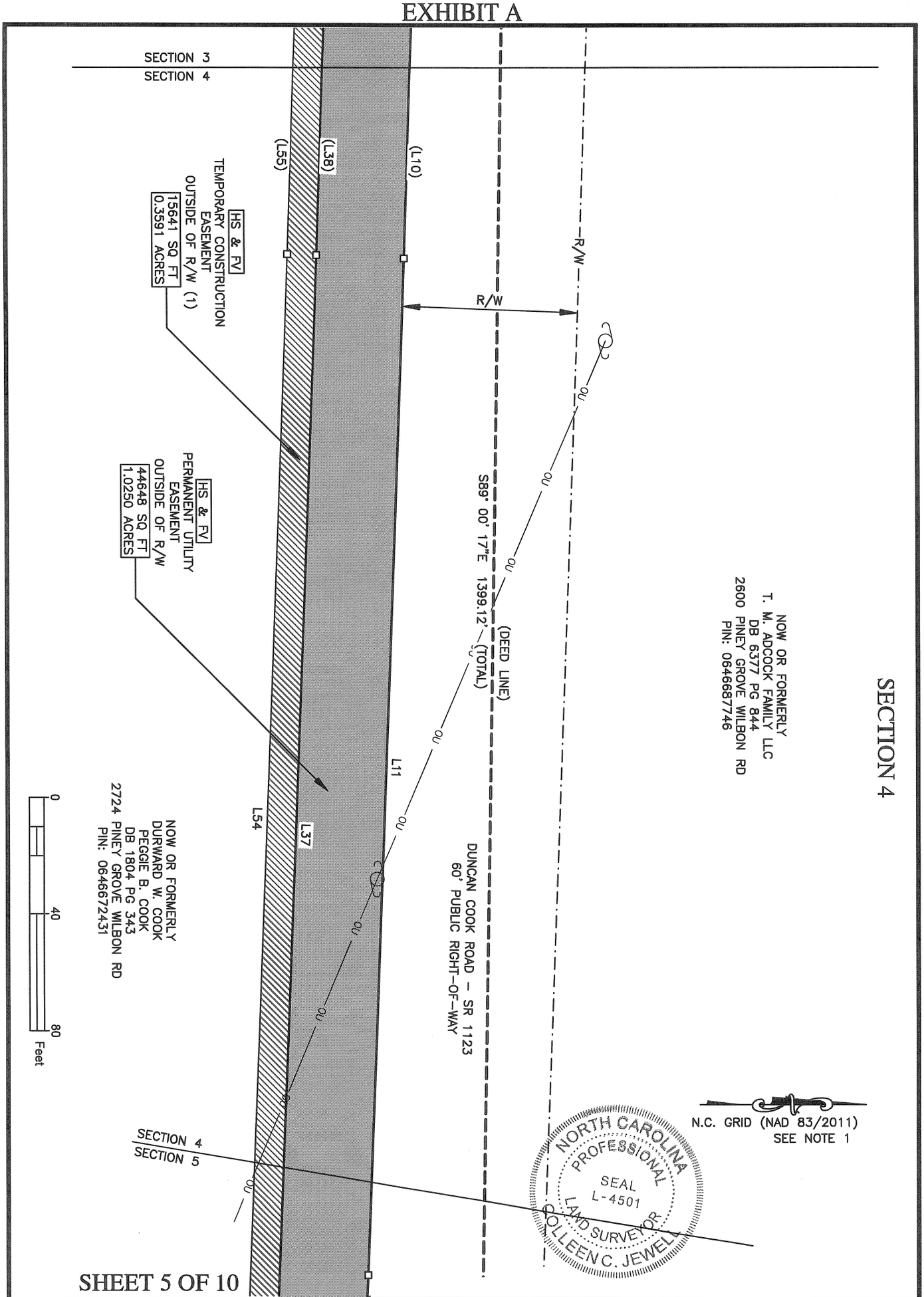
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
HOLLY SPRING TNSP., WAKE COUNTY, NORTH CAROLINA

EXHIBIT A



SHEET 5 OF 10

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EASEMENT PLAT
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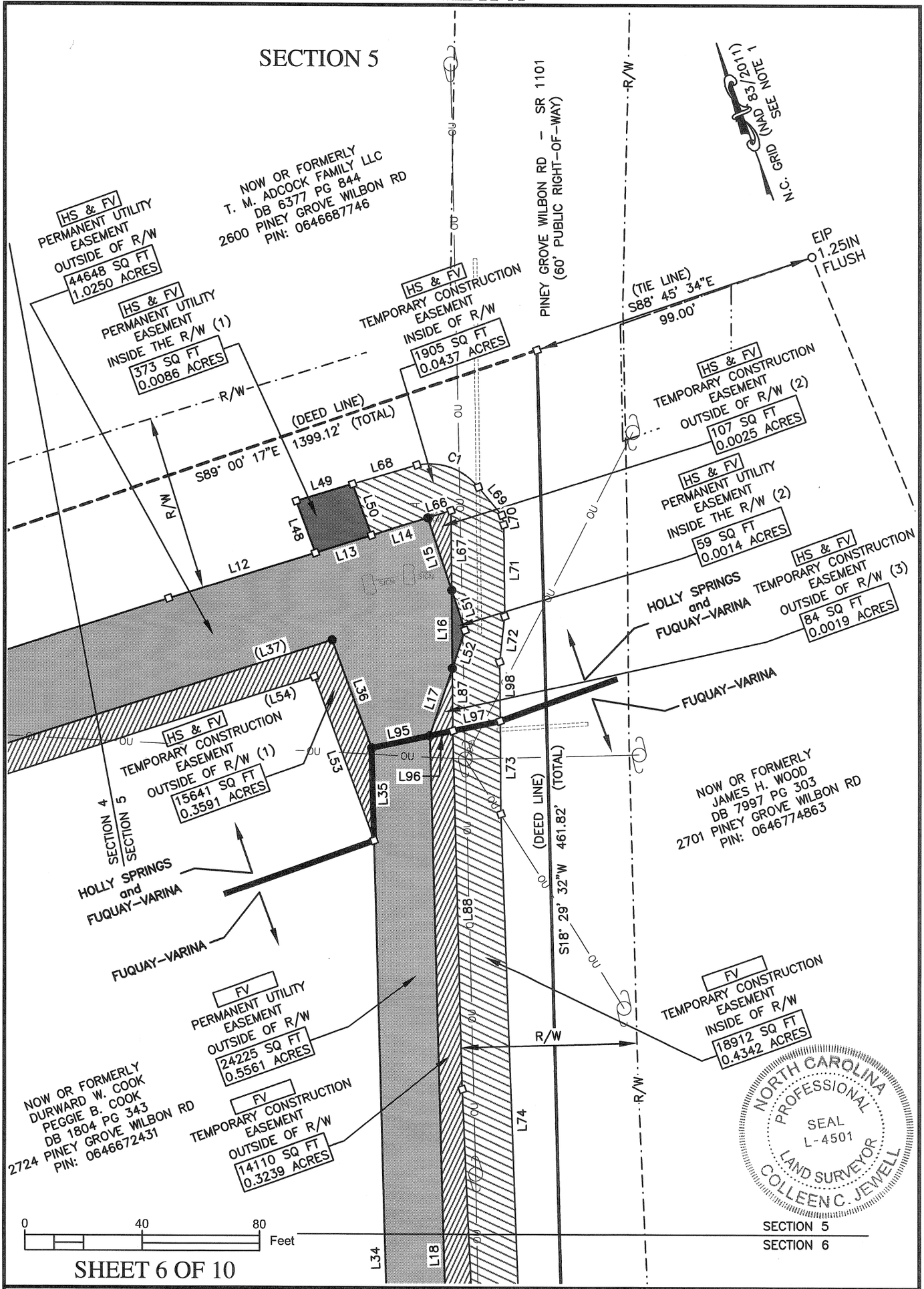
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
HOLLY SPRING TNSP., WAKE COUNTY, NORTH CAROLINA

EXHIBIT A



SHEET 6 OF 10

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EASEMENT PLAT
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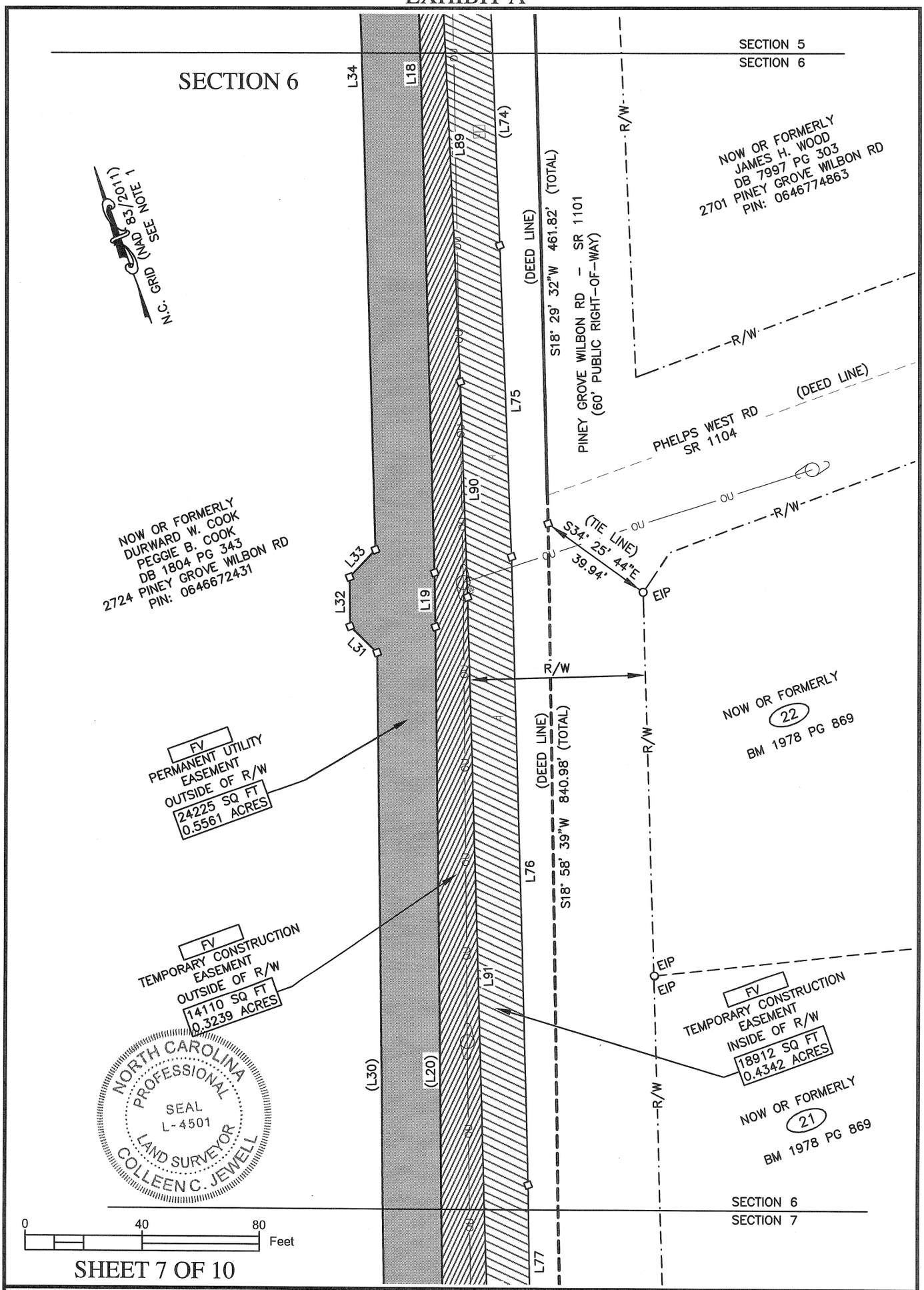
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRING TNSP., WAKE COUNTY, NORTH CAROLINA

EXHIBIT A



SHEET 7 OF 10

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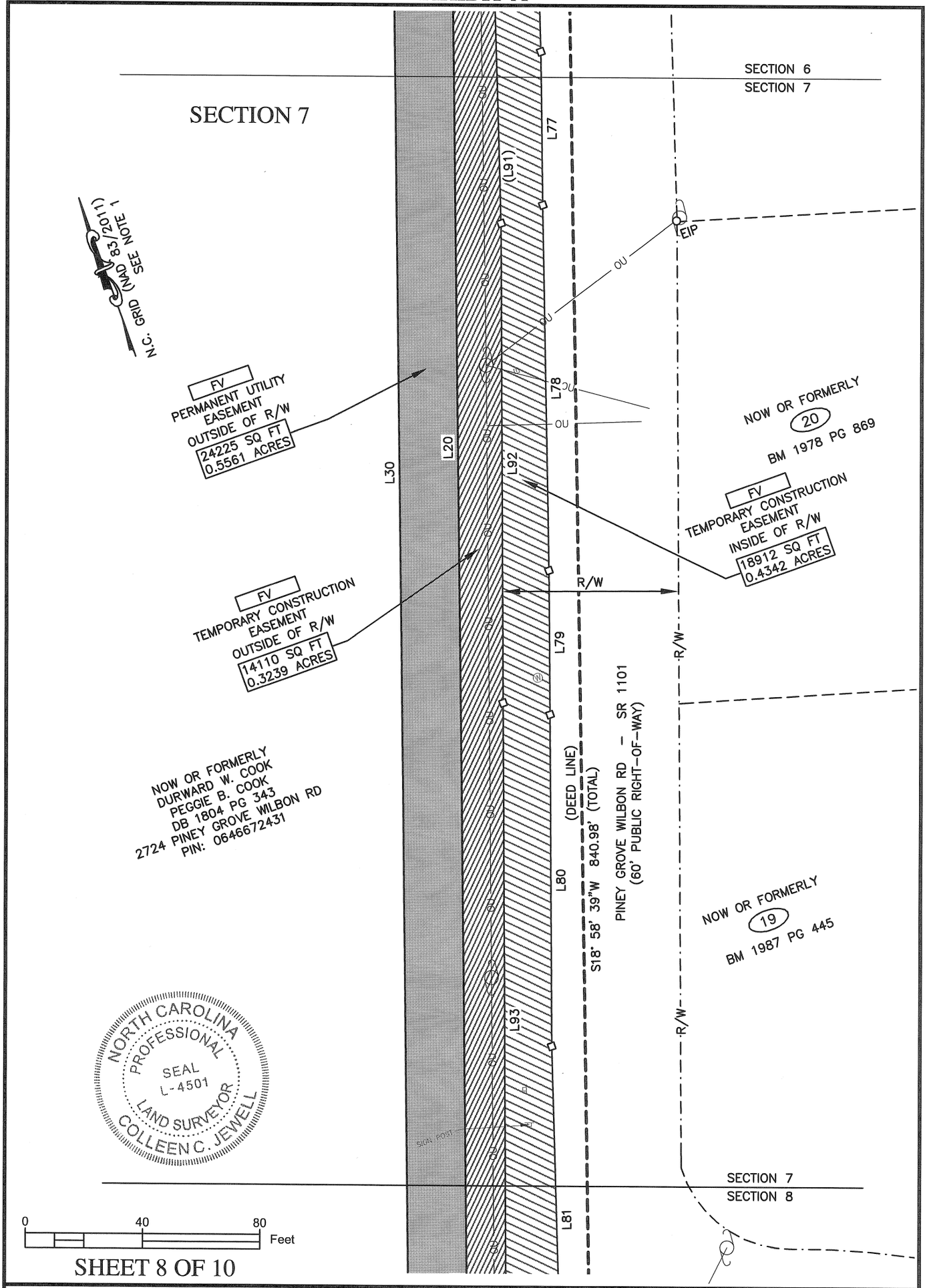
EXHIBIT A



SHEET 8 OF 10

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EASEMENT PLAT
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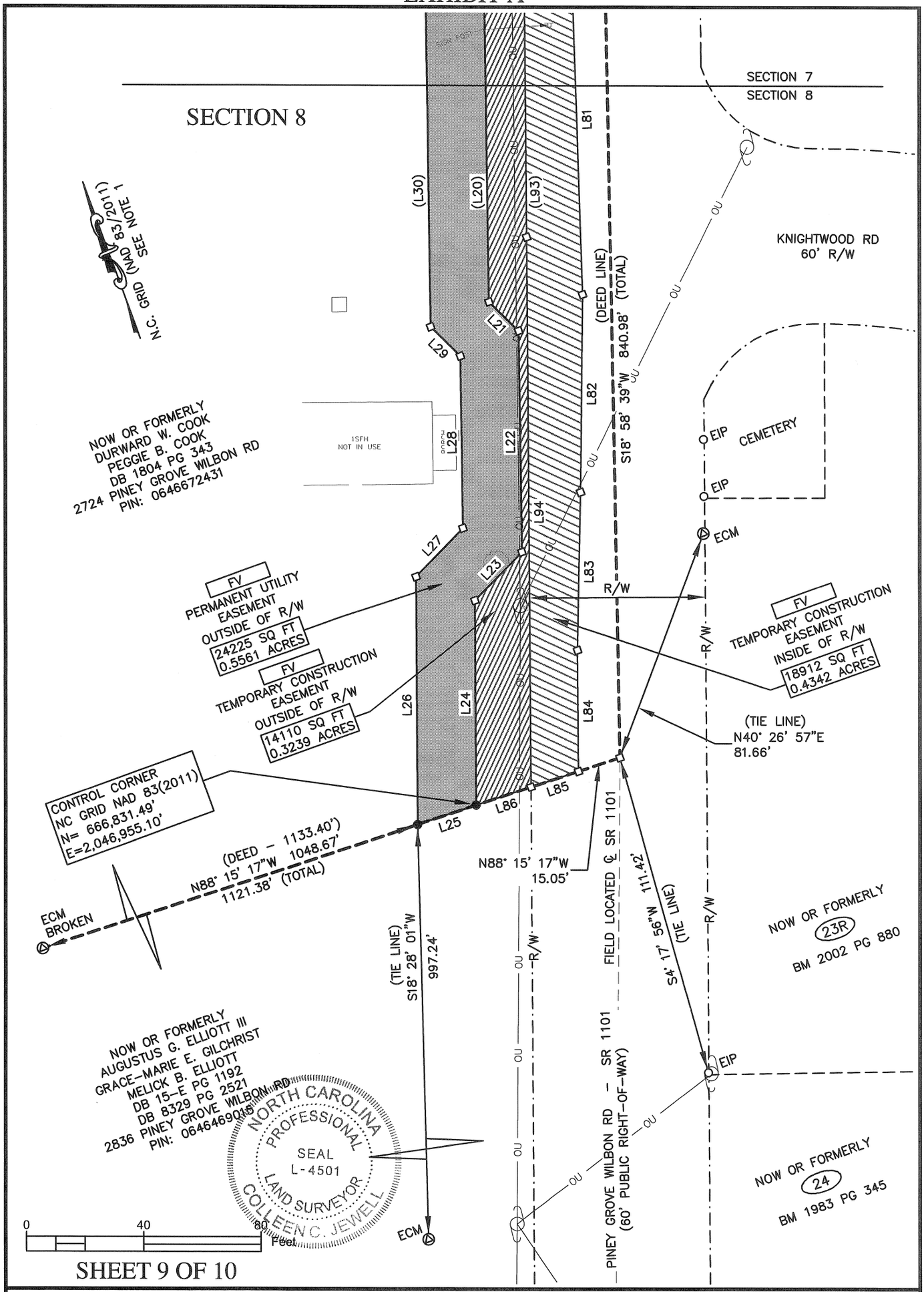
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
HOLLY SPRING TNSP., WAKE COUNTY, NORTH CAROLINA

EXHIBIT A



SHEET 9 OF 10

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Surv'd: LB	Drawn: CRB	Chk'd: CCJ	Job No.: 7122	Date: 01/06/25	Scale: 1" = 40'

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EASEMENT PLAT
GRANTOR: DURWARD W. COOK & PEGGIE B. COOK
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
HOLLY SPRING TNSP., WAKE COUNTY, NORTH CAROLINA

EXHIBIT A

Line Table		
Line #	Direction	Length
L1	S89° 00' 17"E	60.24'
L2	S89° 00' 17"E	184.39'
L3	S79° 49' 16"E	26.82'
L4	S81° 15' 01"E	54.96'
L5	S82° 59' 14"E	56.53'
L6	S85° 16' 46"E	56.23'
L7	S86° 59' 25"E	55.66'
L8	S88° 01' 32"E	53.99'
L9	S88° 23' 46"E	340.32'
L10	S88° 01' 59"E	261.11'
L11	S87° 49' 18"E	348.57'
L12	S87° 21' 04"E	52.41'
L13	S87° 21' 04"E	20.03'
L14	S87° 21' 04"E	20.14'
L15	S1° 39' 09"W	25.85'
L16	S19° 29' 13"W	26.64'
L17	S38° 24' 33"W	24.21'
L18	S18° 22' 16"W	347.14'
L19	S19° 00' 38"W	18.49'
L20	S19° 12' 58"W	650.44'
L21	S25° 47' 02"E	14.14'
L22	S19° 12' 58"W	75.19'
L23	S64° 12' 58"W	23.05'
L24	S19° 42' 21"W	69.82'
L25	N88° 15' 17"W	21.02'

Line Table		
Line #	Direction	Length
L26	N19° 42' 21"E	84.49'
L27	N64° 12' 58"E	22.95'
L28	N19° 12' 58"E	58.62'
L29	N25° 47' 02"W	14.14'
L30	N19° 12' 58"E	650.26'
L31	N26° 37' 44"W	12.73'
L32	N19° 12' 58"E	16.85'
L33	N63° 22' 16"E	12.84'
L34	N18° 22' 16"E	303.71'
L35	N18° 22' 16"E	31.54'
L36	N0° 06' 45"W	39.06'
L37	N87° 45' 37"W	397.33'
L38	N88° 01' 59"W	260.94'
L39	N88° 23' 46"W	340.32'
L40	N88° 01' 32"W	54.36'
L41	N86° 59' 25"W	56.38'
L42	N85° 16' 46"W	57.28'
L43	N82° 59' 14"W	57.58'
L44	N81° 15' 01"W	55.79'
L45	N79° 49' 16"W	79.36'
L46	N79° 37' 01"W	88.64'
L47	N79° 27' 59"W	41.22'
L48	N0° 18' 58"W	18.74'
L49	S86° 41' 49"E	20.04'
L50	S0° 18' 58"E	18.51'

Line Table		
Line #	Direction	Length
L51	S1° 39' 09"W	14.43'
L52	S38° 24' 33"W	13.63'
L53	N0° 06' 45"W	59.38'
L54	N87° 45' 37"W	387.71'
L55	N88° 01' 59"W	260.89'
L56	N88° 23' 46"W	340.32'
L57	N88° 01' 32"W	54.48'
L58	N86° 59' 25"W	56.62'
L59	N85° 16' 46"W	57.63'
L60	N82° 59' 14"W	57.93'
L61	N81° 15' 01"W	56.07'
L62	N79° 49' 16"W	79.51'
L63	N79° 37' 01"W	88.67'
L64	N79° 27' 59"W	94.52'
L65	N79° 17' 57"W	6.12'
L66	S87° 21' 04"E	8.27'
L67	S19° 29' 13"W	27.00'
L68	S86° 41' 49"E	22.91'
L69	S20° 19' 38"E	12.43'
L70	S9° 01' 39"W	3.39'
L71	S19° 29' 00"W	31.06'
L72	S26° 08' 45"W	15.61'
L73	S19° 32' 00"W	31.63'
L74	S17° 52' 20"W	208.86'
L75	S17° 45' 37"W	106.25'

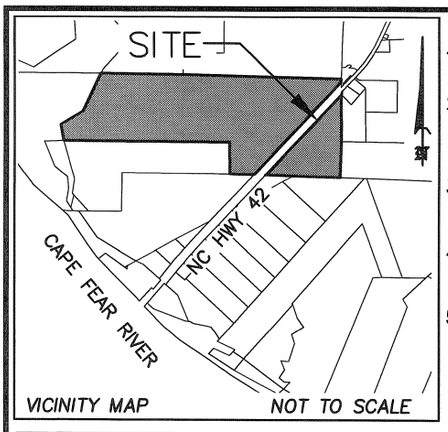
Line Table		
Line #	Direction	Length
L76	S18° 17' 24"W	214.18'
L77	S19° 06' 08"W	52.53'
L78	S18° 52' 54"W	124.28'
L79	S19° 24' 24"W	49.10'
L80	S19° 31' 15"W	112.95'
L81	S18° 10' 09"W	118.95'
L82	S20° 39' 34"W	67.26'
L83	S21° 10' 08"W	53.73'
L84	S19° 33' 53"W	41.45'
L85	N88° 15' 17"W	17.07'
L86	N88° 15' 17"W	19.73'
L87	S19° 29' 13"W	21.33'
L88	S18° 25' 58"W	122.00'
L89	S17° 22' 35"W	161.71'
L90	S18° 00' 00"W	73.49'
L91	S18° 13' 40"W	259.19'
L92	S19° 36' 40"W	163.22'
L93	S19° 32' 27"W	215.96'
L94	S19° 36' 40"W	187.55'
L95	S81° 50' 55"E	20.32'
L96	S81° 50' 55"E	8.01'
L97	S81° 50' 55"E	16.50'
L98	S19° 32' 00"W	20.21'

Curve Table					
Curve #	Radius	Length	Delta	Chord Direction	Chord Length
C1	21.20'	23.42'	63.30	S50° 23' 13"E	22.25'

LEGEND

- ● – IRON PIPE SET
- ○ – EXISTING IRON PIPE (EIP/REBAR)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- ——·R/W·——·—— – RIGHT-OF-WAY
- ——— – EXISTING PROPERTY LINE
- – – –

EXHIBIT A



NOTES

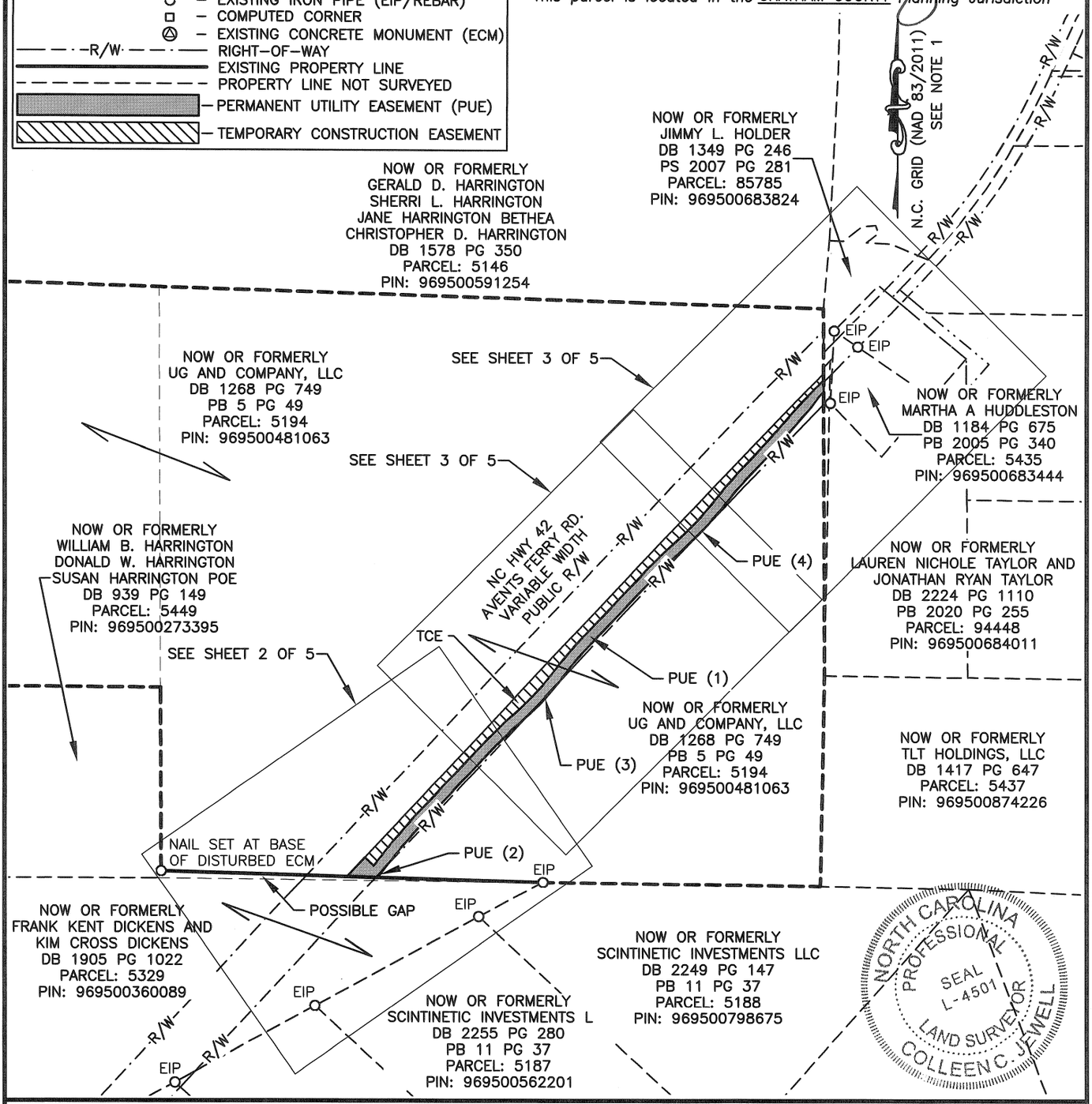
1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.
2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.
3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.
4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.
5)– THIS PROPERTY IS LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3710969500K, EFFECTIVE 02/02/07.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY *Planning Jurisdiction*

LEGEND
- EXISTING IRON PIPE (EIP/REBAR)
- COMPUTED CORNER
- EXISTING CONCRETE MONUMENT (ECM)
- R/W – RIGHT–OF–WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT (PUE)
- TEMPORARY CONSTRUCTION EASEMENT



NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

SHEET 1 OF 5

0 400 800 Feet

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 6TH DAY OF Mar A.D.,2024.

SURVEYOR

L–4501
LICENSE NUMBER

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Surv'd: MR	*Drawn:* CRB	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 03/06/24	*Scale:* 1" = 400'

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EASEMENT PLAT
GRANTOR: UG AND COMPANY, LLC
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

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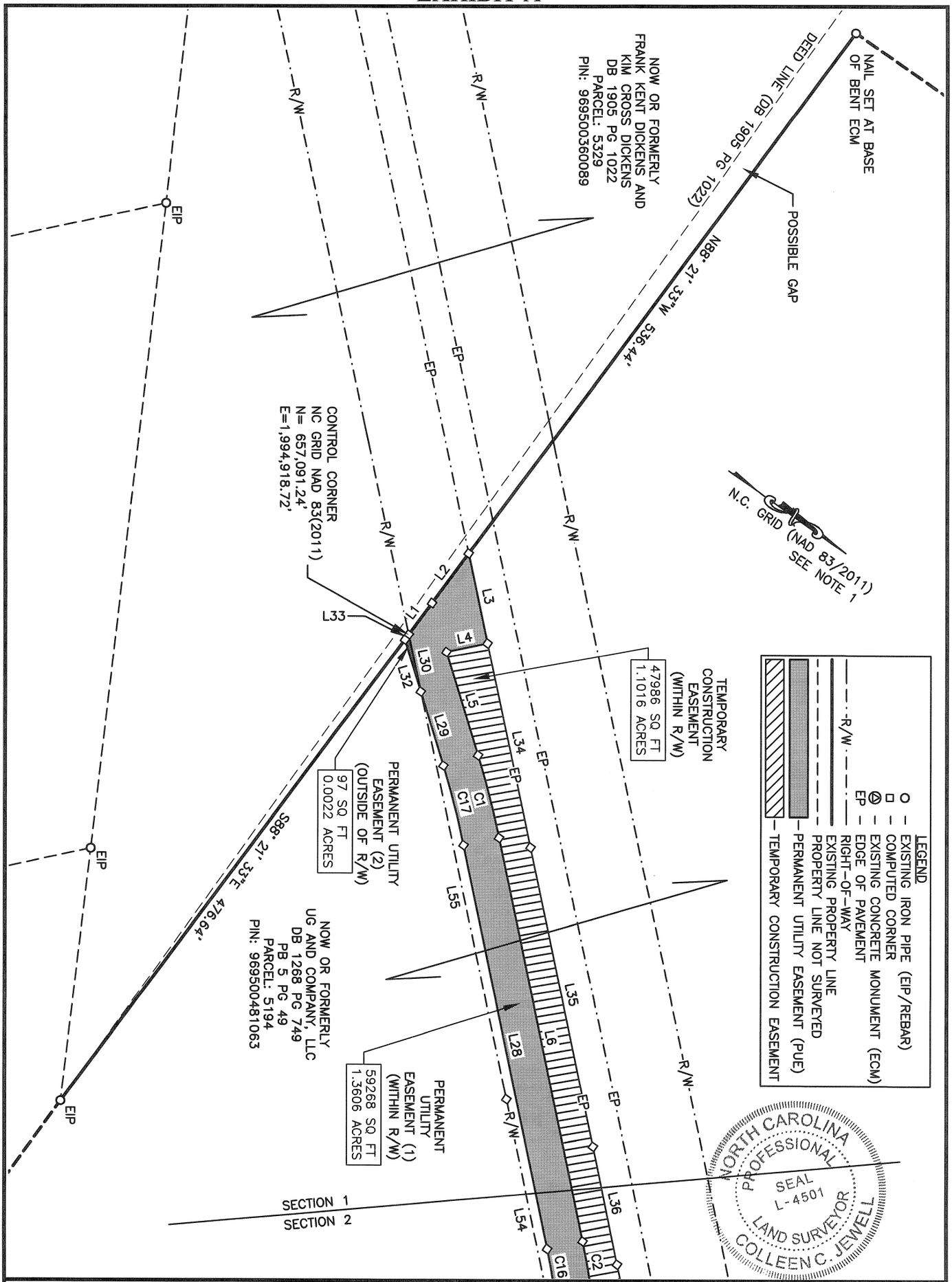


PAGE 2 OF 5

0 100 200 Feet

SECTION 1

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 6 DAY OF Mar. A.D.,2024.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-1063-UG.dwg

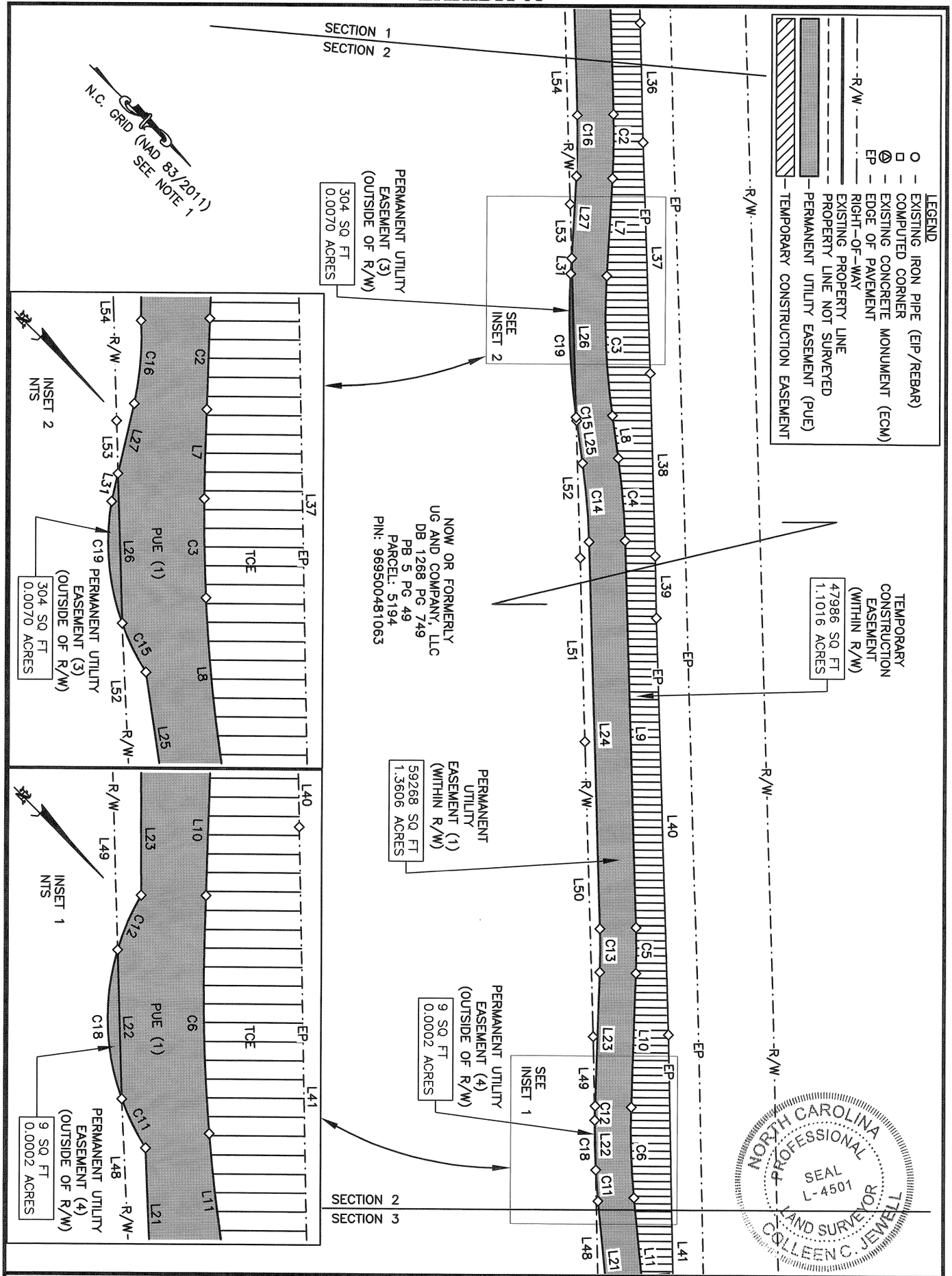
Surv'd: MR | Drawn: CRB | Chk'd: CCJ | Job No.: 7122 | Date: 03/06/24 | Scale: 1" = 100'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE - (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: UG AND COMPANY, LLC
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A



PAGE 3 OF 5

0 100 200 Feet

SECTION 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 6th DAY OF Mar A.D.,2024.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.			AREAS COMPUTED BY COORDINATES.	FILE NAME: 7122-1063-UG.dwg	
Surv'd: MR	Drawn: CRB	Chk'd: CCJ	Job No.: 7122	Date: 03/06/24	Scale: 1" = 100'

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EASEMENT PLAT

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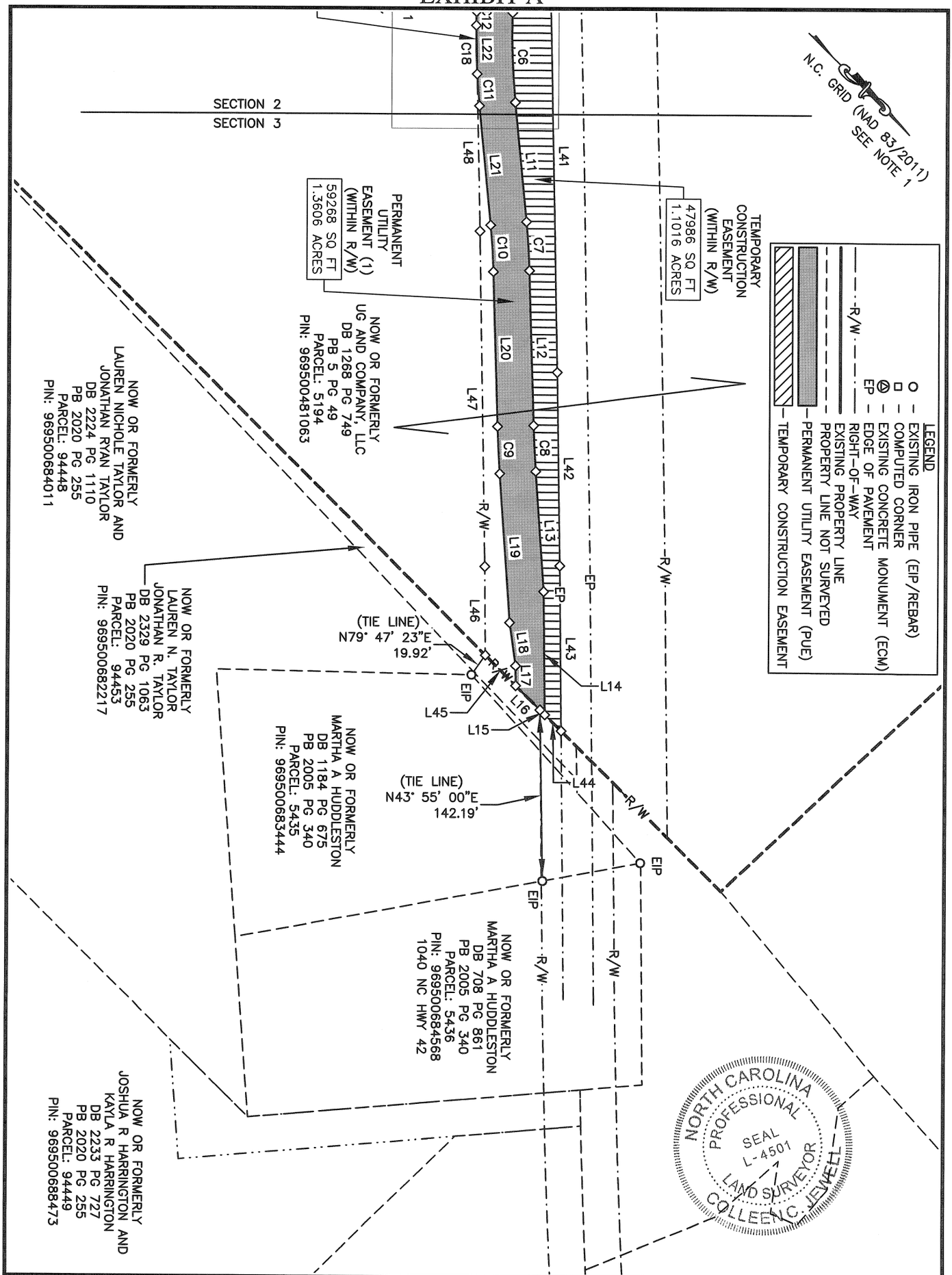
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A



PAGE 4 OF 5

0 100 200 Feet

SECTION 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 6TH DAY OF Mar A.D.,2024.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-1063-UG.dwg

Surv'd: MR | Drawn: CRB | Chk'd: CCJ | Job No.: 7122 | Date: 03/06/24 | Scale: 1" = 100'

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EASEMENT PLAT

GRANTOR: UG AND COMPANY, LLC
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A

AREA SUMMARY	
PERMANENT UTILITY EASEMENT (1) WITHIN R/W	59268 (SF)
	1.3606 (AC)
TEMPORARY CONSTRUCTION EASEMENT WITHIN R/W	47986 (SF)
	1.1016 (AC)
PERMANENT UTILITY EASEMENT (2) OUTSIDE OF R/W	97 (SF)
	0.0022 (AC)
PERMANENT UTILITY EASEMENT (3) OUTSIDE OF R/W	304 (SF)
	0.0070 (AC)
PERMANENT UTILITY EASEMENT (4) OUTSIDE OF R/W	9 (SF)
	0.0002 (AC)
TOTAL	107664 (SF)
	2.472 (AC)

LEGEND

- O – EXISTING IRON PIPE (EIP/REBAR)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- EP – EDGE OF PAVEMENT
- —— —·—·—— – R/W – RIGHT-OF-WAY
- ———— – EXISTING PROPERTY LINE
- – – – – – – – – PROPERTY LINE NOT SURVEYED
- – PERMANENT UTILITY EASEMENT (PUE)
- – TEMPORARY CONSTRUCTION EASEMENT

Curve Table				
Curve #	Radius	Length	Chord Direction	Chord Length
C1	765.00'	70.11'	N40° 34' 21"E	70.08'
C2	615.00'	53.19'	N45° 40' 32"E	53.17'
C3	585.00'	116.18'	N42° 27' 50"E	115.99'
C4	615.00'	68.95'	N39° 59' 10"E	68.91'
C5	615.00'	37.95'	N44° 57' 56"E	37.94'
C6	585.00'	74.77'	N43° 04' 20"E	74.71'
C7	615.00'	40.65'	N41° 18' 16"E	40.64'
C8	985.00'	38.49'	N42° 04' 43"E	38.48'
C9	1015.00'	39.66'	S42° 04' 43"W	39.66'
C10	585.00'	38.67'	S41° 18' 16"W	38.66'
C11	615.00'	26.21'	S40° 37' 55"W	26.21'
C12	615.00'	11.79'	S46° 11' 04"W	11.79'
C13	585.00'	36.10'	S44° 57' 56"W	36.09'
C14	585.00'	65.58'	S39° 59' 10"W	65.55'
C15	615.00'	2.96'	S36° 54' 45"W	2.96'
C16	585.00'	50.60'	S45° 40' 32"W	50.58'
C17	735.00'	67.36'	S40° 34' 21"W	67.33'
C18	615.00'	40.60'	S43° 44' 39"W	40.59'
C19	615.00'	119.18'	S42° 36' 07"W	118.99'

Line Table		
Line #	Direction	Length
L1	N88° 21' 33"W	32.31'
L2	N88° 21' 33"W	50.79'
L3	N43° 00' 04"E	75.44'
L4	S47° 01' 21"E	34.74'
L5	N37° 56' 50"E	89.70'
L6	N43° 11' 52"E	341.59'
L7	N48° 09' 12"E	81.10'
L8	N36° 46' 29"E	35.38'
L9	N43° 11' 52"E	320.93'
L10	N46° 44' 01"E	112.00'
L11	N39° 24' 39"E	99.48'
L12	N43° 11' 52"E	128.36'
L13	N40° 57' 33"E	99.62'
L14	N44° 08' 01"E	102.35'
L15	S0° 12' 32"E	5.75'
L16	S0° 12' 32"E	28.55'
L17	S44° 15' 00"W	16.58'
L18	S36° 41' 01"W	36.28'
L19	S40° 57' 33"W	123.26'

Line Table		
Line #	Direction	Length
L20	S43° 11' 52"W	128.36'
L21	S39° 24' 39"W	99.48'
L22	S43° 44' 39"W	40.59'
L23	S46° 44' 01"W	112.00'
L24	S43° 11' 52"W	320.93'
L25	S36° 46' 29"W	35.38'
L26	S43° 09' 07"W	132.04'
L27	S48° 09' 12"W	67.99'
L28	S43° 11' 52"W	341.59'
L29	S37° 56' 50"W	64.31'
L30	S43° 00' 50"W	48.48'
L31	S48° 09' 12"W	13.11'
L32	S37° 56' 50"W	45.14'
L33	N88° 21' 33"W	5.31'
L34	N43° 00' 04"E	172.57'
L35	N43° 06' 40"E	252.99'
L36	N43° 23' 34"E	99.76'
L37	N42° 59' 41"E	191.83'
L38	N43° 13' 20"E	151.42'

Line Table		
Line #	Direction	Length
L39	N43° 44' 20"E	51.43'
L40	N43° 06' 40"E	346.03'
L41	N43° 47' 16"E	359.07'
L42	N43° 59' 48"E	160.63'
L43	N44° 16' 03"E	137.08'
L44	S0° 12' 32"E	19.12'
L45	S0° 12' 32"E	35.88'
L46	S44° 21' 37"W	73.32'
L47	S43° 55' 09"W	278.25'
L48	S43° 44' 39"W	130.30'
L49	S43° 44' 39"W	69.72'
L50	S43° 09' 21"W	245.21'
L51	S43° 18' 24"W	152.19'
L52	S43° 09' 07"W	116.99'
L53	S43° 09' 07"W	44.95'
L54	S43° 15' 50"W	201.95'
L55	S43° 00' 50"W	344.27'

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

SHEET 5 OF 5

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 8th DAY OF May A.D.,2024.

SURVEYOR

L-4501
LICENSE NUMBER

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EASEMENT PLAT

GRANTOR: UG AND COMPANY, LLC
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

GRANTOR: UG AND COMPANY, LLC
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT #1

BEGINNING AT A POINT ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 (AVENTS FERRY ROAD – A VARIABLE WIDTH PUBLIC RIGHT-OF-WAY) HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=657,091.24 AND E=1,994,918.72; SAID POINT BEING ON THE COMMON LINE OF UG AND COMPANY, LLC AS RECORDED IN DEED BOOK 1268 PAGE 749 AND PLAT BOOK 5 PAGE 49 AND FRANK AND KIM DICKENS AS RECORDED IN DEED BOOK 1905 PAGE 1022 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS AND IS LOCATED NORTH 88 DEGREES 21 MINUTES 33 SECONDS WEST A DISTANCE OF 481.95 FEET FROM AN EXISTING IRON PIPE MARKING THE NORTHEAST CORNER OF THE FRANK AND KIM DICKENS PROPERTY AS REFERENCED ABOVE AND A CORNER OF THE SCINTINETIC INVESTMENTS, LLC PROPERTY AS RECORDED IN DEED BOOK 2249 PAGE 147 AND BOOK OF MAPS 11 PAGE 37. THENCE ALONG THE COMMON LINE OF UG AND COMPANY, LLC AND DICKENS NORTH 88 DEGREES 21 MINUTES 33 SECONDS WEST FOR A DISTANCE OF 83.10 FEET TO THE EDGE OF PAVEMENT OF NC HIGHWAY 42; SAID POINT BEING SOUTH 88 DEGREES 21 MINUTES 33 SECONDS EAST A DISTANCE OF 536.44 FEET FROM AN EXISTING NAIL FOUND AT THE BASE OF A BENT CONCRETE MONUMENT. THENCE ALONG THE EDGE OF PAVEMENT NORTH 43 DEGREES 00 MINUTES 04 SECONDS EAST FOR A DISTANCE OF 75.44 FEET TO A POINT. THENCE SOUTH 47 DEGREES 01 MINUTES 21 SECONDS EAST FOR A DISTANCE OF 34.74 FEET TO A POINT. THENCE NORTH 37 DEGREES 56 MINUTES 50 SECONDS EAST FOR A DISTANCE OF 89.70 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 765.00 FEET, AN ARC LENGTH OF 70.11 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 40 DEGREES 34 MINUTES 21 SECONDS EAST FOR 70.08 FEET TO A POINT. THENCE NORTH 43 DEGREES 11 MINUTES 52 SECONDS EAST FOR A DISTANCE OF 341.59 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 53.19 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 45 DEGREES 40 MINUTES 32 SECONDS EAST FOR 53.17 FEET TO A POINT. THENCE NORTH 48 DEGREES 09 MINUTES 12 SECONDS EAST FOR A DISTANCE OF 81.10 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 585.00 FEET, AN ARC LENGTH OF 116.18 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 42 DEGREES 27 MINUTES 50 SECONDS EAST FOR 115.99 FEET TO A POINT. THENCE NORTH 36 DEGREES 46 MINUTES 29 SECONDS EAST FOR A DISTANCE OF 35.38 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 68.95 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 39 DEGREES 59 MINUTES 10 SECONDS EAST FOR 68.91 FEET TO A POINT. THENCE NORTH 43 DEGREES 11 MINUTES 52 SECONDS EAST FOR A DISTANCE OF 320.93 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 37.95 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 44 DEGREES 57 MINUTES 56 SECONDS EAST FOR 37.94 FEET TO A POINT. THENCE NORTH 46 DEGREES 44 MINUTES 01 SECONDS EAST FOR A DISTANCE OF 112.00 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 585.00 FEET, AN ARC LENGTH OF 74.77 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 43 DEGREES 04 MINUTES 20 SECONDS EAST FOR 74.71 FEET TO A POINT. THENCE NORTH 39 DEGREES 24 MINUTES 39 SECONDS EAST FOR A DISTANCE OF 99.48 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF

40.65 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 41 DEGREES 18 MINUTES 16 SECONDS EAST FOR 40.64 FEET TO A POINT. THENCE NORTH 43 DEGREES 11 MINUTES 52 SECONDS EAST FOR A DISTANCE OF 128.36 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 985.00 FEET, AN ARC LENGTH OF 38.49 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 42 DEGREES 04 MINUTES 43 SECONDS EAST FOR 38.48 FEET TO A POINT. THENCE NORTH 40 DEGREES 57 MINUTES 33 SECONDS EAST FOR A DISTANCE OF 99.62 FEET TO A POINT. THENCE NORTH 44 DEGREES 08 MINUTES 01 SECONDS EAST FOR A DISTANCE OF 102.35 FEET TO A POINT ON THE COMMON PROPERTY LINE OF UG AND COMPANY, LLC AND LAUREN AND JONATHAN TAYLOR AS RECORDED IN DEED BOOK 2329 PAGE 1063 AND PLAT BOOK 2020 PAGE 255. THENCE ALONG THE SAID COMMON LINE SOUTH 00 DEGREES 12 MINUTES 32 SECONDS EAST FOR A DISTANCE OF 34.30 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE SOUTH 44 DEGREES 15 MINUTES 00 SECONDS WEST FOR A DISTANCE OF 16.58 FEET TO A POINT. THENCE SOUTH 36 DEGREES 41 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 36.28 FEET TO A POINT. THENCE SOUTH 40 DEGREES 57 MINUTES 33 SECONDS WEST FOR A DISTANCE OF 123.26 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 1015.00 FEET, AN ARC LENGTH OF 39.66 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 42 DEGREES 04 MINUTES 43 SECONDS WEST FOR 39.66 FEET TO A POINT. THENCE SOUTH 43 DEGREES 11 MINUTES 52 SECONDS WEST FOR A DISTANCE OF 128.36 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 585.00 FEET, AN ARC LENGTH OF 38.67 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 41 DEGREES 18 MINUTES 16 SECONDS WEST FOR 38.66 FEET TO A POINT. THENCE SOUTH 39 DEGREES 24 MINUTES 39 SECONDS WEST FOR A DISTANCE OF 99.48 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 26.21 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 40 DEGREES 37 MINUTES 55 SECONDS WEST FOR 26.21 FEET TO A POINT. THENCE SOUTH 43 DEGREES 44 MINUTES 39 SECONDS WEST FOR A DISTANCE OF 40.59 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 11.79 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 46 DEGREES 11 MINUTES 04 SECONDS WEST FOR 11.79 FEET TO A POINT. THENCE SOUTH 46 DEGREES 44 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 112.00 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 585.00 FEET, AN ARC LENGTH OF 36.10 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 44 DEGREES 57 MINUTES 56 SECONDS WEST FOR 36.09 FEET TO A POINT. THENCE SOUTH 43 DEGREES 11 MINUTES 52 SECONDS WEST FOR A DISTANCE OF 320.93 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 585.00 FEET, AN ARC LENGTH OF 65.58 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 39 DEGREES 59 MINUTES 10 SECONDS WEST FOR 65.55 FEET TO A POINT. THENCE SOUTH 36 DEGREES 46 MINUTES 29 SECONDS WEST FOR A DISTANCE OF 35.38 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 2.96 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 36 DEGREES 54 MINUTES 45 SECONDS WEST FOR 2.96 FEET TO A POINT. THENCE SOUTH 43 DEGREES 09 MINUTES 07 SECONDS WEST FOR A DISTANCE OF 132.04 FEET TO A POINT. THENCE SOUTH 48 DEGREES 09 MINUTES 12 SECONDS WEST FOR A DISTANCE OF 67.99 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 585.00 FEET, AN ARC LENGTH OF 50.60 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 45 DEGREES 40 MINUTES 32 SECONDS WEST FOR 50.58 FEET TO A POINT. THENCE SOUTH 43 DEGREES 11 MINUTES 52 SECONDS WEST FOR A DISTANCE OF 341.59 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 735.00 FEET, AN ARC LENGTH OF 67.36 FEET, AND A CHORD BEARING

AND DISTANCE OF SOUTH 40 DEGREES 34 MINUTES 21 SECONDS WEST FOR 67.33 FEET TO A POINT. THENCE SOUTH 37 DEGREES 56 MINUTES 50 SECONDS WEST FOR A DISTANCE OF 64.31 FEET TO A POINT. THENCE SOUTH 43 DEGREES 00 MINUTES 50 SECONDS WEST FOR A DISTANCE OF 48.48 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 59,268 SQUARE FEET (1.3606 ACRES). REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED MARCH 06, 2024.

PERMANENT UTILITY EASEMENT #2

BEGINNING AT A POINT ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 (AVENTS FERRY ROAD – A VARIABLE WIDTH PUBLIC RIGHT-OF-WAY) AND THE SOUTHERN LINE OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT #1 HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=657,091.24 AND E=1,994,918.72; SAID POINT BEING ON THE COMMON LINE OF UG AND COMPANY, LLC AS RECORDED IN DEED BOOK 1268 PAGE 749 AND PLAT BOOK 5 PAGE 49 AND FRANK AND KIM DICKENS AS RECORDED IN DEED BOOK 1905 PAGE 1022 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS AND IS LOCATED NORTH 88 DEGREES 21 MINUTES 33 SECONDS WEST A DISTANCE OF 481.95 FEET FROM AN EXISTING IRON PIPE MARKING THE NORTHEAST CORNER OF THE FRANK AND KIM DICKENS PROPERTY AS REFERENCED ABOVE AND A CORNER OF THE SCINTINETIC INVESTMENTS, LLC PROPERTY AS RECORDED IN DEED BOOK 2249 PAGE 147 AND BOOK OF MAPS 11 PAGE 37. THENCE ALONG THE SAID SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 NORTH 43 DEGREES 00 MINUTES 50 SECONDS EAST FOR A DISTANCE OF 48.48 FEET TO A POINT. THENCE LEAVING THE SAID RIGHT-OF-WAY SOUTH 37 DEGREES 56 MINUTES 50 SECONDS WEST FOR A DISTANCE OF 45.14 FEET TO A POINT ON THE SAID COMMON LINE OF UG AND COMPANY, LLC AND FRANK AND KIM DICKENS. THENCE NORTH 88 DEGREES 21 MINUTES 33 SECONDS WEST FOR A DISTANCE OF 5.31 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 97 SQUARE FEET (0.0022 ACRES). REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED MARCH 06, 2024.

PERMANENT UTILITY EASEMENT #3

BEGINNING AT A POINT ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 (AVENTS FERRY ROAD – A VARIABLE WIDTH PUBLIC RIGHT-OF-WAY) AND THE SOUTHERN LINE OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT #1 HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=657,091.24 AND E=1,994,918.72; SAID POINT BEING ON THE COMMON LINE OF UG AND COMPANY, LLC AS RECORDED IN DEED BOOK 1268 PAGE 749 AND PLAT BOOK 5 PAGE 49 AND FRANK AND KIM DICKENS AS RECORDED IN DEED BOOK 1905 PAGE 1022 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS AND IS LOCATED NORTH 88 DEGREES 21 MINUTES 33 SECONDS WEST A DISTANCE OF 481.95 FEET FROM AN EXISTING IRON PIPE MARKING THE NORTHEAST CORNER OF THE FRANK AND KIM DICKENS PROPERTY AS REFERENCED ABOVE AND A CORNER OF THE SCINTINETIC INVESTMENTS, LLC PROPERTY AS RECORDED IN DEED BOOK 2249 PAGE 147 AND BOOK OF MAPS 11 PAGE 37. THENCE ALONG THE SAID SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 THE FOLLOWING FOUR COURSES AND DISTANCES:

NORTH 43 DEGREES 00 MINUTES 50 SECONDS EAST FOR 48.48 FEET TO A POINT;

NORTH 43 DEGREES 00 MINUTES 50 SECONDS EAST FOR 344.27 FEET TO A POINT;

NORTH 43 DEGREES 15 MINUTES 50 SECONDS EAST FOR 201.95 FEET TO A POINT;

NORTH 43 DEGREES 09 MINUTES 07 SECONDS EAST FOR 44.95 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT. THENCE CONTINUING ALONG THE SAID RIGHT-OF-WAY NORTH 43 DEGREES 09 MINUTES 07 SECONDS EAST FOR A DISTANCE OF 132.04 FEET. THENCE LEAVING THE SAID RIGHT-OF-WAY AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 119.18 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 42 DEGREES 36 MINUTES 07 SECONDS WEST FOR 118.99 FEET TO A POINT. THENCE SOUTH 48 DEGREES 09 MINUTES 12 SECONDS WEST FOR A DISTANCE OF 13.11 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 304 SQUARE FEET (0.0070 ACRES). REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED MARCH 06, 2024.

PERMANENT UTILITY EASEMENT #4

BEGINNING AT A POINT ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 (AVENTS FERRY ROAD – A VARIABLE WIDTH PUBLIC RIGHT-OF-WAY) AND THE SOUTHERN LINE OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT #1 HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=657,091.24 AND E=1,994,918.72; SAID POINT BEING ON THE COMMON LINE OF UG AND COMPANY, LLC AS RECORDED IN DEED BOOK 1268 PAGE 749 AND PLAT BOOK 5 PAGE 49 AND FRANK AND KIM DICKENS AS RECORDED IN DEED BOOK 1905 PAGE 1022 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS AND IS LOCATED NORTH 88 DEGREES 21 MINUTES 33 SECONDS WEST A DISTANCE OF 481.95 FEET FROM AN EXISTING IRON PIPE MARKING THE NORTHEAST CORNER OF THE FRANK AND KIM DICKENS PROPERTY AS REFERENCED ABOVE AND A CORNER OF THE SCINTINETIC INVESTMENTS, LLC PROPERTY AS RECORDED IN DEED BOOK 2249 PAGE 147 AND BOOK OF MAPS 11 PAGE 37. THENCE ALONG THE SAID SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 THE FOLLOWING COURSES AND DISTANCES:

NORTH 43 DEGREES 00 MINUTES 50 SECONDS EAST FOR 48.48 FEET TO A POINT;

NORTH 43 DEGREES 00 MINUTES 50 SECONDS EAST FOR 344.27 FEET TO A POINT;

NORTH 43 DEGREES 15 MINUTES 50 SECONDS EAST FOR 201.95 FEET TO A POINT;

NORTH 43 DEGREES 09 MINUTES 07 SECONDS EAST FOR 44.95 FEET TO A POINT;

NORTH 43 DEGREES 09 MINUTES 07 SECONDS EAST FOR 132.04 FEET TO A POINT;

NORTH 43 DEGREES 09 MINUTES 07 SECONDS EAST FOR 116.99 FEET TO A POINT;

NORTH 43 DEGREES 18 MINUTES 24 SECONDS EAST FOR 152.19 FEET TO A POINT;

NORTH 43 DEGREES 09 MINUTES 21 SECONDS EAST FOR 245.21 FEET TO A POINT;

NORTH 43 DEGREES 44 MINUTES 39 SECONDS EAST FOR 69.72 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT #4. THENCE NORTH 43 DEGREES 44 MINUTES 39 SECONDS EAST FOR A DISTANCE OF 40.59 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 40.60 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 43 DEGREES 44 MINUTES 39 SECONDS WEST FOR 40.59 FEET

TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 9 SQUARE FEET (0.0002 ACRES). REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED MARCH 06, 2024.

TEMPORARY CONSTRUCTION EASEMENT #1

COMMENCING AT A POINT ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 (AVENTS FERRY ROAD – A VARIABLE WIDTH PUBLIC RIGHT-OF-WAY) HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=657,091.24 AND E=1,994,918.72; SAID POINT BEING ON THE COMMON LINE OF UG AND COMPANY, LLC AS RECORDED IN DEED BOOK 1268 PAGE 749 AND PLAT BOOK 5 PAGE 49 AND FRANK AND KIM DICKENS AS RECORDED IN DEED BOOK 1905 PAGE 1022 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS AND IS LOCATED NORTH 88 DEGREES 21 MINUTES 33 SECONDS WEST A DISTANCE OF 481.95 FEET FROM AN EXISTING IRON PIPE MARKING THE NORTHEAST CORNER OF THE FRANK AND KIM DICKENS PROPERTY AS REFERENCED ABOVE AND A CORNER OF THE SCINTINETIC INVESTMENTS, LLC PROPERTY AS RECORDED IN DEED BOOK 2249 PAGE 147 AND BOOK OF MAPS 11 PAGE 37. THENCE ALONG THE COMMON LINE OF UG AND COMPANY, LLC AND DICKENS NORTH 88 DEGREES 21 MINUTES 33 SECONDS WEST FOR A DISTANCE OF 83.10 FEET TO THE EDGE OF PAVEMENT OF NC HIGHWAY 42; SAID POINT BEING SOUTH 88 DEGREES 21 MINUTES 33 SECONDS EAST A DISTANCE OF 536.44 FROM AN EXISTING NAIL FOUND AT THE BASE OF A BENT CONCRETE MONUMENT. THENCE ALONG THE EDGE OF PAVEMENT NORTH 43 DEGREES 00 MINUTES 04 SECONDS EAST FOR A DISTANCE OF 75.44 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS TEMPORARY CONSTRUCTION EASEMENT. THENCE CONTINUING ALONG THE EDGE OF PAVEMENT THE FOLLOWING TEN COURSES AND DISTANCES:

THENCE NORTH 43 DEGREES 00 MINUTES 04 SECONDS EAST FOR 172.57 FEET;

THENCE NORTH 43 DEGREES 06 MINUTES 40 SECONDS EAST FOR 252.99 FEET;

THENCE NORTH 43 DEGREES 23 MINUTES 34 SECONDS EAST FOR 99.76 FEET;

THENCE NORTH 42 DEGREES 59 MINUTES 41 SECONDS EAST FOR 191.83 FEET;

THENCE NORTH 43 DEGREES 13 MINUTES 20 SECONDS EAST FOR 151.42 FEET;

THENCE NORTH 43 DEGREES 44 MINUTES 20 SECONDS EAST FOR 51.43 FEET;

THENCE NORTH 43 DEGREES 06 MINUTES 40 SECONDS EAST FOR 346.03 FEET;

THENCE NORTH 43 DEGREES 47 MINUTES 16 SECONDS EAST FOR 359.07 FEET;

THENCE NORTH 43 DEGREES 59 MINUTES 48 SECONDS EAST FOR 160.63 FEET;

THENCE NORTH 44 DEGREES 16 MINUTES 03 SECONDS EAST FOR 137.08 FEET TO A POINT ON THE COMMON PROPERTY LINE OF UG AND COMPANY, LLC AND LAUREN AND JONATHAN TAYLOR AS RECORDED IN DEED BOOK 2329 PAGE 1063 AND PLAT BOOK 2020 PAGE 255. THENCE ALONG THE SAID COMMON LINE SOUTH 00 DEGREES 12 MINUTES 32 SECONDS EAST FOR A DISTANCE OF 19.12 FEET TO A POINT. THENCE ALONG THE NORTHERN LINE OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT SOUTH 44 DEGREES 08 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 102.35 FEET TO A POINT. THENCE SOUTH 40 DEGREES 57 MINUTES 33 SECONDS WEST FOR A DISTANCE OF 99.62 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 985.00

FEET, AN ARC LENGTH OF 38.49 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 42 DEGREES 04 MINUTES 43 SECONDS WEST FOR 38.48 FEET TO A POINT. THENCE SOUTH 43 DEGREES 11 MINUTES 52 SECONDS WEST FOR A DISTANCE OF 128.36 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 40.65 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 41 DEGREES 18 MINUTES 16 SECONDS WEST FOR 40.64 FEET TO A POINT. THENCE SOUTH 39 DEGREES 24 MINUTES 39 SECONDS WEST FOR A DISTANCE OF 99.48 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 585.00 FEET, AN ARC LENGTH OF 74.77 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 43 DEGREES 04 MINUTES 20 SECONDS WEST FOR 74.71 FEET TO A POINT. THENCE SOUTH 46 DEGREES 44 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 112.00 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 37.95 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 44 DEGREES 57 MINUTES 56 SECONDS WEST FOR 37.94 FEET TO A POINT. THENCE SOUTH 43 DEGREES 11 MINUTES 52 SECONDS WEST FOR A DISTANCE OF 320.93 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 68.95 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 39 DEGREES 59 MINUTES 10 SECONDS WEST FOR 68.91 FEET TO A POINT. THENCE SOUTH 36 DEGREES 46 MINUTES 29 SECONDS WEST FOR A DISTANCE OF 35.38 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 585.00 FEET, AN ARC LENGTH OF 116.18 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 42 DEGREES 27 MINUTES 50 SECONDS WEST FOR 115.99 FEET TO A POINT. THENCE SOUTH 48 DEGREES 09 MINUTES 12 SECONDS WEST FOR A DISTANCE OF 81.10 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 615.00 FEET, AN ARC LENGTH OF 53.19 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 45 DEGREES 40 MINUTES 32 SECONDS WEST FOR 53.17 FEET TO A POINT. THENCE SOUTH 43 DEGREES 11 MINUTES 52 SECONDS WEST FOR A DISTANCE OF 341.59 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 765.00 FEET, AN ARC LENGTH OF 70.11 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 40 DEGREES 34 MINUTES 21 SECONDS WEST FOR 70.08 FEET TO A POINT. THENCE SOUTH 37 DEGREES 56 MINUTES 50 SECONDS WEST FOR A DISTANCE OF 89.70 FEET TO A POINT. THENCE NORTH 47 DEGREES 01 MINUTES 21 SECONDS WEST FOR A DISTANCE OF 34.74 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 47,986 SQUARE FEET (1.1016 ACRES). REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED MARCH 06, 2024.

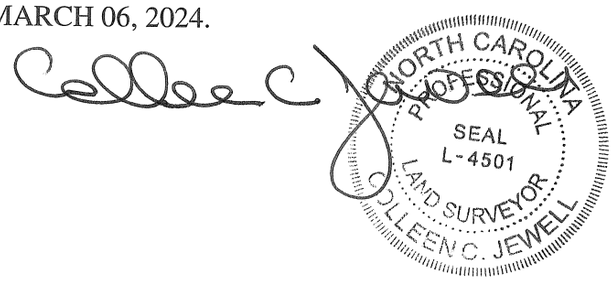
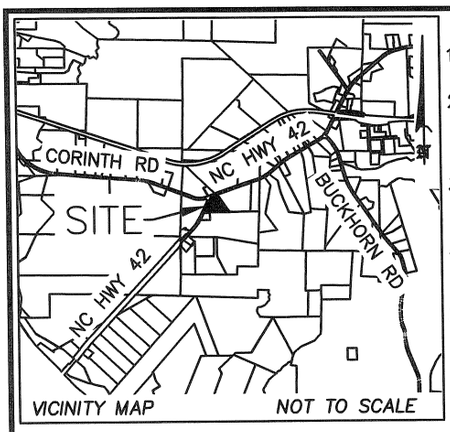


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

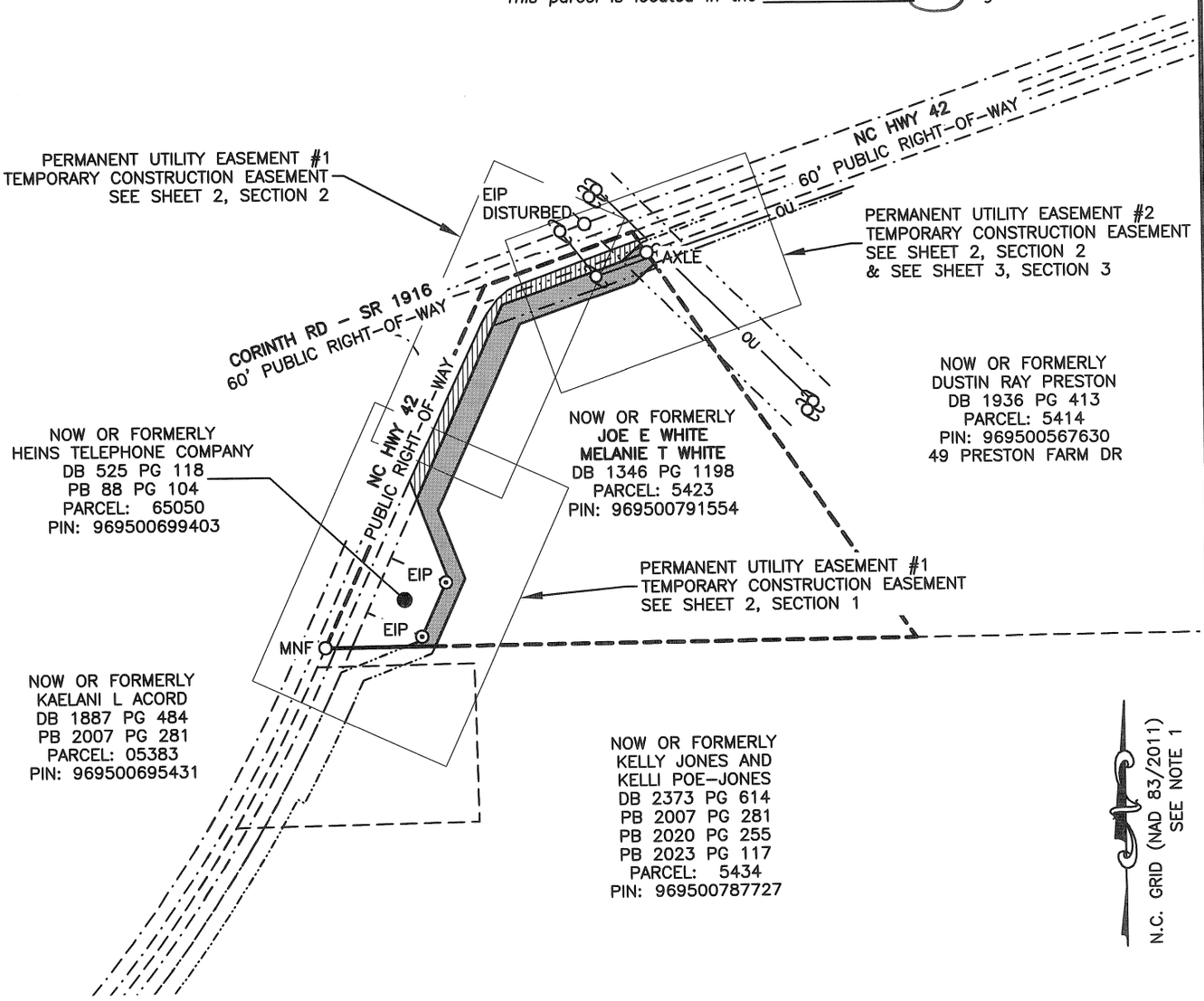
4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3710969500K, EFFECTIVE FEBRUARY 02, 2007.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY *Planning Jurisdiction*



NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 200 400 Feet

SHEET 1 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17 DAY OF OCT A.D., 2023

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122–WHITE–1554–EASE.dwg

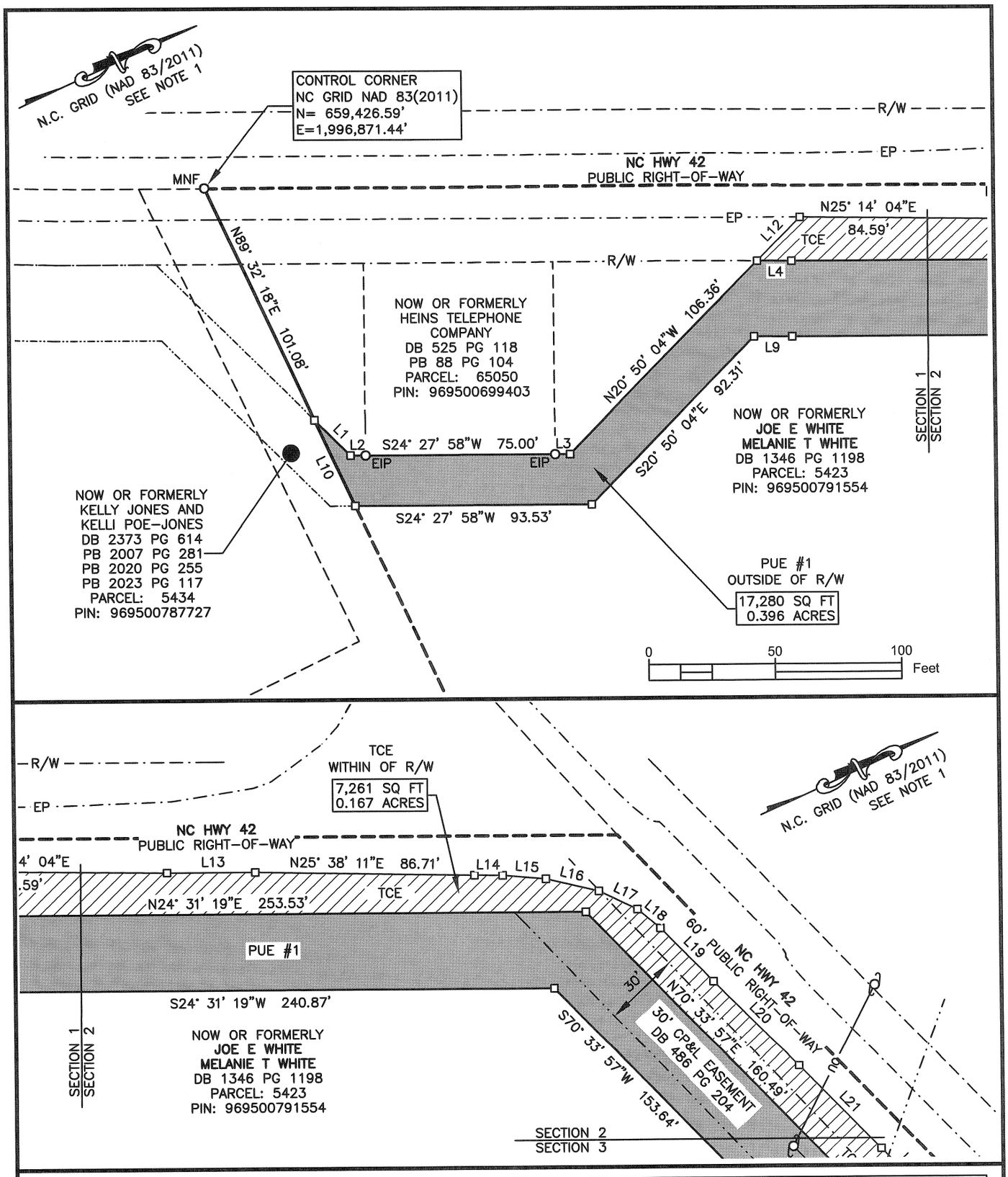
Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 200'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: JOE E. AND MELANIE T. WHITE
GRANTEE: TOWN OF FUQUAY–VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A



NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

SHEET 2 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 16 DAY OF Oct A.D., 2023

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-WHITE-1554-EASE.dwg

Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 50'

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(C-1461)
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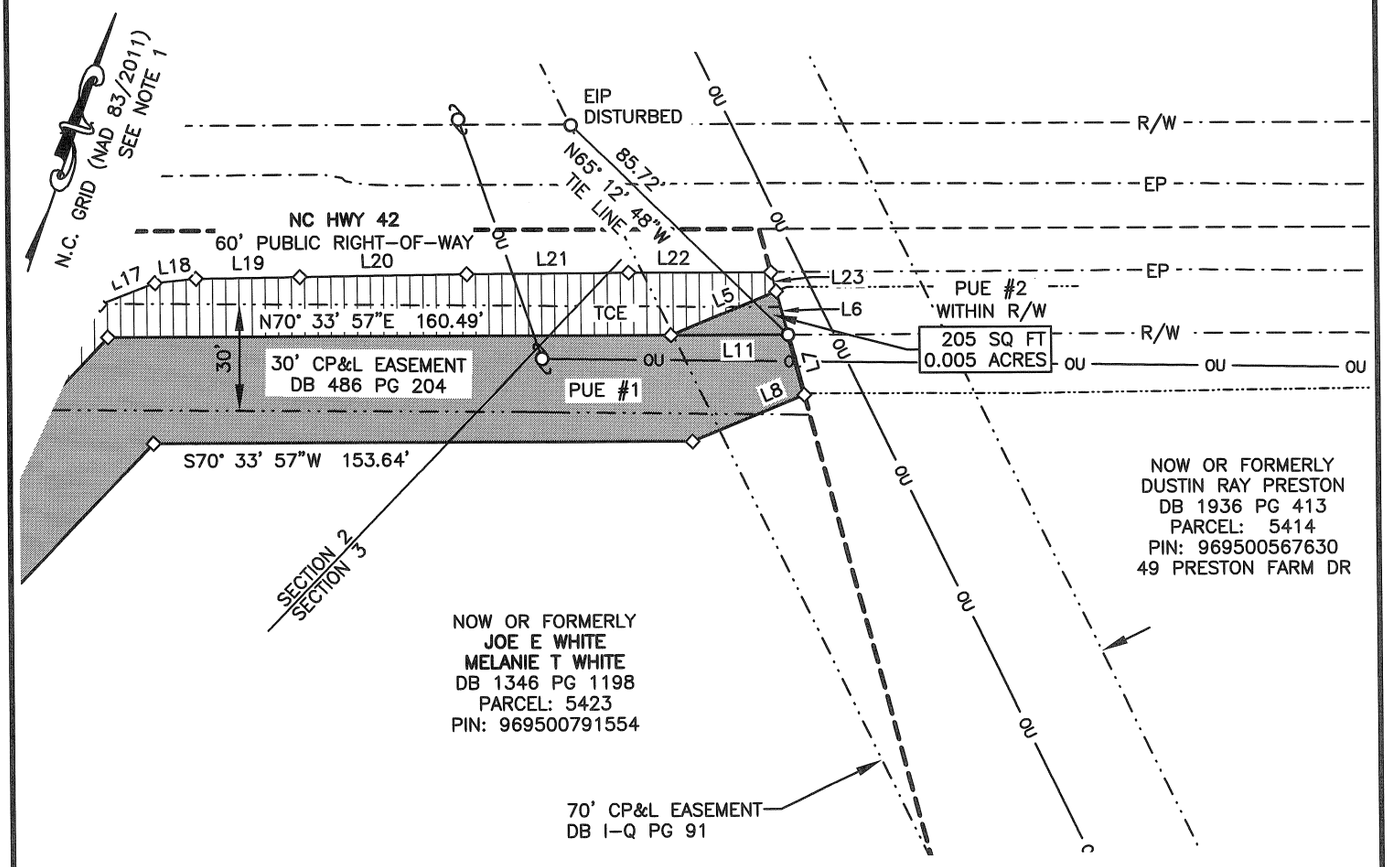
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: JOE E. AND MELANIE T. WHITE
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A



Line Table		
Line #	Direction	Length
L1	S69° 12' 04"W	19.81
L2	N24° 27' 58"E	5.94
L3	N24° 27' 58"E	5.94
L4	N24° 52' 23"E	13.72
L5	N48° 17' 59"E	32.50
L6	S34° 19' 22"E	12.74

Line Table		
Line #	Direction	Length
L7	S34° 19' 18"E	17.51
L8	S48° 18' 00"W	34.52
L9	S24° 52' 23"W	15.14
L10	S89° 32' 18"W	37.43
L11	N70° 33' 51"E	33.35
L12	N20° 50' 04"W	24.34

Line Table		
Line #	Direction	Length
L13	N24° 38' 59"E	34.94
L14	N24° 57' 48"E	11.18
L15	N29° 41' 26"E	17.13
L16	N37° 39' 41"E	21.47
L17	N49° 49' 44"E	16.80
L18	N64° 43' 30"E	11.76

Line Table		
Line #	Direction	Length
L19	N69° 54' 27"E	29.63
L20	N69° 47' 27"E	47.60
L21	N70° 11' 49"E	46.15
L22	N70° 34' 31"E	40.52
L23	S34° 19' 09"E	5.66

AREA SUMMARY		
PERMANENT UTILITY EASEMENT #1	17,280	(SF)
	0.396	(AC)
PERMANENT UTILITY EASEMENT #2	205	(SF)
	0.005	(AC)
TEMPORARY CONSTRUCTION EASEMENT	7,261	(SF)
	0.167	(AC)
TOTAL	24,746	(SF)
	0.568	(AC)

LEGEND
- O – EXISTING IRON PIPE (EIP)
- □ – COMPUTED CORNER
- – POWER POLE
- EP – EDGE OF PAVEMENT
- OU – OVERHEAD UTILITY LINE(S)
- R/W – RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- – PERMANENT UTILITY EASEMENT (PUE)
- – TEMPORARY CONSTRUCTION EASEMENT (TCE)

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 50 100 Feet

SHEET 3 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17 DAY OF OCT A.D., 2023

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-WHITE-1554-EASE.dwg

Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 50'

COOPER AND ASSOCIATES SURVEYORS, P.A.
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OFFICE – (919)469-1760
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EASEMENT PLAT
GRANTOR: JOE E. AND MELANIE T. WHITE
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

GRANTOR: JOE E. AND MELANIE T. WHITE
CHATHAM COUNTY PIN: 969500791554
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SRPINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT #1

BEGINNING AT AN EXISTING AXLE MARKING THE COMMON LINE OF THE DUSTIN RAY PRESTON PROPERTY AS RECORDED IN DEED BOOK 1936 PAGE 413 AND THE JOE E. AND MELANIE T. WHITE PROPERTY AS RECORDED IN DEED BOOK 1346 PAGE 1198 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS; SAID AXLE BEING ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 AND HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=659,920.47 AND E=1,997,282.93. THENCE ALONG THE SAID COMMON LINE SOUTH 34 DEGREES 19 MINUTES 18 SECONDS EAST FOR A DISTANCE OF 17.51 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE SOUTH 48 DEGREES 18 MINUTES 00 SECONDS WEST FOR A DISTANCE OF 34.52 FEET TO A POINT. THENCE SOUTH 70 DEGREES 33 MINUTES 57 SECONDS WEST FOR A DISTANCE OF 153.64 FEET TO A POINT. THENCE SOUTH 24 DEGREES 31 MINUTES 19 SECONDS WEST FOR A DISTANCE OF 240.87 FEET TO A POINT. THENCE SOUTH 24 DEGREES 52 MINUTES 23 SECONDS WEST FOR A DISTANCE OF 15.14 FEET TO A POINT. THENCE SOUTH 20 DEGREES 50 MINUTES 04 SECONDS EAST FOR A DISTANCE OF 92.31 FEET TO A POINT. THENCE SOUTH 24 DEGREES 27 MINUTES 58 SECONDS WEST FOR A DISTANCE OF 93.53 FEET TO A POINT ON THE COMMON PROPERTY LINE WITH KELLY JONES AND KELLI POE-JONES AS RECORDED IN DEED BOOK 2373 PAGE 614 AND BOOK OF MAPS 2023 PAGE 117. THENCE ALONG THE SAID COMMON LINE OF WHITE AND JONES SOUTH 89 DEGREES 32 MINUTES 18 SECONDS WEST FOR A DISTANCE OF 37.43 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE NORTH 69 DEGREES 12 MINUTES 04 SECONDS EAST FOR A DISTANCE OF 19.81 FEET TO A POINT. THENCE NORTH 24 DEGREES 27 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 5.94 FEET TO AN EXISTING IRON PIPE MARKING THE SOUTHEAST CORNER OF THE HEINS TELEPHONE COMPANY PROPERTY AS RECORDED IN DEED BOOK 525 PAGE 118 AND PLAT BOOK 88 PAGE 104. THENCE ALONG THE EASTERN LINE OF THE HEINS TELEPHONE COMPANY PROPERTY NORTH 24 DEGREES 27 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 75.00 FEET TO AN EXISTING IRON PIPE MARKING THE NORTHEAST CORNER OF THE SAID PROPERTY. THENCE NORTH 24 DEGREES 27 MINUTES 58 SECONDS EAST FOR A DISTANCE OF 5.94 FEET TO A POINT. THENCE NORTH 20 DEGREES 50 MINUTES 04 SECONDS WEST FOR A DISTANCE OF 106.36 FEET TO A POINT. THENCE NORTH 24 DEGREES 52 MINUTES 23 SECONDS EAST FOR A DISTANCE OF 13.72 FEET TO A POINT. THENCE NORTH 24 DEGREES 31 MINUTES 19 SECONDS EAST FOR A DISTANCE OF 253.53 FEET TO A POINT. THENCE NORTH 70 DEGREES 33 MINUTES 57 SECONDS EAST FOR A DISTANCE OF 160.49 FEET TO A POINT. THENCE NORTH 70 DEGREES 33 MINUTES 51 SECONDS EAST FOR A DISTANCE OF 33.35 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 17,280 SQUARE FEET (0.396 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023 AND REVISED FEBRUARY 19, 2025.

PERMANENT UTILITY EASEMENT #2

BEGINNING AT AN EXISTING AXLE MARKING THE COMMON LINE OF THE DUSTIN RAY PRESTON PROPERTY AS RECORDED IN DEED BOOK 1936 PAGE 413 AND THE JOE E. AND MELANIE T. WHITE PROPERTY AS RECORDED IN DEED BOOK 1346 PAGE 1198 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS; SAID AXLE BEING ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 AND HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=659,920.47 AND E=1,997,282.93. THENCE LEAVING THE SAID COMMON PROPERTY LINE ALONG THE NORTHERN LINE OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT #1 SOUTH 70 DEGREES 33 MINUTES 51 SECONDS WEST FOR A DISTANCE OF 33.35 FEET TO A POINT. THENCE NORTH 48 DEGREES 17 MINUTES 59 SECONDS EAST FOR A DISTANCE OF 32.50 FEET TO A POINT ON THE SAID COMMON LINE OF PRESTON AND WHITE. THENCE ALONG THE SAID COMMON LINE SOUTH 34 DEGREES 19 MINUTES 22 SECONDS EAST FOR A DISTANCE OF 12.74 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 205 SQUARE FEET (0.005 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023 AND REVISED FEBRUARY 19, 2025.

TEMPORARY CONSTRUCTION EASEMENT

COMMENCING AT AN EXISTING AXLE MARKING THE COMMON LINE OF THE DUSTIN RAY PRESTON PROPERTY AS RECORDED IN DEED BOOK 1936 PAGE 413 AND THE JOE E. AND MELANIE T. WHITE PROPERTY AS RECORDED IN DEED BOOK 1346 PAGE 1198 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS; SAID AXLE BEING ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 AND HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=659,920.47 AND E=1,997,282.93. THENCE ALONG THE SAID COMMON LINE NORTH 34 DEGREES 19 MINUTES 22 SECONDS WEST FOR A DISTANCE OF 12.74 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS TEMPORARY CONSTRUCTION EASEMENT; SAID POINT BEING THE NORTHERN CORNER OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT #2. THENCE ALONG THE NORTHERN LINE OF PERMANENT UTILITY EASEMENT #2 LEAVING THE SAID COMMON LINE SOUTH 48 DEGREES 17 MINUTES 59 SECONDS WEST FOR A DISTANCE OF 32.50 FEET TO A POINT ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42; SAID POINT ALSO BEING ON THE NORTHERN LINE OF PERMANENT UTLITY EASEMENT #1. THENCE ALONG THE RIGHT-OF-WAY AND THE NORTHERN LINE OF THE PERMANENT UTILITY EASEMENT #1 THE FOLLOW THREE COURSES AND DISTANCES:

SOUTH 70 DEGREES 33 MINUTES 57 SECONDS WEST FOR 160.49 FEET TO A POINT;
SOUTH 24 DEGREES 31 MINUTES 19 SECONDS WEST FOR 253.53 FEET TO A POINT;
SOUTH 24 DEGREES 52 MINUTES 23 SECONDS WEST FOR 13.72 FEET TO A POINT.

THENCE LEAVING THE SAID RIGHT-OF-WAY AND PERMANENT UTILITY EASEMENT #1 NORTH 20 DEGREES 50 MINUTES 04 SECONDS WEST FOR A DISTANCE OF 24.34 FEET TO A POINT ON THE EDGE OF PAVEMENT OF N.C. HIGHWAY 42. THENCE ALONG THE SAID EDGE OF PAVEMENT THE FOLLOWING TWELVE COURSES AND DISTANCES:

NORTH 25 DEGREES 14 MINUTES 04 SECONDS EAST FOR 84.59 FEET TO A POINT;
NORTH 24 DEGREES 38 MINUTES 59 SECONDS EAST FOR 34.94 FEET TO A POINT;
NORTH 25 DEGREES 38 MINUTES 11 SECONDS EAST FOR 86.71 FEET TO A POINT;
NORTH 24 DEGREES 57 MINUTES 48 SECONDS EAST FOR 11.18 FEET TO A POINT;

NORTH 29 DEGREES 41 MINUTES 26 SECONDS EAST FOR 17.13 FEET TO A POINT;
NORTH 37 DEGREES 39 MINUTES 41 SECONDS EAST FOR 21.47 FEET TO A POINT;
NORTH 49 DEGREES 49 MINUTES 44 SECONDS EAST FOR 16.80 FEET TO A POINT;
NORTH 64 DEGREES 43 MINUTES 30 SECONDS EAST FOR 11.76 FEET TO A POINT;
NORTH 69 DEGREES 54 MINUTES 27 SECONDS EAST FOR 29.63 FEET TO A POINT;
NORTH 69 DEGREES 47 MINUTES 27 SECONDS EAST FOR 47.60 FEET TO A POINT;
NORTH 70 DEGREES 11 MINUTES 49 SECONDS EAST FOR 46.15 FEET TO A POINT;
NORTH 70 DEGREES 34 MINUTES 31 SECONDS EAST FOR 40.52 FEET TO A POINT ON THE SAID COMMON LINE OF PRESTON AND WHITE. THENCE ALONG THE SAID COMMON LINE SOUTH 34 DEGREES 19 MINUTES 09 SECONDS EAST FOR A DISTANCE OF 5.66 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 7,261 SQUARE FEET (0.167 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023 AND REVISED FEBRUARY 19, 2025.

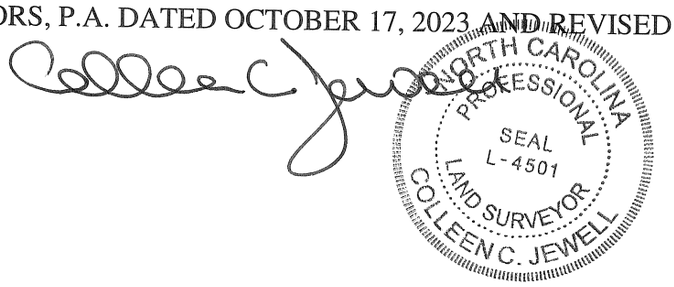
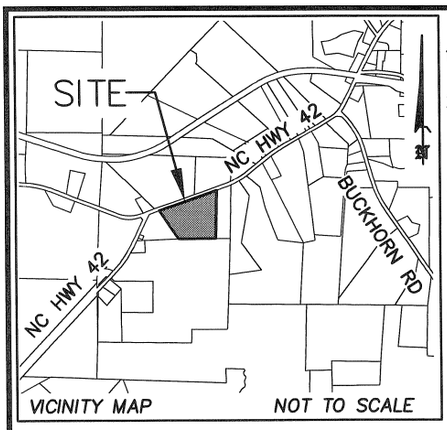


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

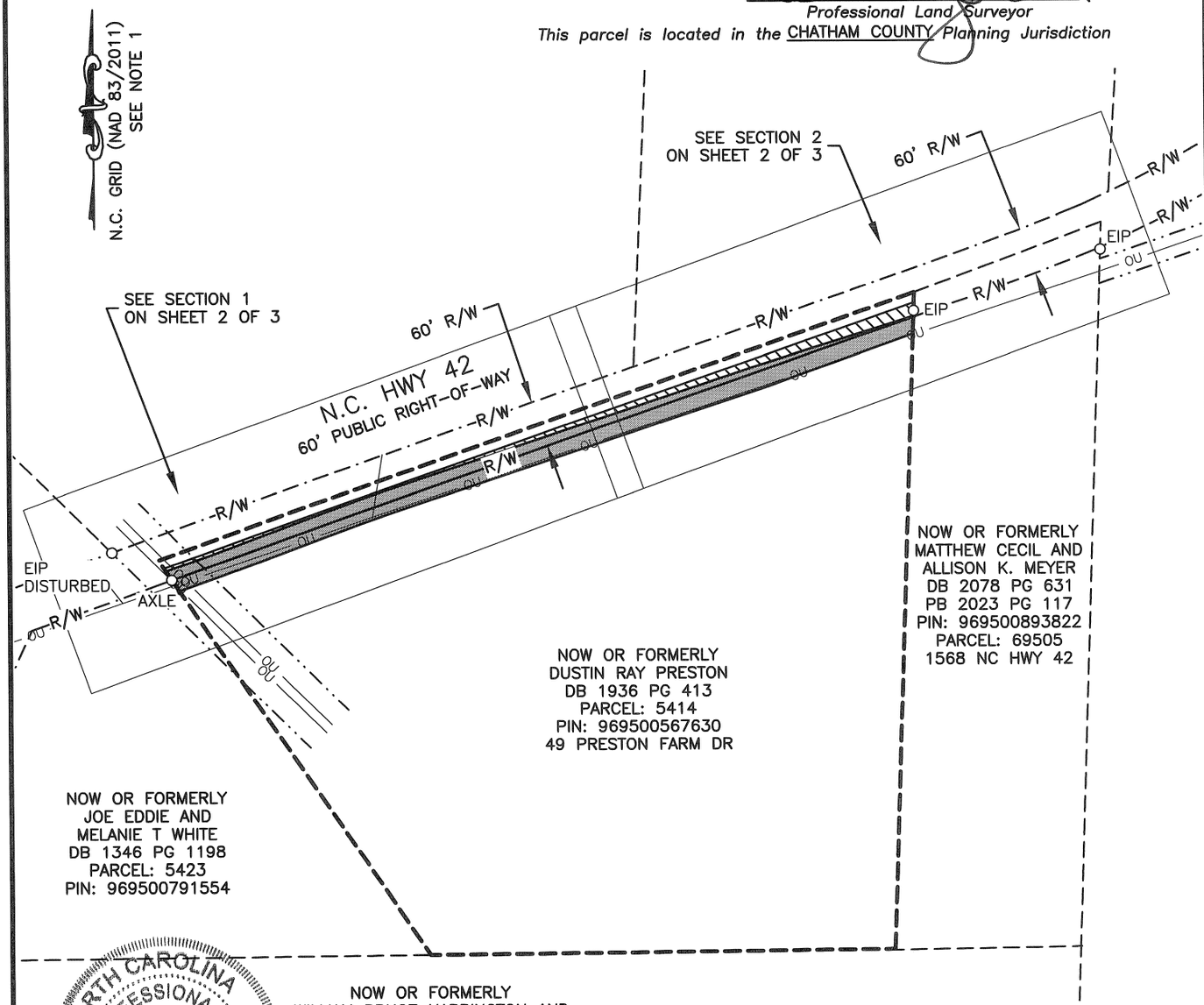
4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3710969600J, EFFECTIVE 02/02/07 AND MAP NO. 3710969500K, EFFECTIVE 02/02/07.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY *Planning Jurisdiction*



NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 200 400 Feet

LEGEND

- O – EXISTING IRON PIPE (EIP/REBAR)
- □ – COMPUTED CORNER
- △ – EXISTING CONCRETE MONUMENT (ECM)
- – EXISTING UTILITY POLE
- OU – OVERHEAD UTILITY LINE(S)
- R/W – RIGHT–OF–WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- OU – OVERHEAD UTILITY LINE(S)
- PERMANENT UTILITY EASEMENT
- TEMPORARY CONSTRUCTION EASEMENT

SHEET 1 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 24 DAY OF _____ A.D.,2024.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | *AREAS COMPUTED BY COORDINATES.* | *FILE NAME:* 7122–7630–PRESTON.dwg

Surv'd: MR	*Drawn:* CRB	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 01/24/24	*Scale:* 1" = 200'

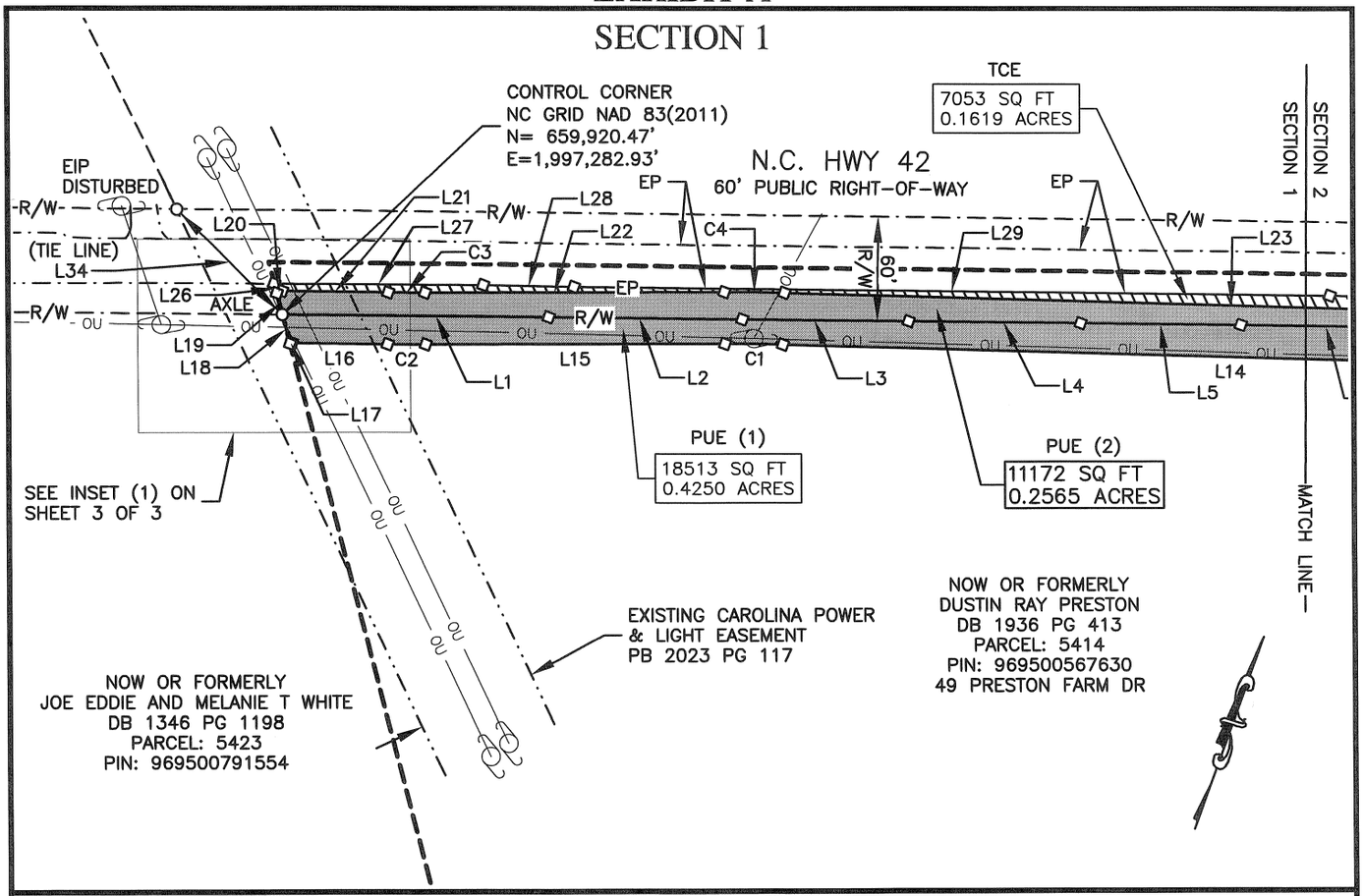
COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

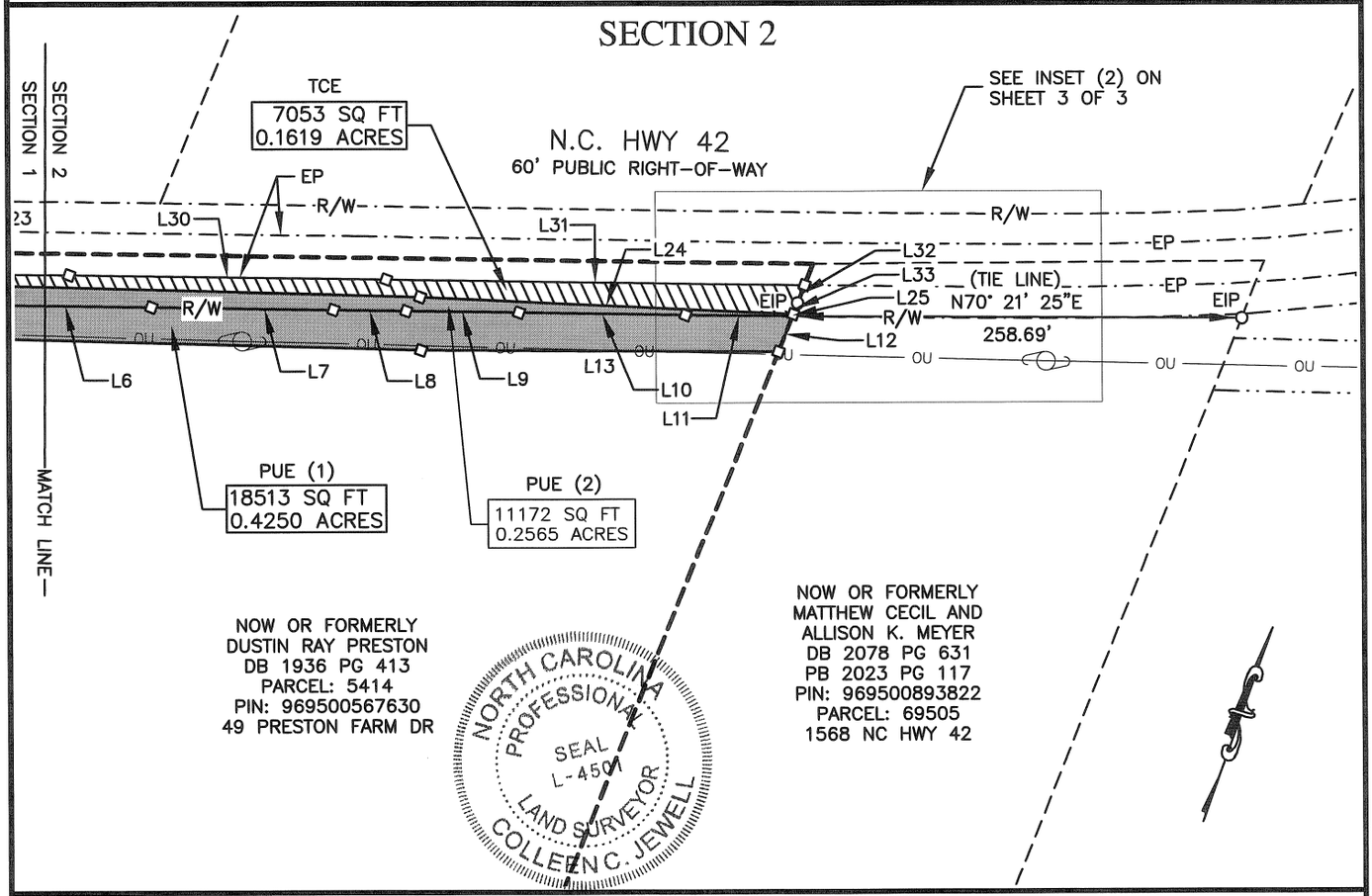
GRANTOR: DUSTIN RAY PRESTON
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A

SECTION 1



SECTION 2



0 100 200 Feet

SHEET 2 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 24 DAY OF Jan A.D.,2024.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-7630-PRESTON.dwg

Surv'd: MR | Drawn: CRB | Chk'd: CCJ | Job No.: 7122 | Date: 01/24/24 | Scale: 1" = 100'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
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EASEMENT PLAT

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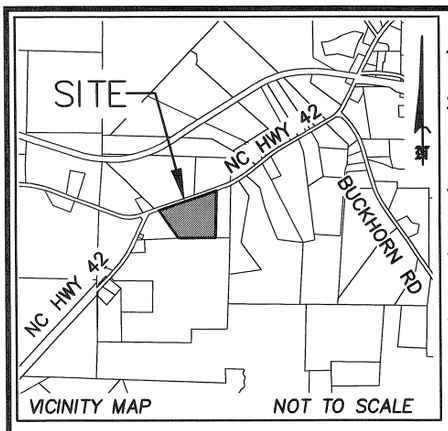
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

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5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3710969600J, EFFECTIVE 02/02/07 AND MAP NO. 3710969500K, EFFECTIVE 02/02/07.

NORTH CAROLINA PROFESSIONAL SEAL L-4501 SURVEYOR COLLEEN C. JEWELL

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

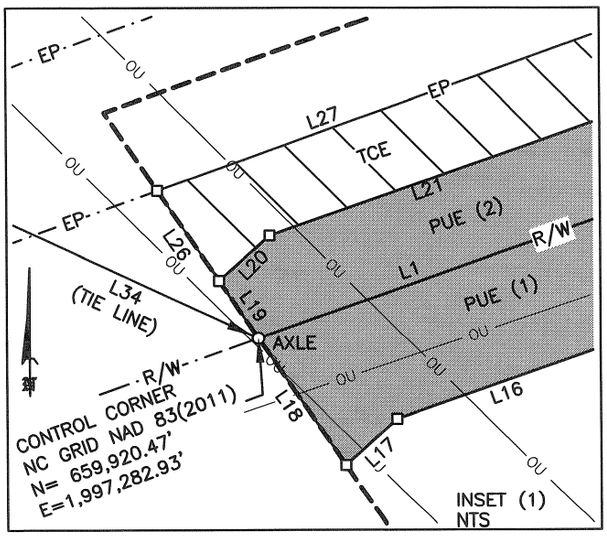
Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY *Planning Jurisdiction.*

LEGEND

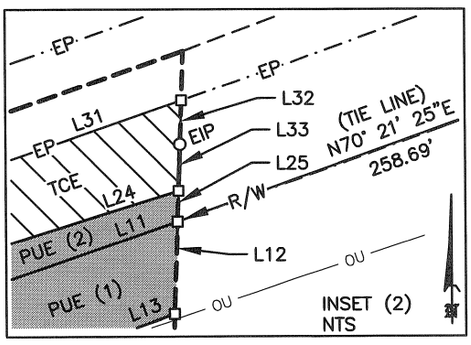
- O – EXISTING IRON PIPE (EIP/REBAR)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- EP – EDGE OF PAVEMENT
- – EXISTING UTILITY POLE
- OU – OVERHEAD UTILITY LINE(S)
- R/W – RIGHT–OF–WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PUE – PERMANENT UTILITY EASEMENT
- TCE – TEMPORARY CONSTRUCTION EASEMENT

AREA SUMMARY	
PERMANENT UTILITY EASEMENT (1) OUTSIDE OF R/W	18513 (SF)
	0.4250 (AC)
PERMANENT UTILITY EASEMENT (2) INSIDE OF R/W	11172 (SF)
	0.2565 (AC)
TEMPROARY CONSTRUCTION EASEMENT INSIDE OF R/W	7053 (SF)
	0.1619 (AC)
TOTAL	36738 (SF)
	0.843 (AC)



Line Table		
Line #	Direction	Length
L1	N70° 33' 57"E	154.43'
L2	N70° 41' 04"E	112.16'
L3	N70° 41' 01"E	96.46'
L4	N70° 43' 25"E	99.64'
L5	N70° 37' 11"E	92.89'
L6	N70° 49' 21"E	98.84'
L7	N70° 56' 47"E	104.90'
L8	N70° 53' 09"E	41.93'
L9	N70° 53' 09"E	64.88'
L10	N70° 57' 05"E	95.94'
L11	N70° 48' 48"E	61.59'
L12	S2° 03' 53"W	21.61'
L13	S70° 22' 17"W	205.80'
L14	S71° 37' 18"W	519.81'
L15	S69° 54' 14"W	173.48'
L16	S70° 47' 59"W	55.45'
L17	S48° 17' 59"W	1.24'

Line Table		
Line #	Direction	Length
L18	N34° 19' 18"W	17.51'
L19	N34° 19' 18"W	12.74'
L20	N48° 17' 59"E	3.32'
L21	N70° 47' 59"E	61.56'
L22	N69° 54' 14"E	173.46'
L23	N71° 37' 18"E	518.34'
L24	N72° 42' 45"E	215.02'
L25	S2° 03' 53"W	1.24'
L26	N34° 19' 18"W	5.66'
L27	N70° 25' 09"E	121.09'
L28	N71° 06' 06"E	52.62'
L29	N70° 41' 19"E	438.08'
L30	N70° 54' 36"E	182.50'
L31	N70° 52' 49"E	241.06'
L32	S2° 03' 53"W	10.88'
L33	S2° 03' 53"W	6.88'
L34	N65° 12' 48"W	85.72'



Curve Table				
Curve #	Radius	Length	Chord Direction	Chord Length
C1	566.45'	33.52'	S70° 45' 46"W	33.51'
C2	585.03'	22.14'	S70° 15' 17"W	22.13'
C3	555.03'	21.33'	N70° 15' 08"E	21.33'
C4	596.45'	34.85'	N70° 45' 46"E	34.84'

SHEET 3 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 24 DAY OF _____ A.D.,2024.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | *AREAS COMPUTED BY COORDINATES.* | *FILE NAME:* 7122–7630–PRESTON.dwg

Surv'd: MR | *Drawn:* CRB | *Chk'd:* CCJ | *Job No.:* 7122 | *Date:* 01/24/24 | *Scale:* N/A

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: DUSTIN RAY PRESTON
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

GRANTOR: DUSTIN RAY PRESTON
CHATHAM COUNTY PIN: 969500567630
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SRPINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT #1

BEGINNING AT AN EXISTING AXLE MARKING THE COMMON LINE OF THE DUSTIN RAY PRESTON PROPERTY AS RECORDED IN DEED BOOK 1936 PAGE 413 AND THE JOE EDDIE AND MELANIE T. WHITE PROPERTY AS RECORDED IN DEED BOOK 1346 PAGE 1198 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS; SAID AXLE BEING ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 AND HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=659,920.47 AND E=1,997,282.93. THENCE ALONG THE SAID SOUTHERN RIGHT-OF-WAY THE FOLLOWING 11 COURSES AND DISTANCES:

NORTH 70 DEGREES 33 MINUTES 57 SECONDS EAST FOR 154.43 FEET TO A POINT; NORTH 70 DEGREES 41 MINUTES 04 SECONDS EAST FOR 112.16 FEET TO A POINT; NORTH 70 DEGREES 41 MINUTES 01 SECONDS EAST FOR 96.46 FEET TO A POINT; NORTH 70 DEGREES 43 MINUTES 25 SECONDS EAST FOR 99.64 FEET TO A POINT; NORTH 70 DEGREES 37 MINUTES 11 SECONDS EAST FOR 92.89 FEET TO A POINT; NORTH 70 DEGREES 49 MINUTES 21 SECONDS EAST FOR 98.84 FEET TO A POINT; NORTH 70 DEGREES 56 MINUTES 47 SECONDS EAST FOR 104.90 FEET TO A POINT; NORTH 70 DEGREES 53 MINUTES 09 SECONDS EAST FOR 41.93 FEET TO A POINT; NORTH 70 DEGREES 53 MINUTES 09 SECONDS EAST FOR 64.88 FEET TO A POINT; NORTH 70 DEGREES 57 MINUTES 05 SECONDS EAST FOR 95.94 FEET TO A POINT; NORTH 70 DEGREES 48 MINUTES 48 SECONDS EAST FOR 61.59 FEET TO A POINT ON THE COMMON PROPERTY LINE OF MATTHEW CECIL AND ALLISON K. MEYER AS RECORDED IN DEED BOOK 2078 PAGE 631 AND BOOK OF MAPS 2023 PAGE 117. THENCE ALONG THE SAID COMMON PROPERTY LINE SOUTH 02 DEGREES 03 MINUTES 53 SECONDS WEST FOR A DISTANCE OF 21.61 FEET TO A POINT. THENCE LEAVING THE SAID COMMON PROPERTY LINE SOUTH 70 DEGREES 22 MINUTES 17 SECONDS WEST FOR A DISTANCE OF 205.80 FEET TO A POINT. THENCE SOUTH 71 DEGREES 37 MINUTES 18 SECONDS WEST FOR A DISTANCE OF 519.81 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 566.45 FEET, AN ARC LENGTH OF 33.52 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 70 DEGREES 45 MINUTES 46 SECONDS WEST FOR 33.51 FEET TO A POINT. THENCE SOUTH 69 DEGREES 54 MINUTES 14 SECONDS WEST FOR A DISTANCE OF 173.48 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 585.03 FEET, AN ARC LENGTH OF 22.14 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 70 DEGREES 15 MINUTES 17 SECONDS WEST FOR 22.13 FEET TO A POINT. THENCE SOUTH 70 DEGREES 47 MINUTES 59 SECONDS WEST FOR A DISTANCE OF 55.45 FEET TO A POINT. THENCE SOUTH 48 DEGREES 17 MINUTES 59 SECONDS WEST FOR A DISTANCE OF 1.24 FEET TO A POINT ON THE SAID COMMON LINE OF DUSTIN RAY PRESTON AND JOE EDDIE AND MELANIE T. WHITE. THENCE ALONG THE SAID COMMON LINE NORTH 34 DEGREES 19 MINUTES 18 SECONDS WEST FOR A DISTANCE OF 17.51 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 18,513 SQUARE FEET (0.4250 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 24, 2024.

PERMANENT UTILITY EASEMENT #2

BEGINNING AT AN EXISTING AXLE MARKING THE COMMON LINE OF THE DUSTIN RAY PRESTON PROPERTY AS RECORDED IN DEED BOOK 1936 PAGE 413 AND THE JOE EDDIE AND MELANIE T. WHITE PROPERTY AS RECORDED IN DEED BOOK 1346 PAGE 1198 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS; SAID AXLE BEING ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 AND HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=659,920.47 AND E=1,997,282.93. THENCE ALONG THE SAID COMMON LINE OF PRESTON AND WHITE NORTH 34 DEGREES 19 MINUTES 18 SECONDS WEST FOR A DISTANCE OF 12.74 FEET TO A POINT. THENCE LEAVING THE SAID COMMON PROPERTY LINE NORTH 48 DEGREES 17 MINUTES 59 SECONDS EAST FOR A DISTANCE OF 3.32 FEET TO A POINT. THENCE NORTH 70 DEGREES 47 MINUTES 59 SECONDS EAST FOR A DISTANCE OF 61.56 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 555.03 FEET, AN ARC LENGTH OF 21.33 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 70 DEGREES 15 MINUTES 08 SECONDS EAST FOR 21.33 FEET TO A POINT. THENCE NORTH 69 DEGREES 54 MINUTES 14 SECONDS EAST FOR A DISTANCE OF 173.46 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 596.45 FEET, AN ARC LENGTH OF 34.85 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 70 DEGREES 45 MINUTES 46 SECONDS EAST FOR 34.84 FEET TO A POINT. THENCE NORTH 71 DEGREES 37 MINUTES 18 SECONDS EAST FOR A DISANCE OF 518.34 FEET TO A POINT. THENCE NORTH 72 DEGREES 42 MINUTES 45 SECONDS EAST FOR A DISTANCE OF 215.02 FEET TO A POINT ON THE COMMON PROPERTY LINE OF MATTHEW CECIL AND ALLISON K. MEYER AS RECORDED IN DEED BOOK 2078 PAGE 631 AND BOOK OF MAPS 2023 PAGE 117. THENCE ALONG THE SAID COMMON PROPERTY LINE SOUTH 02 DEGREES 03 MINUTES 53 SECONDS WEST FOR A DISTANCE OF 1.24 FEET TO A POINT ON THE SAID SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42. THENCE LEAVING THE SAID COMMON PROPERTY LINE ALONG THE SAID RIGHT-OF-WAY THE FOLLOWING 11 COURSES AND DISTANCES:

SOUTH 70 DEGREES 48 MINUTES 48 SECONDS WEST FOR 61.59 FEET TO A POINT;
SOUTH 70 DEGREES 57 MINUTES 05 SECONDS WEST FOR 95.94 FEET TO A POINT;
SOUTH 70 DEGREES 53 MINUTES 09 SECONDS WEST FOR 64.88 FEET TO A POINT;
SOUTH 70 DEGREES 53 MINUTES 09 SECONDS WEST FOR 41.93 FEET TO A POINT;
SOUTH 70 DEGREES 56 MINUTES 47 SECONDS WEST FOR 104.90 FEET TO A POINT;
SOUTH 70 DEGREES 49 MINUTES 21 SECONDS WEST FOR 98.84 FEET TO A POINT;
SOUTH 70 DEGREES 37 MINUTES 11 SECONDS WEST FOR 92.89 FEET TO A POINT;
SOUTH 70 DEGREES 43 MINUTES 25 SECONDS WEST FOR 99.64 FEET TO A POINT;
SOUTH 70 DEGREES 41 MINUTES 01 SECONDS WEST FOR 96.46 FEET TO A POINT;
SOUTH 70 DEGREES 41 MINUTES 04 SECONDS WEST FOR 112.16 FEET TO A POINT;
SOUTH 70 DEGREES 33 MINUTES 57 SECONDS WEST FOR 154.43 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 11,172 SQUARE FEET (0.2565 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 24, 2024.

TEMPORARY CONSTRUCTION EASEMENT

COMMENCING AT AN EXISTING AXLE MARKING THE COMMON LINE OF THE DUSTIN RAY PRESTON PROPERTY AS RECORDED IN DEED BOOK 1936 PAGE 413 AND THE JOE EDDIE AND MELANIE T. WHITE PROPERTY AS RECORDED IN DEED BOOK 1346 PAGE 1198 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF

DEEDS; SAID AXLE BEING ON THE SOUTHERN RIGHT-OF-WAY OF N.C. HIGHWAY 42 AND HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=659,920.47 AND E=1,997,282.93. THENCE ALONG THE SAID COMMON LINE OF PRESTON AND WHITE NORTH 34 DEGREES 19 MINUTES 18 SECONDS WEST FOR A DISTANCE OF 12.74 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS TEMPORARY CONSTRUCTION EASEMENT. THENCE CONTINUING ALONG THE SAID COMMON LINE OF PRESTON AND WHITE NORTH 34 DEGREES 19 MINUTES 18 SECONDS WEST FOR A DISTANCE OF 5.66 FEET TO A POINT; SAID POINT BEING THE SOUTHERN EDGE OF PAVEMENT OF N.C. HIGHWAY 42. THENCE ALONG THE SAID EDGE OF PAVEMENT THE FOLLOWING FIVE COURSES AND DISTANCES:

NORTH 70 DEGREES 25 MINUTES 09 SECONDS EAST FOR 121.09 FEET TO A POINT;

NORTH 71 DEGREES 06 MINUTES 06 SECONDS EAST FOR 52.62 FEET TO A POINT;

NORTH 70 DEGREES 41 MINUTES 19 SECONDS EAST FOR 438.08 FEET TO A POINT;

NORTH 70 DEGREES 54 MINUTES 36 SECONDS EAST FOR 182.50 FEET TO A POINT;

NORTH 70 DEGREES 52 MINUTES 49 SECONDS EAST FOR 241.06 FEET TO A POINT ON THE COMMON PROPERTY LINE OF MATTHEW CECIL AND ALLISON K. MEYER AS RECORDED IN DEED BOOK 2078 PAGE 631 AND BOOK OF MAPS 2023 PAGE 117. THENCE ALONG THE SAID COMMON PROPERTY LINE SOUTH 02 DEGREES 03 MINUTES 53 SECONDS WEST FOR A DISTANCE OF 10.88 FEET TO AN EXISTING IRON PIPE. THENCE CONTINUING ALONG THE SAID COMMON PROPERTY LINE SOUTH 02 DEGREES 03 MINUTES 53 SECONDS WEST FOR A DISTANCE OF 6.88 FEET TO A POINT; SAID POINT BEING ON THE NORTHERN LINE OF THE ABOVE-DESCRIBED PERMANENT UTILITY EASEMENT #2. THENCE LEAVING THE SAID COMMON PROPERTY LINE ALONG THE NORTHERN LINE OF PERMANENT UTILILTY EASEMENT #2 THE FOLLOWING SEVEN COURSES AND DISTANCES:

SOUTH 72 DEGREES 42 MINUTES 45 SECONDS WEST FOR 215.02 FEET TO A POINT;

SOUTH 71 DEGREES 37 MINUTES 18 SECONDS WEST FOR 518.34 FEET TO A POINT;

AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 596.45 FEET, AN ARC LENGTH OF 34.85 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 70 DEGREES 45 MINUTES 46 SECONDS WEST FOR 34.84 FEET TO A POINT;

SOUTH 69 DEGREES 54 MINUTES 14 SECONDS WEST FOR 173.46 FEET TO A POINT;

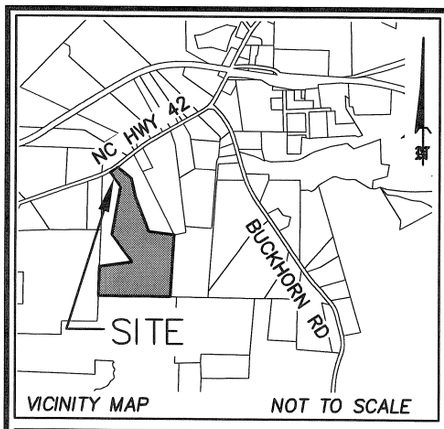
AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 555.03 FEET, AN ARC LENGTH OF 21.33 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 70 DEGREES 15 MINUTES 08 SECONDS WEST FOR 21.33 FEET TO A POINT;

SOUTH 70 DEGREES 47 MINUTES 59 SECONDS WEST FOR 61.56 FEET TO A POINT;

SOUTH 48 DEGREES 17 MINUTES 59 SECONDS WEST FOR 3.32 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 7,053 SQUARE FEET (0.1619 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 24, 2024.



EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3710969600J, EFFECTIVE 02/02/07 AND MAP NO. 3710969500K, EFFECTIVE 02/02/07.

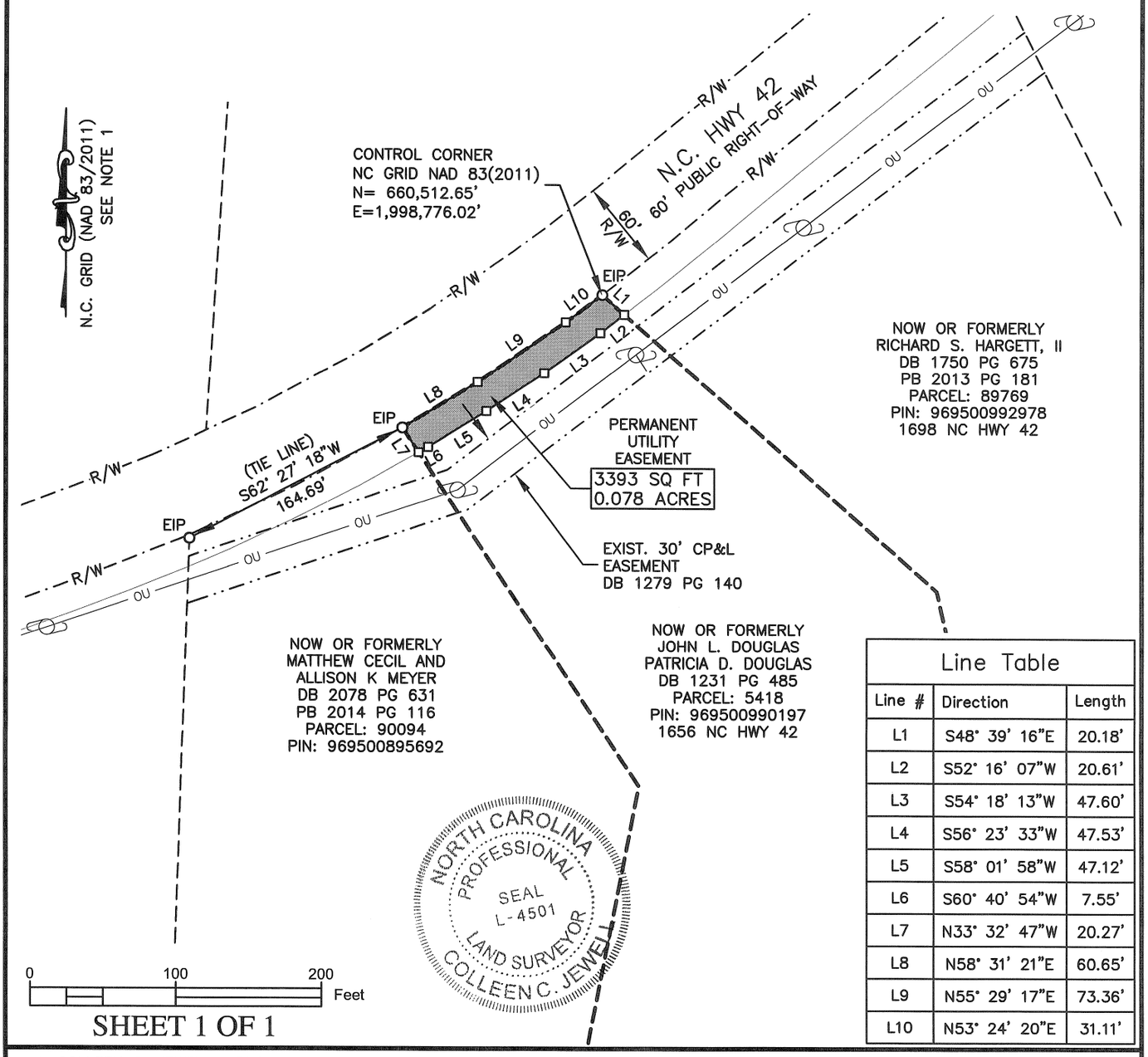
c. 1. *This survey is of an existing parcel of land and does not create a new street or change an existing street;*

Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY *Planning Jurisdiction*

LEGEND

- UTILITY POLE
- EIP – EXISTING IRON PIPE (EIP/REBAR)
- COMPUTED CORNER
- EXISTING CONCRETE MONUMENT (ECM)
- R/W – RIGHT–OF–WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- OU – OVERHEAD UTILITY LINE(S)
- PERMANENT UTILITY EASEMENT (PUE)



Line Table		
Line #	Direction	Length
L1	S48° 39' 16"E	20.18'
L2	S52° 16' 07"W	20.61'
L3	S54° 18' 13"W	47.60'
L4	S56° 23' 33"W	47.53'
L5	S58° 01' 58"W	47.12'
L6	S60° 40' 54"W	7.55'
L7	N33° 32' 47"W	20.27'
L8	N58° 31' 21"E	60.65'
L9	N55° 29' 17"E	73.36'
L10	N53° 24' 20"E	31.11'

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

SHEET 1 OF 1

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 23rd DAY OF Jan A.D.,2024.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122–0197–DOUGLAS.dwg

Surv'd: MR | Drawn: CRB | Chk'd: CCJ | Job No.: 7122 | Date: 01/23/24 | Scale: 1" = 100'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: JOHN L. DOUGLAS & PATRICIA D. DOUGLAS
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

GRANTOR: JOHN L. AND PATRICIA D. DOUGLAS
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN EXISTING IRON PIPE ON THE SOUTHERN RIGHT-OF-WAY OF NC HIGHWAY 42 HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=660,512.65 AND E=1,998,776.02; SAID EXISTING IRON PIPE BEING A COMMON CORNER OF JOHN L. AND PATRICIA D. DOUGLAS AS RECORDED IN DEED BOOK 1231 PAGE 485 AND RICHARD S. HARGETT II, AS RECORDED IN DEED BOOK 1750 PAGE 675 AND PLAT BOOK 2013 PAGE 181 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS. THENCE LEAVING THE SAID SOUTHERN RIGHT-OF-WAY ON N.C. 42 ALONG THE COMMON PROPERTY LINE OF DOUGLAS AND HARGETT SOUTH 48 DEGREES 39 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 20.18 FEET TO A POINT. THENCE LEAVING THE SAID COMMON PROPERTY LINE SOUTH 52 DEGREES 16 MINUTES 07 SECONDS WEST FOR A DISTANCE OF 20.61 FEET TO A POINT. THENCE SOUTH 54 DEGREES 18 MINUTES 13 SECONDS WEST FOR A DISTANCE OF 47.60 FEET TO A POINT. THENCE SOUTH 56 DEGREES 23 MINUTES 33 SECONDS WEST FOR A DISTANCE OF 47.53 FEET TO A POINT. THENCE SOUTH 58 DEGREES 01 MINUTES 58 SECONDS WEST FOR A DISTANCE OF 47.12 FEET TO A POINT. THENCE SOUTH 60 DEGREES 40 MINUTES 54 SECONDS WEST FOR A DISTANCE OF 7.55 FEET TO A POINT ON THE COMMON PROPERTY LINE OF JOHN L. AND PATRICIA D. DOUGLAS AS REFERENCED ABOVE AND MATTHEW CECIL AND ALLISON K MEYER AS RECORDED IN DEED BOOK 2078 PAGE 631 AND PLAT BOOK 2014 PAGE 116. THENCE ALONG THE SAID COMMON PROPERTY LINE NORTH 33 DEGREES 32 MINUTES 47 SECONDS WEST FOR A DISTANCE OF 20.27 FEET TO AN EXISTING IRON PIPE MARKING THE SAID COMMON CORNER ON THE SOUTHERN RIGHT-OF-WAY OF NC HIGHWAY 42. THENCE ALONG THE SOUTHERN RIGHT-OF-WAY OF NC HIGHWAY 42 THE FOLLOW THREE BEARINGS AND DISTANCES:

NORTH 58 DEGREES 31 MINUTES 21 SECONDS EAST FOR 60.65 FEET;

NORTH 55 DEGREES 29 MINUTES 17 SECONDS EAST FOR 73.36 FEET;

NORTH 53 DEGREES 24 MINUTES 20 SECONDS EAST FOR 31.11 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 3,393 SQUARE FEET IN AREA (0.078 ACRES). REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 23, 2024.

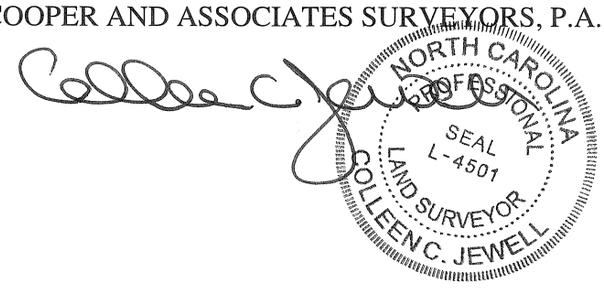
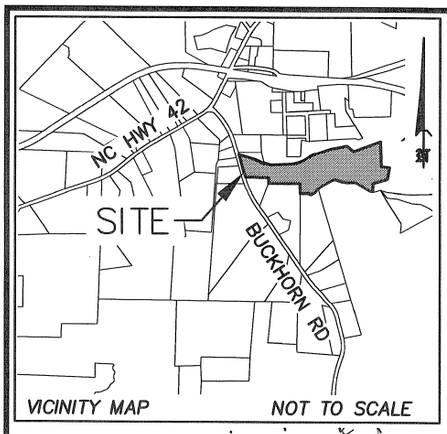


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720060600K, EFFECTIVE 02/02/07.

c. 4. This survey is of a proposed easement for public utility as defined in G.S. 62–3.

Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY Planning Jurisdiction

N.C. GRID (NAD 83/2011) SEE NOTE 1

60' R/W

R/W

EP

OU

REBAR

PERMANENT UTILITY EASEMENT (2) WITHIN R/W

TEMPORARY CONSTRUCTION EASEMENT WITHIN R/W

PERMANENT UTILITY EASEMENT (1) OUTSIDE OF R/W

NOW OR FORMERLY
SSF PROPERTIES LLC
DB 1817 PG 643
PB 2013 PG 10
PARCEL: 89636
PIN: 060600100788
243 BUCKHORN RD

NOW OR FORMERLY
GLENNA GRIFFIN AND
NICHOLAS FRANCOISE
A.K.A. NICHOLAS FRANCIOSE
DB 1747 PG 1145
PB 2014 PG 127
PARCEL: 73961
PIN: 060600202511
245 BUCKHORN RD

NOW OR FORMERLY
JASON E. BURBEE AND
JULIE A. BURBEE
DB 1771 PG 324
PB 2014 PG 79
PARCEL: 5443
PIN: 06060010----
273 BUCKHORN RD

BUCKHORN RD
60' PUBLIC RIGHT–OF–WAY

MN IN PIPE

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

LEGEND

- ● – IRON PIPE SET (IPS)
- EP – EDGE OF PAVEMENT
- UTILITY POLE O – EXISTING IRON PIPE (EIP/REBAR)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- ——·-R/W-·——·—— RIGHT–OF–WAY
- EXISTING PROPERTY LINE
- – – – – – – – PROPERTY LINE NOT SURVEYED
- —— OU —— OVERHEAD UTILITY LINE(S)
- PERMANENT UTILITY EASEMENT (PUE)
- TEMPORARY CONSTRUCTION EASEMENT (TCE)

REVISIONS:
2/24/25 – REVISED CONTROL CORNER.
5/08/25 – REVISED OWNER NAME.

0 100 200 Feet

SHEET 1 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 8th DAY OF May A.D., 2025

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122–2511–GRIFFIN.dwg

Surv'd: MR | Drawn: CRB | Chk'd: CCJ | Job No.: 7122 | Date: 01/16/24 | Scale: 1" = 100'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: GLENNA GRIFFIN & NICHOLAS FRANCOISE A.K.A. NICHOLAS FRANCIOSE
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A

Line Table		
Line #	Direction	Length
L1	N18° 31' 19"W	9.66'
L2	S73° 36' 49"E	23.41'
L3	S15° 53' 10"E	89.71'
L4	S22° 11' 16"E	55.45'
L5	S16° 59' 14"E	164.05'
L6	S28° 00' 46"W	14.52'
L7	S17° 55' 54"E	29.59'
L8	N89° 34' 57"W	21.27'
L9	S17° 18' 49"E	43.87'
L10	S16° 52' 51"E	49.08'
L11	S16° 02' 55"E	48.85'
L12	S16° 07' 09"E	49.73'
L13	S16° 03' 41"E	37.90'
L14	S16° 34' 32"E	50.51'

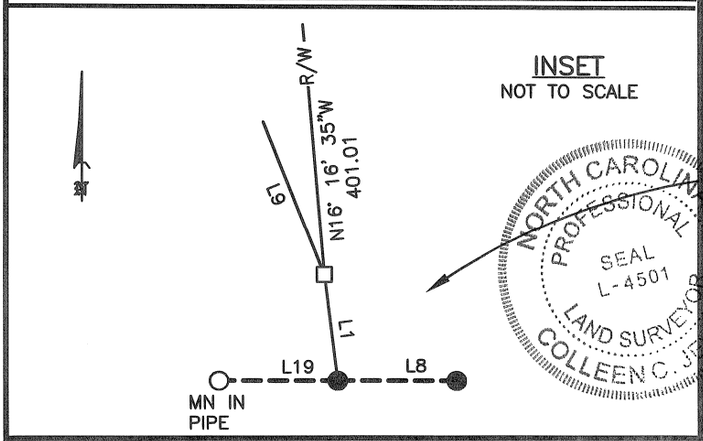
Line Table		
Line #	Direction	Length
L15	S15° 39' 49"E	17.82'
L16	S22° 11' 16"E	21.00'
L17	S15° 51' 32"E	19.07'
L18	S73° 36' 49"E	7.32'
L19	S89° 34' 57"E	10.47'
L20	S89° 34' 47"E	10.46'
L21	N17° 42' 17"W	47.23'
L22	N16° 45' 14"W	49.40'
L23	N15° 47' 22"W	48.92'
L24	N16° 11' 54"W	43.42'
L25	N15° 34' 20"W	48.92'
L26	S15° 54' 14"E	41.41'
L27	S73° 36' 49"E	16.44'

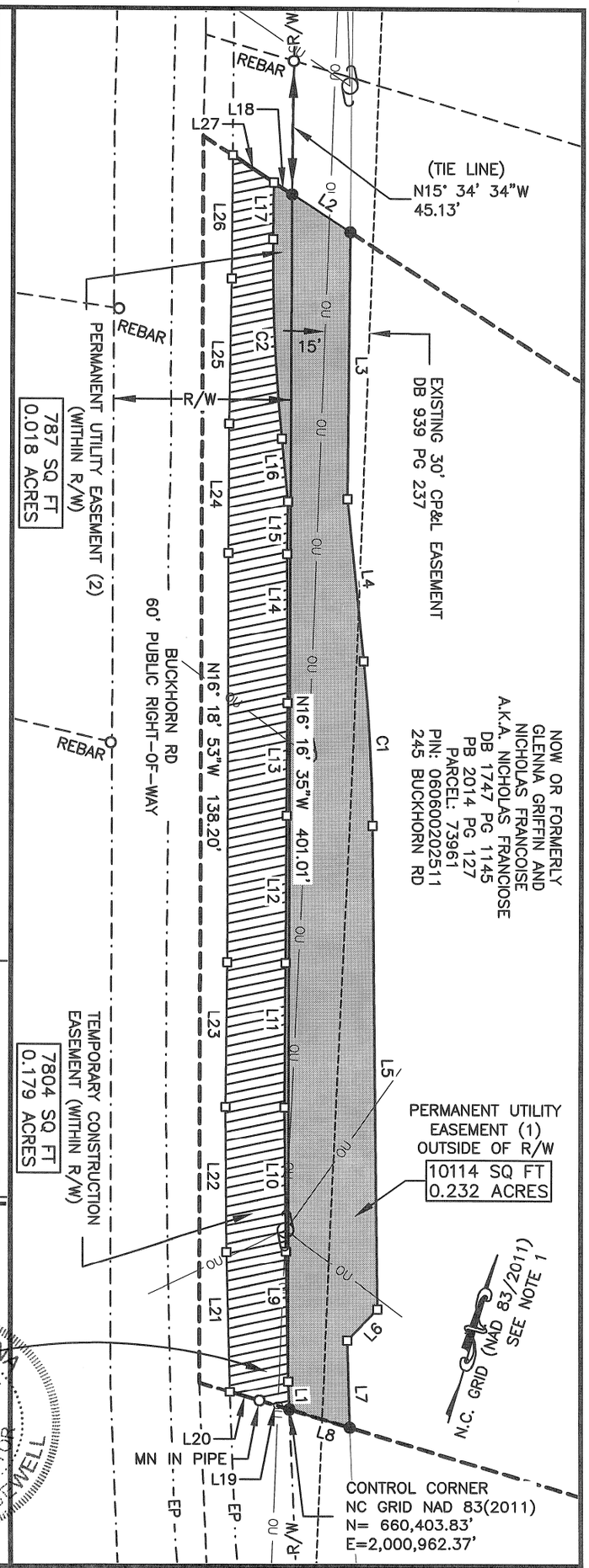
Curve Table				
Curve #	Radius	Length	Chord Direction	Chord Length
C1	610.00'	55.37'	S19° 35' 15"E	55.35'
C2	610.00'	67.38'	S19° 01' 24"E	67.35'

AREA SUMMARY	
PERMANENT UTILITY EASEMENT (1)	10114 (SF)
	0.232 (AC)
PERMANENT UTILITY EASEMENT (2)	787 (SF)
	0.018 (AC)
TEMPORARY CONSTRUCTION EASEMENT	7804 (SF)
	0.179 (AC)
TOTAL	18705 (SF)
	0.429 (AC)

LEGEND

- ● – IRON PIPE SET (IPS)
- EP – EDGE OF PAVEMENT
- UTILITY POLE O – EXISTING IRON PIPE (EIP/REBAR)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- ——·-R/W-·——·—— RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- ——OU—— OVERHEAD UTILITY LINE(S)
- PERMANENT UTILITY EASEMENT (PUE)
- TEMPORARY CONSTRUCTION EASEMENT (TCE)





PAGE 2 OF 2

0 50 100 Feet

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 5TH DAY OF May A.D.,2024

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-2511-GRIFFIN.dwg

Surv'd: MR | Drawn: CRB | Chk'd: CCJ | Job No.: 7122 | Date: 01/15/24 | Scale: 1" = 50'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: GLENNA GRIFFIN & NICHOLAS FRANCOISE A.K.A. NICHOLAS FRANCIOSE
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

GRANTOR: GLENNA GRIFFIN AND NICHOLAS FRANCOISE (A.K.A. NICHOLAS FRANCIOSE)
CHATHAM COUNTY PIN: 060600202511
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT #1

BEGINNING AT AN IRON PIPE SET MARKING THE EASTERN RIGHT-OF-WAY OF BUCKHORN ROAD AND A COMMON CORNER OF GLENNA GRIFFIN AND NICHOLAS FRANCOISE AS RECORDED IN DEED BOOK 1747 PAGE 1145 AND BOOK OF MAPS 2014 PAGE 127 AND JASON E AND JULIE A BURBEE AS RECORDED IN DEED BOOK 1771 PAGE 324 AND BOOK OF MAPS 2014 PAGE 79 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS; SAID IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=660,403.83 AND E=2,000,962.37. THENCE LEAVING THE SAID COMMON LINE ALONG THE SAID EASTERN RIGHT-OF-WAY OF BUCKHORN ROAD NORTH 18 DEGREES 31 MINUTES 19 SECONDS WEST FOR A DISTANCE OF 9.66 FEET TO A POINT. THENCE CONTINUING ALONG THE SAID RIGHT-OF-WAY NORTH 16 DEGREES 16 MINUTES 35 SECONDS WEST FOR A DISTANCE OF 401.01 FEET TO AN IRON PIPE ON THE COMMON LINE OF GRIFFIN AND FRANCOISE AND SSF PROPERTIES, LLC AS RECORDED IN DEED BOOK 1817 PAGE 643 AND BOOK OF MAPS 2013 PAGE 10. THENCE ALONG THE SAID COMMON LINE SOUTH 73 DEGREES 36 MINUTES 49 SECONDS EAST FOR A DISTANCE OF 23.41 FEET TO AN IRON PIPE. THENCE LEAVING THE SAID COMMON LINE SOUTH 15 DEGREES 53 MINUTES 10 SECONDS EAST FOR A DISTANCE OF 89.71 FEET TO A POINT. THENCE SOUTH 22 DEGREES 11 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 55.45 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 610.00 FEET, AN ARC LENGTH OF 55.37 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 19 DEGREES 35 MINUTES 15 SECONDS EAST FOR 55.35 FEET TO A POINT. THENCE SOUTH 16 DEGREES 59 MINUTES 14 SECONDS EAST FOR A DISTANCE OF 164.05 FEET TO A POINT. THENCE SOUTH 28 DEGREES 00 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 14.52 FEET TO A POINT. THENCE SOUTH 17 DEGREES 55 MINUTES 54 SECONDS EAST FOR A DISTANCE OF 29.59 FEET TO AN IRON PIPE ON THE SAID COMMON LINE OF GRIFFIN AND FRANCOISE AND BURBEE. THENCE ALONG THE SAID COMMON LINE NORTH 89 DEGREES 34 MINUTES 57 SECONDS WEST FOR A DISTANCE OF 21.27 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 10,114 SQUARE FEET (0.232 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 15, 2024 AND REVISED FEBRUARY 24, 2025 AND MAY 8, 2025.

PERMANENT UTILITY EASEMENT #2

COMMENCING AT AN IRON PIPE SET MARKING THE EASTERN RIGHT-OF-WAY OF BUCKHORN ROAD AND A COMMON CORNER OF GLENNA GRIFFIN AND NICHOLAS FRANCOISE AS RECORDED IN DEED BOOK 1747 PAGE 1145 AND BOOK OF MAPS 2014 PAGE 127 AND JASON E AND JULIE A BURBEE AS RECORDED IN DEED BOOK 1771 PAGE 324 AND BOOK OF MAPS 2014 PAGE 79 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS; SAID IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=660,403.83 AND E=2,000,962.37. THENCE LEAVING THE SAID COMMON LINE ALONG THE SAID EASTERN RIGHT-OF-WAY

OF BUCKHORN ROAD NORTH 18 DEGREES 31 MINUTES 19 SECONDS WEST FOR A DISTANCE OF 9.66 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT. THENCE NORTH 17 DEGREES 18 MINUTES 49 SECONDS WEST FOR A DISTANCE OF 43.87 FEET TO A POINT. THENCE NORTH 16 DEGREES 52 MINUTES 51 SECONDS WEST FOR A DISTANCE OF 49.08 FEET TO A POINT. THENCE NORTH 16 DEGREES 02 MINUTES 55 SECONDS WEST FOR A DISTANCE OF 48.85 FEET TO A POINT. THENCE NORTH 16 DEGREES 07 MINUTES 09 SECONDS WEST FOR A DISTANCE OF 49.73 FEET TO A POINT. THENCE NORTH 16 DEGREES 03 MINUTES 41 SECONDS WEST FOR A DISTANCE OF 37.90 FEET TO A POINT. THENCE NORTH 16 DEGREES 34 MINUTES 32 SECONDS WEST FOR A DISTANCE OF 50.51 FEET TO A POINT. THENCE NORTH 15 DEGREES 39 MINUTES 49 SECONDS WEST FOR A DISTANCE OF 17.82 FEET TO A POINT. THENCE NORTH 22 DEGREES 11 MINUTES 16 SECONDS WEST FOR A DISTANCE OF 21.00 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 610.00 FEET, AN ARC LENGTH OF 67.38 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 19 DEGREES 01 MINUTES 24 SECONDS WEST FOR 67.35 FEET TO A POINT. THENCE NORTH 15 DEGREES 51 MINUTES 32 SECONDS WEST FOR A DISTANCE OF 19.07 FEET TO A POINT ON THE COMMON LINE OF GRIFFIN AND FRANCOISE AND SSF PROPERTIES, LLC AS RECORDED IN DEED BOOK 1817 PAGE 643 AND BOOK OF MAPS 2013 PAGE 10. THENCE ALONG THE SAID COMMON LINE SOUTH 73 DEGREES 36 MINUTES 49 SECONDS EAST FOR A DISTANCE OF 7.32 FEET TO AN IRON PIPE ON THE EASTERN RIGHT-OF-WAY OF BUCKHORN ROAD. THENCE ALONG THE SAID RIGHT-OF-WAY SOUTH 16 DEGREES 16 MINUTES 35 SECONDS EAST FOR A DISTANCE OF 401.01 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 787 SQUARE FEET (0.018 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 15, 2024 AND REVISED FEBRUARY 24, 2025 AND MAY 8, 2025.

TEMPORARY CONSTRUCTION EASEMENT

BEGINNING AT AN IRON PIPE SET MARKING THE EASTERN RIGHT-OF-WAY OF BUCKHORN ROAD AND A COMMON CORNER OF GLENNA GRIFFIN AND NICHOLAS FRANCOISE AS RECORDED IN DEED BOOK 1747 PAGE 1145 AND BOOK OF MAPS 2014 PAGE 127 AND JASON E AND JULIE A BURBEE AS RECORDED IN DEED BOOK 1771 PAGE 324 AND BOOK OF MAPS 2014 PAGE 79 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS; SAID IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=660,403.83 AND E=2,000,962.37. THENCE ALONG THE SAID COMMON LINE NORTH 89 DEGREES 34 MINUTES 57 SECONDS WEST FOR A DISTANCE OF 10.47 FEET TO AN EXISTING IRON PIPE. THENCE CONTINUING ALONG THE SAID COMMON LINE NORTH 89 DEGREES 34 MINUTES 47 SECONDS WEST FOR A DISTANCE OF 10.46 FEET TO A POINT IN THE RIGHT-OF-WAY OF BUCKHORN ROAD ON THE EDGE OF PAVEMENT. THENCE LEAVING THE SAID COMMON LINE ALONG THE EDGE OF PAVEMENT THE FOLLOWING SEVEN COURSES AND DISTANCES:

NORTH 17 DEGREES 42 MINUTES 17 SECONDS WEST FOR 47.23 FEET;

NORTH 16 DEGREES 45 MINUTES 14 SECONDS WEST FOR 49.40 FEET;

NORTH 15 DEGREES 47 MINUTES 22 SECONDS WEST FOR 48.92 FEET;

NORTH 16 DEGREES 18 MINUTES 53 SECONDS WEST FOR 138.20 FEET;

NORTH 16 DEGREES 11 MINUTES 54 SECONDS WEST FOR 43.42 FEET;

NORTH 15 DEGREES 34 MINUTES 20 SECONDS WEST FOR 48.92 FEET;

NORTH 15 DEGREES 54 MINUTES 14 SECONDS WEST FOR 41.41 FEET TO A POINT ON THE COMMON LINE OF GRIFFIN AND FRANCOISE AND SSF PROPERTIES, LLC AS RECORDED IN DEED BOOK 1817 PAGE 643 AND BOOK OF MAPS 2013 PAGE 10. THENCE ALONG THE SAID COMMON LINE SOUTH 73 DEGREES 36 MINUTES 49 SECONDS EAST FOR A DISTANCE OF 16.44 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE SOUTH 15 DEGREES 51 MINUTES 32 SECONDS EAST FOR A DISTANCE OF 19.07 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 610.00 FEET, AN ARC LENGTH OF 67.38 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 19 DEGREES 01 MINUTES 24 SECONDS EAST FOR 67.35 FEET TO A POINT. THENCE SOUTH 22 DEGREES 11 MINUTES 16 SECONDS EAST FOR A DISTANCE OF 21.00 FEET TO A POINT. THENCE SOUTH 15 DEGREES 39 MINUTES 49 SECONDS EAST FOR A DISTANCE OF 17.82 FEET TO A POINT. THENCE SOUTH 16 DEGREES 34 MINUTES 32 SECONDS EAST FOR A DISTANCE OF 50.51 FEET TO A POINT. THENCE SOUTH 16 DEGREES 03 MINUTES 41 SECONDS EAST FOR A DISTANCE OF 37.90 FEET TO A POINT. THENCE SOUTH 16 DEGREES 07 MINUTES 09 SECONDS EAST FOR A DISTANCE OF 49.73 FEET TO A POINT. THENCE SOUTH 16 DEGREES 02 MINUTES 55 SECONDS EAST FOR A DISTANCE OF 48.85 FEET TO A POINT. THENCE SOUTH 16 DEGREES 52 MINUTES 51 SECONDS EAST FOR A DISTANCE OF 49.08 FEET TO A POINT. THENCE SOUTH 17 DEGREES 18 MINUTES 49 SECONDS EAST FOR A DISTANCE OF 43.87 FEET TO A POINT. THENCE SOUTH 18 DEGREES 31 MINUTES 19 SECONDS EAST FOR A DISTANCE OF 9.66 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 7,804 SQUARE FEET (0.179 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 15, 2024 AND REVISED FEBRUARY 24, 2025 AND MAY 8, 2025.



GRANTOR: DAVID SCOTT WINSTON AND LAUREN ANNE WINSTON
CHATHAM COUNTY PIN: 060500292091
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN EXISTING IRON PIPE ON THE EASTERN RIGHT-OF-WAY OF BUCKHORN RD, A 60' PUBLIC RIGHT-OF-WAY, HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=658,815.38 AND E=2,001,969.14 AND BEING A COMMON CORNER OF DAVID SCOTT AND LAUREN ANNE WINSTON AS RECORDED IN DEED BOOK 1682 PAGE 329 AND PLAT BOOK 2012 PAGE 258 AND WILLIAM RODNEY PERKINS AS RECORDED IN DEED BOOK 830 PAGE 337 AND PLAT BOOK 2000 PAGE 232 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS. THENCE LEAVING THE SAID RIGHT-OF-WAY ALONG THE COMMON LINE OF WINSTON AND PERKINS NORTH 42 DEGREES 21 MINUTES 56 SECONDS EAST FOR A DISTANCE OF 3.67 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE THE FOLLOWING THREE BEARINGS AND DISTANCES:

SOUTH 35 DEGREES 19 MINUTES 53 SECONDS EAST FOR 35.99 FEET TO A POINT;

SOUTH 37 DEGREES 05 MINUTES 16 SECONDS EAST FOR 23.26 FEET TO A POINT;

SOUTH 35 DEGREES 49 MINUTES 08 SECONDS EAST FOR 17.89 FEET TO A POINT ON THE COMMON LINE OF WINSTON REFERENCED ABOVE AND DAVID SCOTT AND LAUREN ANNE WINSTON AS RECORDED IN DEED BOOK 2261 PAGE 1126 AND PLAT BOOK 2017 PAGE 97. THENCE ALONG THE SAID COMMON LINE SOUTH 70 DEGREES 41 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 4.98 FEET TO AN EXISTING IRON REBAR MARKING THE COMMON CORNER OF WINSTON AND WINSTON AND THE EASTERN RIGHT-OF-WAY OF BUCKHORN RD. THENCE ALONG THE SAID RIGHT-OF-WAY AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 2,329.01 FEET, AN ARC LENGTH OF 28.57 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 35 DEGREES 17 MINUTES 32 SECONDS WEST FOR 28.57 FEET TO A POINT. THENCE CONTINUING ALONG THE SAID RIGHT-OF-WAY NORTH 34 DEGREES 56 MINUTES 26 SECONDS WEST FOR A DISTANCE OF 46.40 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 312 SQUARE FEET (0.007 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 15, 2024.

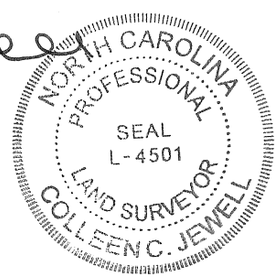
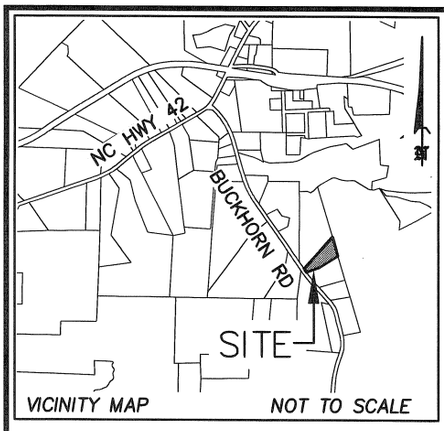


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720060400L, EFFECTIVE 02/02/07.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY Planning Jurisdiction

LEGEND

- UTILITY POLE
- O – EXISTING IRON PIPE (EIP/REBAR)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- R/W – RIGHT–OF–WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- OU – OVERHEAD UTILITY LINE(S)
- PERMANENT UTILITY EASEMENT

NOW OR FORMERLY
DUKE ENERGY PROGRESS LLC
DB 1811 PG 572
PARCEL: 62379
PIN: 060600859938

N.C. GRID (NAD 83/2011)
SEE NOTE 1

NOW OR FORMERLY
WILLIAM RODNEY PERKINS
DB 830 PG 337
PB 2000 PG 232
PARCEL: 76572
PIN: 060500291214
593 BUCKHORN RD

NOW OR FORMERLY
DAVID SCOTT WINSTON AND
LAUREN ANNE WINSTON
DB 1682 PG 329
PB 2012 PG 258
PARCEL: 89619
PIN: 060500292091
647 BUCKHORN RD

EIP

(TIE LINE)
N34° 32' 21"W
767.27'

CONTROL CORNER
NC GRID NAD 83(2011)
N= 658,815.38'
E=2,001,969.14'

60' R/W

PERMANENT UTILITY EASEMENT
312 SQ FT
0.007 ACRES

L1
L2
L3
L4
L5
L6
C1

EIP
REBAR

NOW OR FORMERLY
DAVID SCOTT WINSTON AND
LAUREN ANNE WINSTON
DB 2261 PG 1126
PB 2017 PG 97
PARCEL: 90261
PIN: 060500283669

60' PUBLIC RIGHT–OF–WAY
BUCKHORN RD

(TIE LINE)
S39° 36' 51"E
336.96'

EIP

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 100 200 Feet

SHEET 1 OF 1

Line Table		
Line #	Direction	Length
L1	N42° 21' 56"E	3.67'
L2	S35° 19' 53"E	35.99'
L3	S37° 05' 16"E	23.26'
L4	S35° 49' 08"E	17.89'
L5	S70° 41' 46"W	4.98'
L6	N34° 56' 26"W	46.40'

Curve Table				
Curve #	Radius	Length	Chord Direction	Chord Length
C1	2329.01'	28.57'	N35° 17' 32"W	28.57'

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 15th DAY OF Jan A.D.,2024.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122–2091–WINSTON.dwg

Surv'd: MR | Drawn: CRB | Chk'd: CCJ | Job No.: 7122 | Date: 01/15/24 | Scale: 1" = 100'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: DAVID SCOTT WINSTON AND & LAUREN ANNE WINSTON
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

GRANTOR: DAVID SCOTT WINSTON AND LAUREN ANNE WINSTON
CHATHAM COUNTY PIN: 060500283669
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN EXISTING IRON PIPE ON THE EASTERN RIGHT-OF-WAY OF BUCKHORN RD, A 60' PUBLIC RIGHT-OF-WAY, HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=658,494.49 AND E=2,002,227.03 AND BEING A COMMON CORNER OF DAVID SCOTT AND LAUREN ANNE WINSTON AS RECORDED IN DEED BOOK 2261 PAGE 1126 AND PLAT BOOK 2017 PAGE 97 AND ARTHUR C. MUSSELMAN,III AND SHARON COOPER MUSSELMAN AS RECORDED IN DEED BOOK 1767 PAGE 403 AND PLAT BOOK 2017 PAGE 97 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS. THENCE ALONG THE SAID RIGHT-OF-WAY NORTH 42 DEGREES 13 MINUTES 09 SECONDS WEST FOR A DISTANCE OF 69.99 FEET TO A POINT. THENCE CONTINUING ALONG THE SAID RIGHT-OF-WAY AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 2,328.37 FEET, AN ARC LENGTH OF 267.21 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 38 DEGREES 55 MINUTES 54 SECONDS WEST FOR 267.06 FEET TO AN EXISTING IRON REBAR MARKING A COMMON CORNER WITH WINSTON AS REFERENCED ABOVE AND DAVID SCOTT AND LAUREN ANNE WINSTON AS RECORDED IN DEED BOOK 1682 PAGE 329 AND PLAT BOOK 2012 PAGE 258. THENCE LEAVING THE SAID RIGHT-OF-WAY ALONG THE COMMON LINE OF WINSTON AND WINSTON NORTH 70 DEGREES 41 MINUTES 46 SECONDS EAST FOR A DISTANCE OF 4.98 FEET TO A POINT. THENCE LEAVING THE SAID RIGHT-OF-WAY THE FOLLOWING SEVEN BEARINGS AND DISTANCES:

SOUTH 36 DEGREES 23 MINUTES 31 SECONDS EAST FOR 48.97 FEET TO A POINT;

SOUTH 38 DEGREES 33 MINUTES 00 SECONDS EAST FOR 50.04 FEET TO A POINT;

SOUTH 38 DEGREES 24 MINUTES 33 SECONDS EAST FOR 47.35 FEET TO A POINT;

SOUTH 39 DEGREES 40 MINUTES 04 SECONDS EAST FOR 47.77 FEET TO A POINT;

SOUTH 40 DEGREES 36 MINUTES 01 SECONDS EAST FOR 46.81 FEET TO A POINT;

SOUTH 41 DEGREES 24 MINUTES 13 SECONDS EAST FOR 47.32 FEET TO A POINT;

SOUTH 41 DEGREES 39 MINUTES 17 SECONDS EAST FOR 48.86 FEET TO A POINT ON THE SAID COMMON LINE OF WINSTON AND MUSSELMAN. THENCE ALONG THE SAID COMMON LINE SOUTH 73 DEGREES 34 MINUTES 42 SECONDS WEST FOR A DISTANCE OF 4.41 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 1,727 SQUARE FEET (0.040 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED JANUARY 15, 2024.

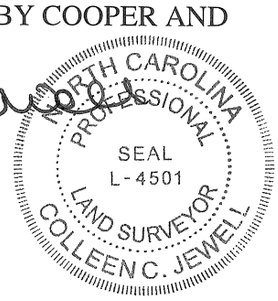
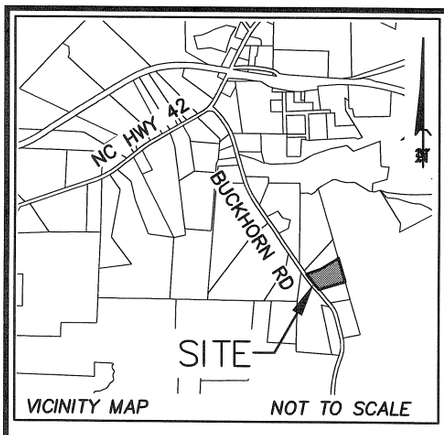


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720060400L, EFFECTIVE 02/02/07.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

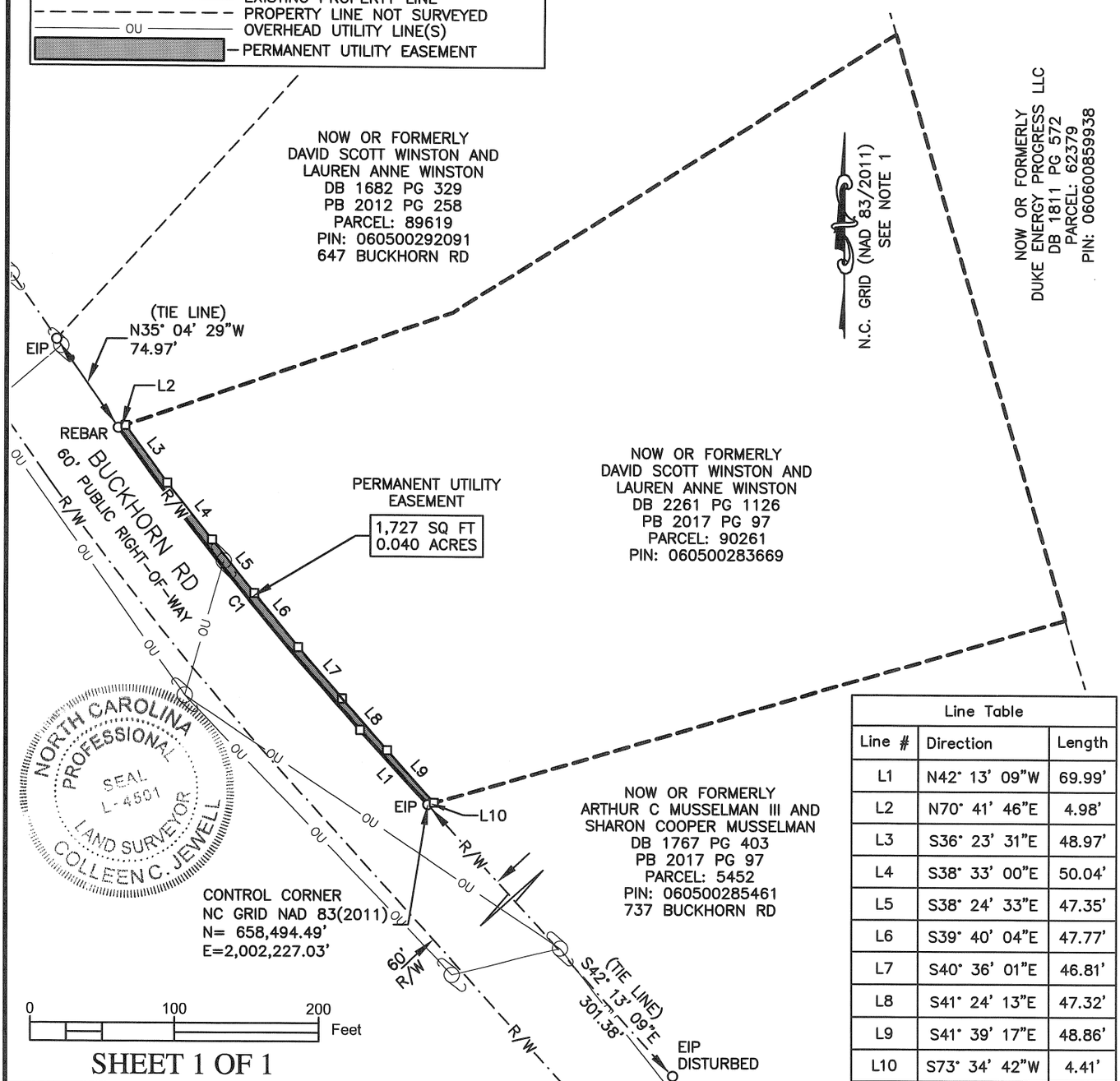
Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY Planning Jurisdiction

LEGEND

- UTILITY POLE
- O – EXISTING IRON PIPE (EIP/REBAR)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- R/W – RIGHT–OF–WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- OU – OVERHEAD UTILITY LINE(S)
- PERMANENT UTILITY EASEMENT

Curve Table				
Curve #	Radius	Length	Chord Direction	Chord Length
C1	2328.37'	267.21'	N38° 55' 54"W	267.06'



Line Table		
Line #	Direction	Length
L1	N42° 13' 09"W	69.99'
L2	N70° 41' 46"E	4.98'
L3	S36° 23' 31"E	48.97'
L4	S38° 33' 00"E	50.04'
L5	S38° 24' 33"E	47.35'
L6	S39° 40' 04"E	47.77'
L7	S40° 36' 01"E	46.81'
L8	S41° 24' 13"E	47.32'
L9	S41° 39' 17"E	48.86'
L10	S73° 34' 42"W	4.41'

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

SHEET 1 OF 1

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 15TH DAY OF JAN A.D.,2024.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | *AREAS COMPUTED BY COORDINATES.* | *FILE NAME:* 7122–3669–WINSTON.dwg

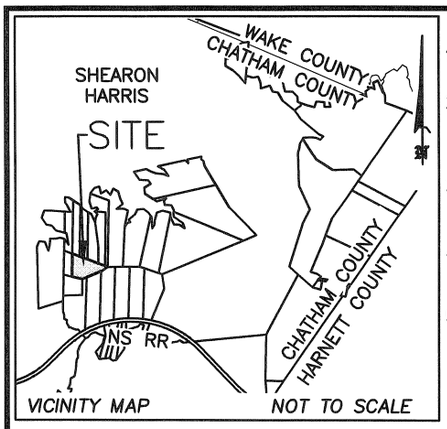
Surv'd: MR | *Drawn:* CRB | *Chk'd:* CCJ | *Job No.:* 7122 | *Date:* 01/15/24 | *Scale:* 1" = 100'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: DAVID SCOTT WINSTON AND LAUREN ANNE WINSTON
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

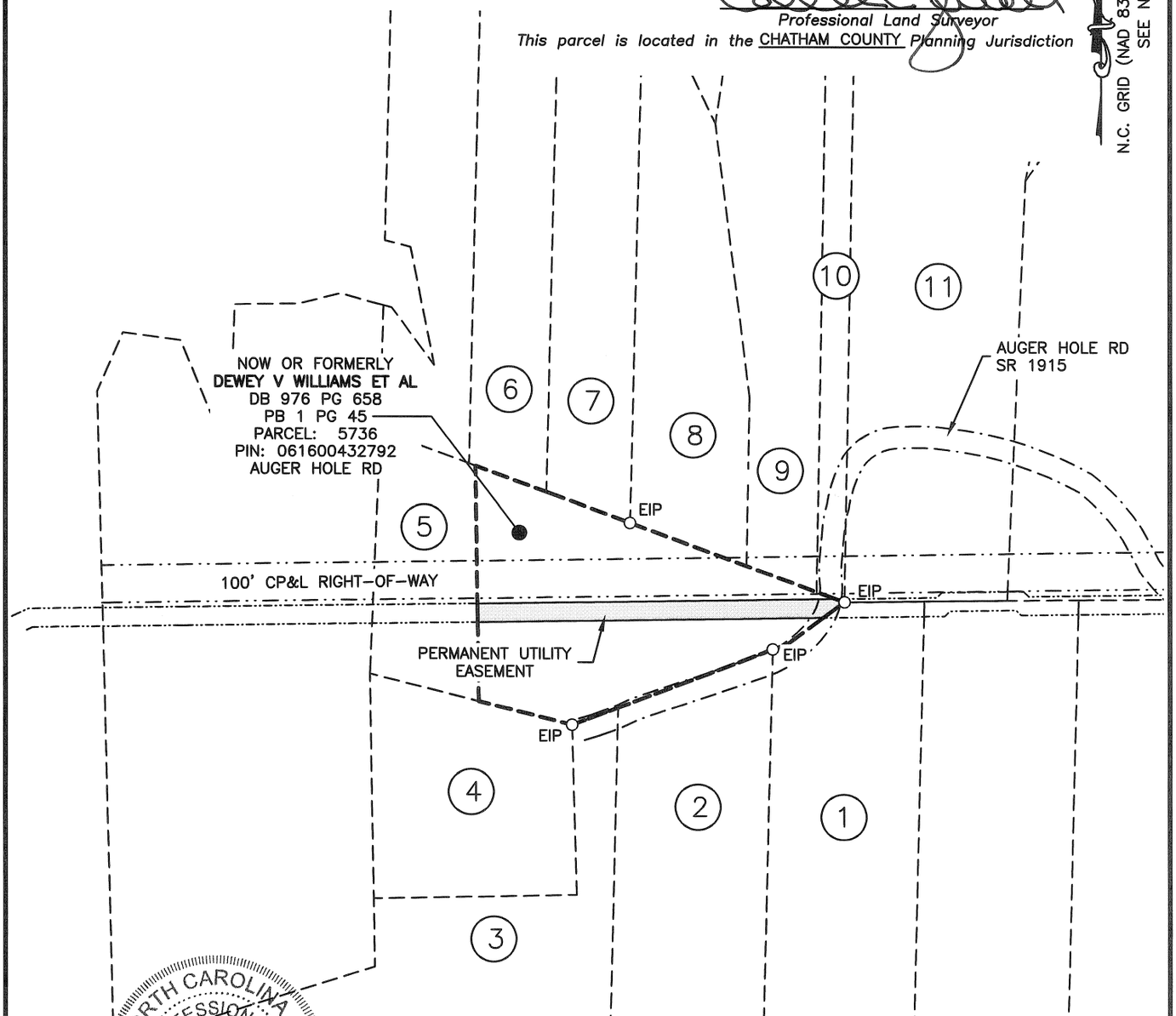
5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720060600K, EFFECTIVE FEBRUARY 02, 2007.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY *Planning Jurisdiction*

N.C. GRID (NAD 83/2011) SEE NOTE 1



ADJOINING PROPERTY OWNERS				
#	OWNER	DEED/ESTATE FILE	PLAT BOOK/PAGE	PARCEL #
1	WILLIAM E TANT	EF 23E PG 345	PC A PG 450	63210
2	DEWEY V WILLIAMS ET AL	DB 976 PG 660	PC A PG 450	63208
3	RICHARD W SNEAD JR	DB 1621 PG 361	PC A PG 450	05747
4	RICHARD W SNEAD JR	DB 1621 PG 361	PB 1 PG 45	05739
5	WILLIAM E TANT	EF 23E PG 345	PB 1 PG 45	05471
6	DEWEY V WILLIAMS ET AL	DB 976 PG 660	PC A PG 450	63213
7	RICHARD W SNEAD JR	DB 1621 PG 361	PC A PG 450	63214
8	DANNY L TUTOR ET AL	EF 04E PG 0028	PC A PG 450	63215
9	JERALD C DICKINSON TRUSTEE	DB 2022 PG 486	PC A PG 450	63216
10	JERALD C DICKINSON TRUSTEE	DB 2022 PG 488	PC A PG 450	63217
11	JERALD C DICKINSON TRUSTEE	DB 2022 PG 486	PC A PG 450	05733

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 400 800 Feet

SHEET 1 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 13 DAY OF [illegible] A.D., 2023

SURVEYOR

L–4501
LICENSE NUMBER

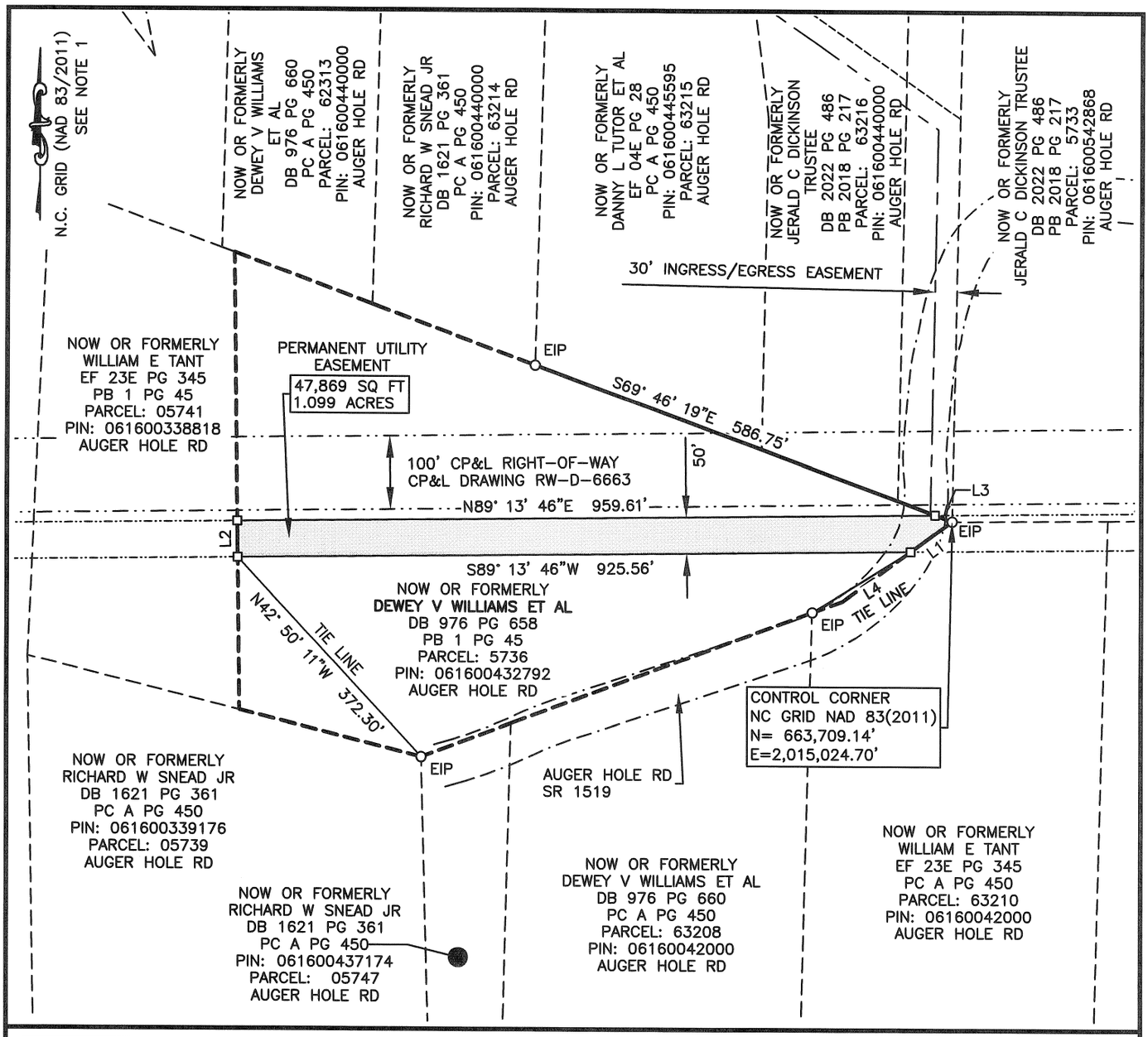
ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | *AREAS COMPUTED BY COORDINATES.* | *FILE NAME:* 7122–WILLIAMS–2792–EASE.dwg

Surv'd: RAC	*Drawn:* MR	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 10/17/23	*Scale:* 1" = 400'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: DEWEY V. WILLIAMS, ET AL.
GRANTEE: TOWN OF FUQUAY–VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA



LEGEND

- ○ – EXISTING IRON PIPE (EIP)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- – POWER POLE
- ——— OU ——— OVERHEAD UTILITY LINE(S)
- ——— R/W ——— RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- – PERMANENT UTILITY EASEMENT

AREA SUMMARY		
PERMANENT UTILITY EASEMENT	47,869	(SF)
	1.099	(AC)
TOTAL	47,869	(SF)
	1.099	(AC)

Line Table		
Line #	Direction	Length
L1	S53° 45' 08"W	70.63'
L2	N0° 46' 09"W	50.00'
L3	S69° 46' 19"E	25.13'
L4	N58° 07' 22"E	159.28'

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 200 400 Feet

SHEET 2 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M.
WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17 DAY OF OCT A.D., 2023

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-WILLIAMS-2792-EASE.dwg

Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 200'

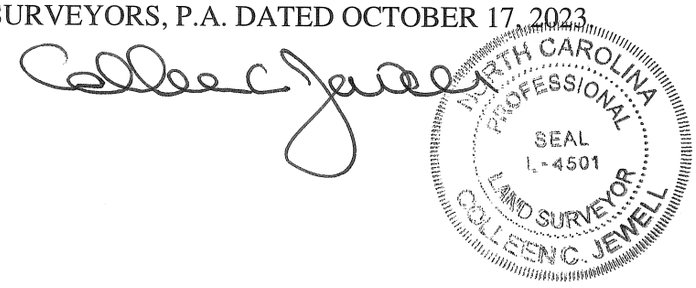
COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: DEWEY V. WILLIAMS, ET AL.
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

GRANTOR: DEWEY V. WILLIAMS, ET AL
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN EXISTING IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=663,709.14 AND E=2,015,024.70; SAID EXISTING IRON PIPE BEING A COMMON CORNER OF THE DEWEY V. WILLIAMS ET AL PROPERTY AS RECORDED IN DEED BOOK 976 PAGE 658 AND THE JERALD C. DICKINSON TRUSTEE PROPERTY AS RECORDED IN DEED BOOK 2022 PAGE 486 AND BOOK OF MAPS 2018 PAGE 217 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS. THENCE SOUTH 53 DEGREES 45 MINUTES 08 SECONDS WEST FOR A DISTANCE OF 70.63 FEET TO A POINT; SAID POINT BEING NORTH 58 DEGREES 07 MINUTES 22 SECONDS EAST A DISTANCE OF 159.28 FEET FROM AN EXISTING IRON PIPE ON THE SOUTHERN LINE OF THE DEWEY V. WILLIAMS ET AL PROPERTY AND THE NORTHERN LINE OF AUGER HOLD RD (SR1519). THENCE SOUTH 89 DEGREES 13 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 925.56 FEET TO A POINT ON THE COMMON PROPERTY LINE WITH WILLIAM E. TANT AS RECORDED IN WILL BOOK 23E PAGE 345. THENCE ALONG THE SAID COMMON PROPERTY LINE NORTH 00 DEGREES 46 MINUTES 09 SECONDS WEST FOR A DISTANCE OF 50.00 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE NORTH 89 DEGREES 13 MINUTES 46 SECONDS EAST FOR A DISTANCE OF 959.61 FEET TO A POINT IN A 30' INGRESS / EGRESS EASEMENT AS SHOWN IN PLAT CABINET A PAGE 450. THENCE SOUTH 69 DEGREES 46 MINUTES 19 SECONDS EAST FOR A DISTANCE OF 25.13 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT CONTAINING 47,869 SQUARE FEET (1.099 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.



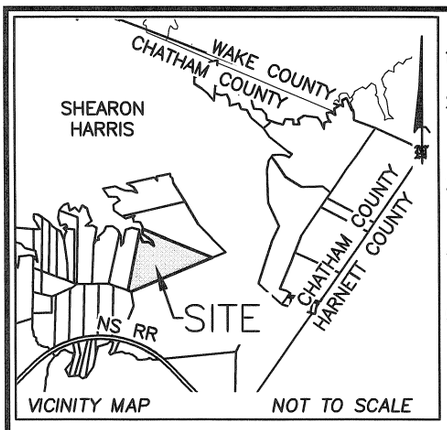
GRANTOR: DANNY LEE TUTOR ET AL
CHATHAM COUNTY PIN: 061600742464
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT A POINT ON THE COMMON LINE OF THE DANNY LEE TUTOR ET AL PROPERTY AS RECORDED IN WILL BOOK EF004E-0028 AND DB I-J PAGE 513 AND PLAT BOOK 1 PAGE 45 IN THE CHATHAM COUNTY REGISTER OF DEEDS AND THE DUKE ENERGY PROGRESS, LLC PROPERTY AS RECORDED IN DEED BOOK 1811 PAGE 572; SAID POINT HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=663,695.39 AND E=2,017,049.99 AND BEING NORTH 66 DEGREES 37 MINUTES 51 SECONDS EAST A DISTANCE OF 514.61 FEET FROM AN EXISTING IRON PIPE ON THE NORTHERN SIDE OF AUGER HOLE RD (SR1519). THENCE LEAVING THE SAID COMMON LINE SOUTH 89 DEGREES 13 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 536.80 FEET TO A POINT ON THE COMMON LINE WITH TUTOR AS REFERENCED ABOVE AND ANDRA D. DAVIS AS RECORDED IN DEED BOOK 2040 PAGE 496 AND PLAT BOOK 2018 PAGE 217; SAID POINT BEING NORTH 11 DEGREES 26 MINUTES 08 SECONDS EAST A DISTANCE OF 161.80 FEET FROM AN EXISTING IRON PIPE ON THE NORTHERN SIDE OF AUGER HILL RD. THENCE ALONG THE SAID COMMON LINE NORTH 11 DEGREES 26 MINUTES 08 SECONDS EAST FOR A DISTANCE OF 51.16 FEET TO A POINT; SAID POINT BEING SOUTH 11 DEGREES 26 MINUTES 08 SECONDS WEST A DISTANCE OF 1455.00 FEET FROM AN EXISTING IRON PIPE MARKING THE NORTHERN COMMON CORNER OF TUTOR AND DAVIS. THENCE LEAVING THE SAID COMMON LINE NORTH 89 DEGREES 13 MINUTES 46 SECONDS EAST FOR A DISTANCE OF 646.11 FEET TO A POINT ON THE COMMON LINE OF TUTOR AND DUKE ENERGY PROGRESS AS REFERENCED ABOVE; SAID POINT BEING SOUTH 66 DEGREES 37 MINUTES 51 SECONDS WEST A DISTANCE OF 1870.92 FEET FROM AN EXISTING IRON PIPE MARKING THE NORTHERN COMMON CORNER OF TUTOR AND DUKE ENERGY PROGRESS. THENCE ALONG THE SAID COMMON LINE SOUTH 66 DEGREES 37 MINUTES 51 SECONDS WEST FOR A DISTANCE OF 130.12 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 29,573 SQUARE FEET (0.679 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.



EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.
2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.
3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.
4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.
5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720060600K, EFFECTIVE FEBRUARY 02, 2007.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY *Planning Jurisdiction*

NOW OR FORMERLY
DUKE ENERGY PROGRESS LLC
DB 1811 PG 572
PARCEL: 62379
PIN: 060600859938

N.C. GRID (NAD 83/2011)
SEE NOTE 1

EIP

NOW OR FORMERLY
ANDRA D DAVIS
DB 2040 PG 496
PB 2018 PG 217
PARCEL: 93288
PIN: 061600643594
AUGER HOLE RD

NOW OR FORMERLY
DANNY LEE TUTOR ETAL
EF 004E–0028
DB I–J PG 513
PB 1 PG 45
PARCEL: 5737
PIN: 061600742464
AUGER HOLE RD

EIP

PERMANENT UTILITY EASEMENT

100' CP&L RIGHT–OF–WAY

EIP

EIP

NOW OR FORMERLY
DANNY LEE TUTOR ETAL
EF 04–E–28
PB A PG 450
PARCEL: 63222
PIN: 061600622881
AUGER HOLE RD

AUGER HOLE RD
SR 1915

NOW OR FORMERLY
DUKE ENERGY PROGRESS LLC
DB 1811 PG 572
PARCEL: 62379
PIN: 060600859938

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 400 800 Feet

SHEET 1 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 14 DAY OF OCT A.D.,2023.

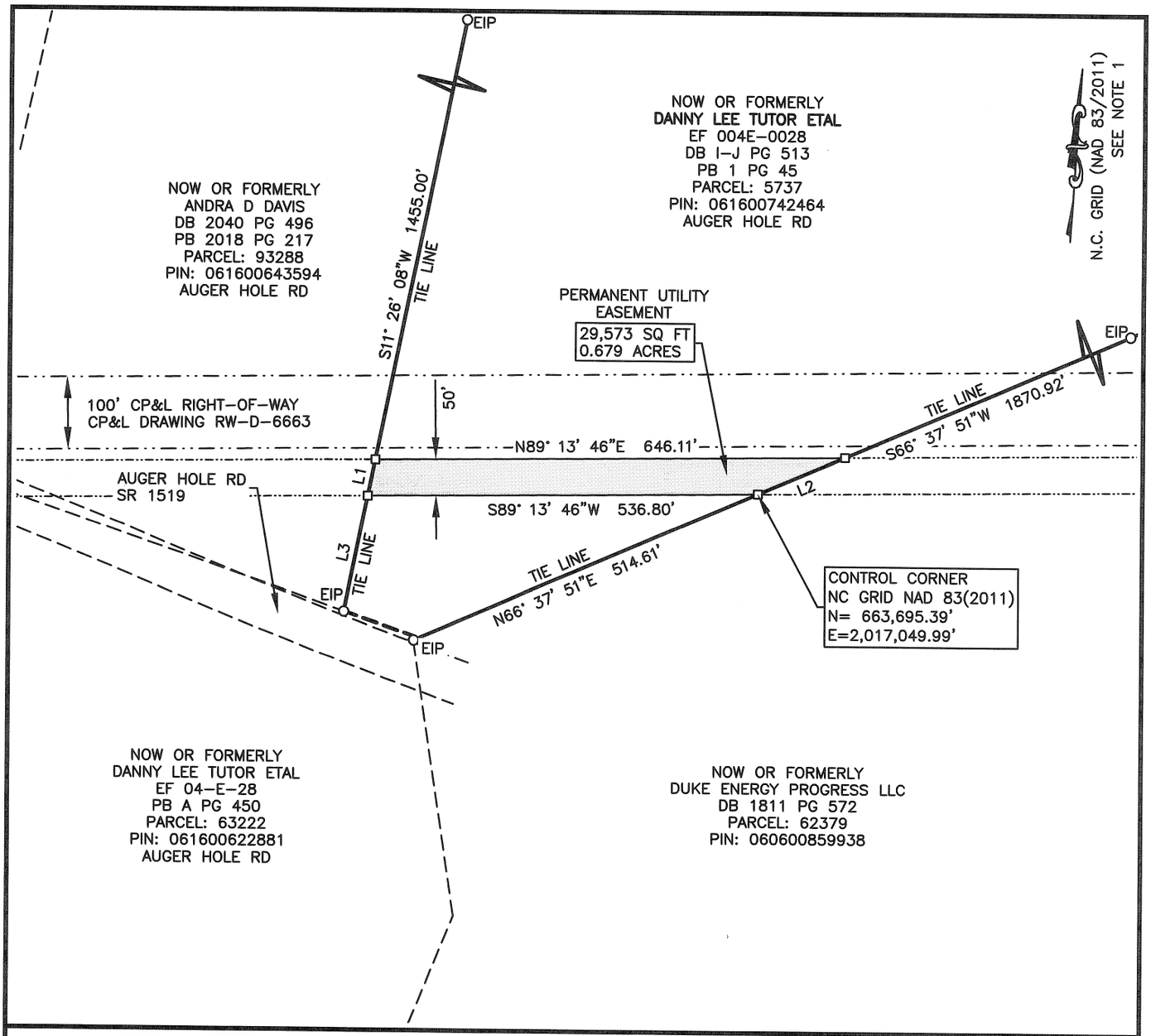
SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.		AREAS COMPUTED BY COORDINATES.	FILE NAME: 7122–TUTOR–2464–EASE.dwg		
Surv'd: RAC	Drawn: MR	Chk'd: CCJ	Job No.: 7122	Date: 10/17/23	Scale: 1" = 400'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: DANNY LEE TUTOR, ET AL.
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA



LEGEND

- O — EXISTING IRON PIPE (EIP)
- □ — COMPUTED CORNER
- Ⓐ — EXISTING CONCRETE MONUMENT (ECM)
- — POWER POLE
- OU — OVERHEAD UTILITY LINE(S)
- R/W — RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT

AREA SUMMARY		
PERMANENT UTILITY EASEMENT	29,573	(SF)
	0.679	(AC)
TOTAL	29,573	(SF)
	0.679	(AC)

Line Table		
Line #	Direction	Length
L1	N11° 26' 08"E	51.16'
L2	S66° 37' 51"W	130.12'
L3	N11° 26' 08"E	161.80'

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 200 400 Feet

SHEET 2 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17TH DAY OF OCT A.D.,2023.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-TUTOR-2464-EASE.dwg

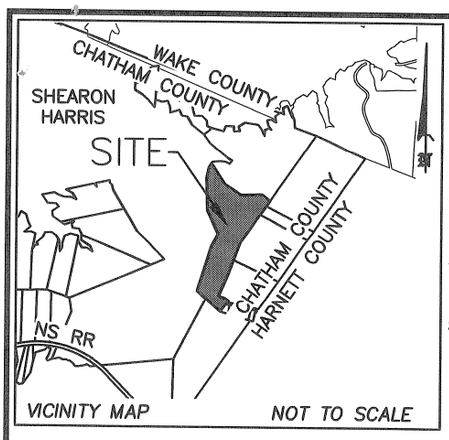
Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 200'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: DANNY LEE TUTOR, ET AL.
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720062600L, EFFECTIVE JULY 19, 2022.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY *Planning Jurisdiction*

N.C. GRID (NAD 83/2011) SEE NOTE 1

NOW OR FORMERLY
COLON W HOBBY
DB 702 PG 872
PIN:062600178644
PARCEL ID:62360
HOBBY RD

N52° 20' 26"W
283.03'

EIP

NOW OR FORMERLY
COLON W HOBBY
DB 486 PG 852
PIN:062600365759
PARCEL ID:60461
HOBBY RD

EIP

N35° 15' 57"E
509.82'

NOW OR FORMERLY
COLON W. HOBBY
DB 693 PG 151
PB 95 PG 1
PARCEL: 5745
PIN: 062600151216
AUGER HOLE RD

EIP

NOW OR FORMERLY
GREGORY HOBBY
JULIE HOBBY
DB 1390 PG 1119
PB 92 PG 34
PARCEL: 70313
PIN: 062600344921
HOBBY RD

NOW OR FORMERLY
DUKE ENERGY PROGRESS LLC
DB 1811 PG 572
PARCEL: 62379
PIN: 060600859938

N34° 18' 20"E
979.88'

EIP

NOW OR FORMERLY
GREGORY HOBBY
JULIE HOBBY
DB 1060 PG 629 (HCR)
PB 94 PG 272 (CCR)
PARCEL: 71791
PIN: 062600240000
HOBBY RD

N17° 29' 05"E
503.86'

EIP

30' CP&L EASE
DB 910 PG 699

N20° 11' 35"E
294.28'

N26° 03' 39"E
820.47'

PERMANENT UTILITY EASEMENT

NOW OR FORMERLY
GREGORY HOBBY
JULIE HOBBY
DB 1287 PG 334
PARCEL: 74411
PIN: 062600137646
AUGER HOLE RD

100' CP&L RIGHT–OF–WAY

EIP

EIP

N73° 33' 18"W
631.99'
(TIE LINE)

AUGER HOLE ROAD
SR 1915

R/W

R/W

NOW OR FORMERLY
GARRETT ROGER S. & ETUX
HEATHER AMBER GARRETT
DB 1837 PG 191
BM 2001 PG 305
PARCEL: 78293
PIN: 0626130231

NOW OR FORMERLY
HARRISON, ANNE
HEAFNER TRUSTEE
DB 1877 PG 112
PARCEL: 5743
PIN: 0626018995

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 600 1200 Feet

SHEET 1 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 18 DAY OF Oct A.D., 2023.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.			*AREAS COMPUTED BY COORDINATES.*	*FILE NAME:* 7122–HOBBY–1216–EASE.dwg	
Surv'd: RAC	*Drawn:* MR	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 10/17/23	*Scale:* 1" = 600'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
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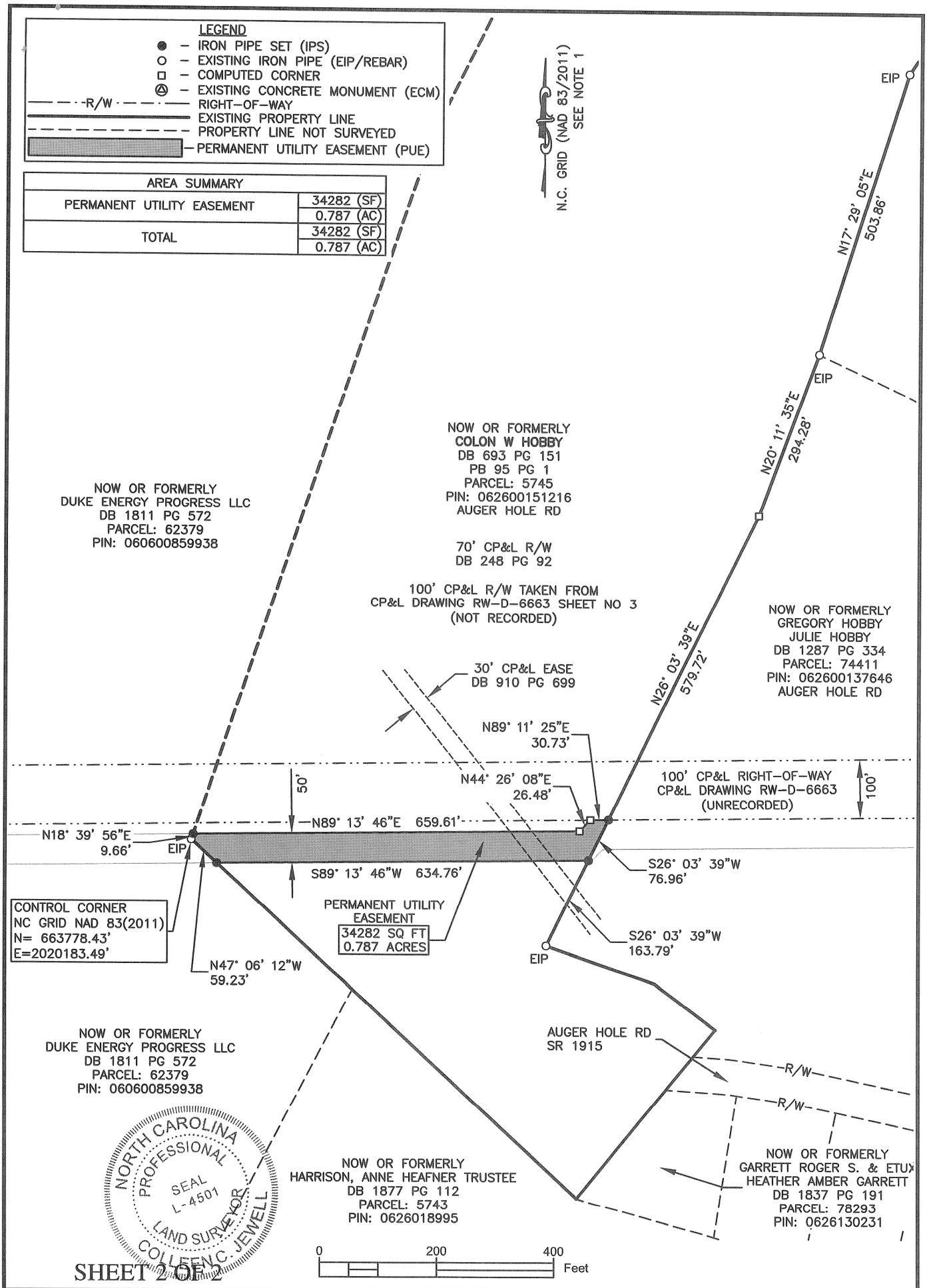
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: COLON W. HOBBY
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA



SHEET 2 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17TH DAY OF OCT A.D., 2023

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-HOBBY-1216-EASE.dwg

Surv'd: RAC	Drawn: MR/CRB	Chk'd: CCJ	Job No.: 7122	Date: 10/17/23	Scale: 1" = 200'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE - (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: COLON W. HOBBY
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

GRANTOR: COLON W. HOBBY
CHATHAM COUNTY PIN: 062600151216
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN EXISTING IRON PIPE MARKING THE COMMON CORNER OF THE COLON W. HOBBY PROPERTY AS RECORDED IN DEED BOOK 693 PAGE 151 AND PLAT BOOK 95 PAGE 1 AND THE DUKE ENERGY PROGRESS, LLC PROPERTY AS RECORDED IN DEED BOOK 1811 PAGE 572 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS. THENCE ALONG THE SAID COMMON LINE NORTH 18 DEGREES 39 MINUTES 56 SECONDS EAST FOR A DISTANCE OF 9.66 FEET TO AN IRON PIPE SET. THENCE LEAVING THE SAID COMMON LINE NORTH 89 DEGREES 13 MINUTES 46 SECONDS EAST FOR A DISTANCE OF 659.61 FEET TO A POINT. THENCE NORTH 44 DEGREES 26 MINUTES 08 SECONDS EAST FOR A DISTANCE OF 26.48 FEET TO A POINT ON THE SOUTHERN LINE OF AN EXISTING 100' CAROLINA POWER AND LIGHT COMPANY EASEMENT SHOWN ON DRAWING RW-D-6663. THENCE ALONG THE SAID EXISTING EASEMENT NORTH 89 DEGREES 11 MINUTES 25 SECONDS EAST FOR A DISTANCE OF 30.73 FEET TO AN IRON PIPE SET ON THE COMMON PROPERTY LINE OF GREGORY AND JULIE HOBBY AS RECORDED IN DEED BOOK 1287 PAGE 334. THENCE ALONG THE SAID COMMON LINE SOUTH 26 DEGREES 03 MINUTES 39 SECONDS WEST FOR A DISTANCE OF 76.96 FEET TO A POINT. THENCE SOUTH 89 DEGREES 13 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 634.76 FEET TO A POINT ON THE ABOVE-DESCRIBED COMMON LINE WITH DUKE ENERGY PROGRESS, LLC. THENCE ALONG THE SAID COMMON LINE NORTH 47 DEGREES 06 MINUTES 12 SECONDS WEST FOR A DISTANCE OF 59.23 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 34,282 SQUARE FEET (0.787 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.

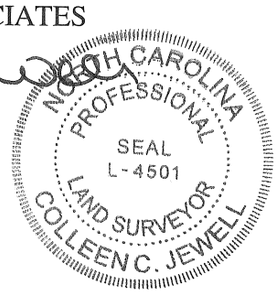
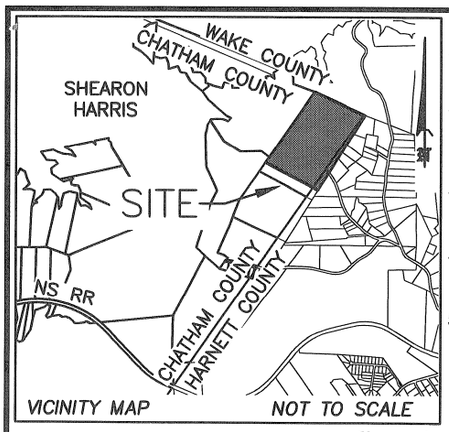


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720062600L, EFFECTIVE JULY 19, 2022.

c. 1. *This survey is of an existing parcel of land and does not create a new street or change an existing street;*

Professional Land Surveyor

This parcel is located in the CHATHAM & HARNETT COUNTY *Planning Jurisdiction*

N.C. GRID (NAD 83/2011) SEE NOTE 1

CASS HOLT ROAD
SR 1116

NOW OR FORMERLY
COLON W. HOBBY
DB 8257 PG 70
PIN: 0626493104
8200 CASS HOLT RD

WAKE COUNTY
CHATHAM COUNTY

EIP

S65° 42' 28"E
1574.47'

NOW OR FORMERLY
COLON W. HOBBY
DB 702 PG 872
PARCEL: 62360
PIN: 062600178644
HOBBY RD

PERMANENT UTILITY EASEMENT
(CHATHAM COUNTY)

EIP

SEE SECTION 3
ON SHEET 4 OF 4

WAKE COUNTY
HARNETT COUNTY

N34° 27' 26"E
2246.29'

NOW OR FORMERLY
COLON W. HOBBY
DB 693 PG 151
PB 95 PG 1
PARCEL: 5745
PIN: 062600151216
AUGER HOLE RD

NOW OR FORMERLY
COLON W. HOBBY
DB 486 PG M852
PARCEL ID:60461
PIN: 062600365759
HOBBY RD

B

BM 99 PG 131
LOTS A–C

A

PERMANENT UTILITY EASEMENT
(HARNETT COUNTY)

C

(TIE LINE)
N52° 20' 26"W
283.03'

SEE SECTION 2
ON SHEET 3 OF 4

EIP

NOW OR FORMERLY
COLON W. HOBBY
DB 775 PG 908
PARCEL ID: 050626 0220
PIN: 0626–46–1234.000
HOBBY RD

6

EIP

5

BM F PG 587B
LOTS 4–6

N35° 15' 57"E
197.12'

DISK 5 CO LINE
PB 2019 PG 89–90

4

(TIE LINE)
N35° 15' 57"E
312.70'

SEE SECTION 1
ON SHEET 2 OF 4

1.25IN EIP FLUSH
1.25IN EIP FLUSH
MNF

1678.96'
N62° 41' 13"W

CHATHAM COUNTY
HARNETT COUNTY

HOBBY RD. SR 1400
60' PUBLIC R/W

EIP

NOW OR FORMERLY
GREGORY W. HOBBY
JULIE K. HOBBY
DB 1390 PG 1119
PB 92 PG 34
PARCEL: 70313
PIN: 062600344921
HOBBY RD

BM 98 PG 196

1.25" EIP 6AG

NOW OR FORMERLY
COLON W. HOBBY
DB 775 PG 908
PARCEL ID: 050626 0220
PIN: 0626–46–1234.000
HOBBY RD

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

8A

BM 2018 PG 170

8B

0 500 1000 Feet

SHEET 1 OF 4

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 11 DAY OF NOV A.D.,2024.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | *AREAS COMPUTED BY COORDINATES.* | *FILE NAME:* 7122–HOBBY–5759.dwg

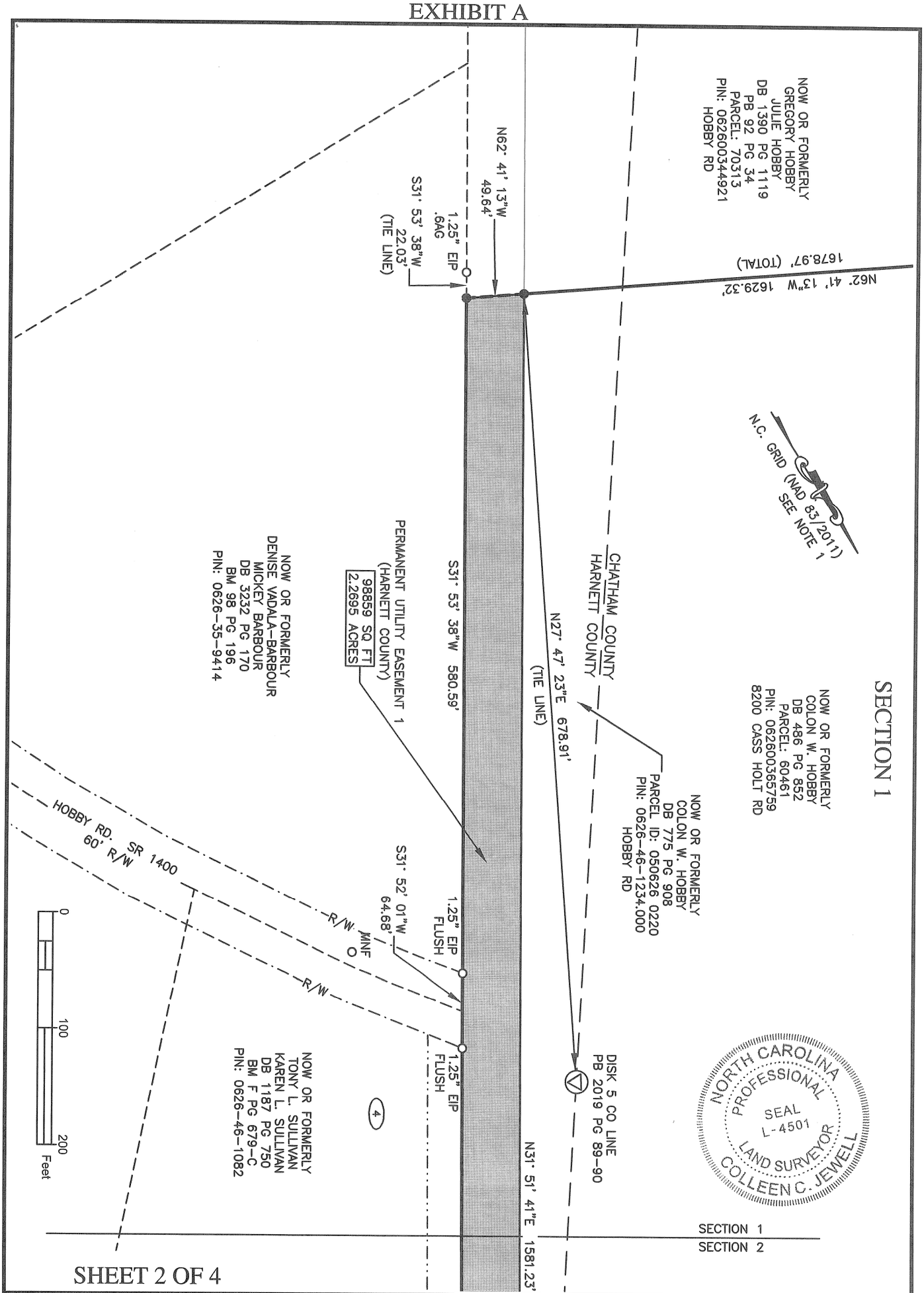
Surv'd: RAC	*Drawn:* CRB	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 11/07/24	*Scale:* 1" = 500'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: COLON W. HOBBY
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR/BUCKHORN TNSP., CHATHAM/HARNETT COUNTY, NORTH CAROLINA

EXHIBIT A



SHEET 2 OF 4

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 14 DAY OF NOV A.D.,2024.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-HOBBY-5759.dwg

Surv'd: RAC	Drawn: CRB	Chk'd: CCJ	Job No.: 7122	Date: 11/07/24	Scale: 1" = 100'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
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EASEMENT PLAT

GRANTOR: COLON W. HOBBY
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- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
CAPE FEAR/BUCKHORN TNSP., CHATHAM/HARNETT COUNTY, NORTH CAROLINA

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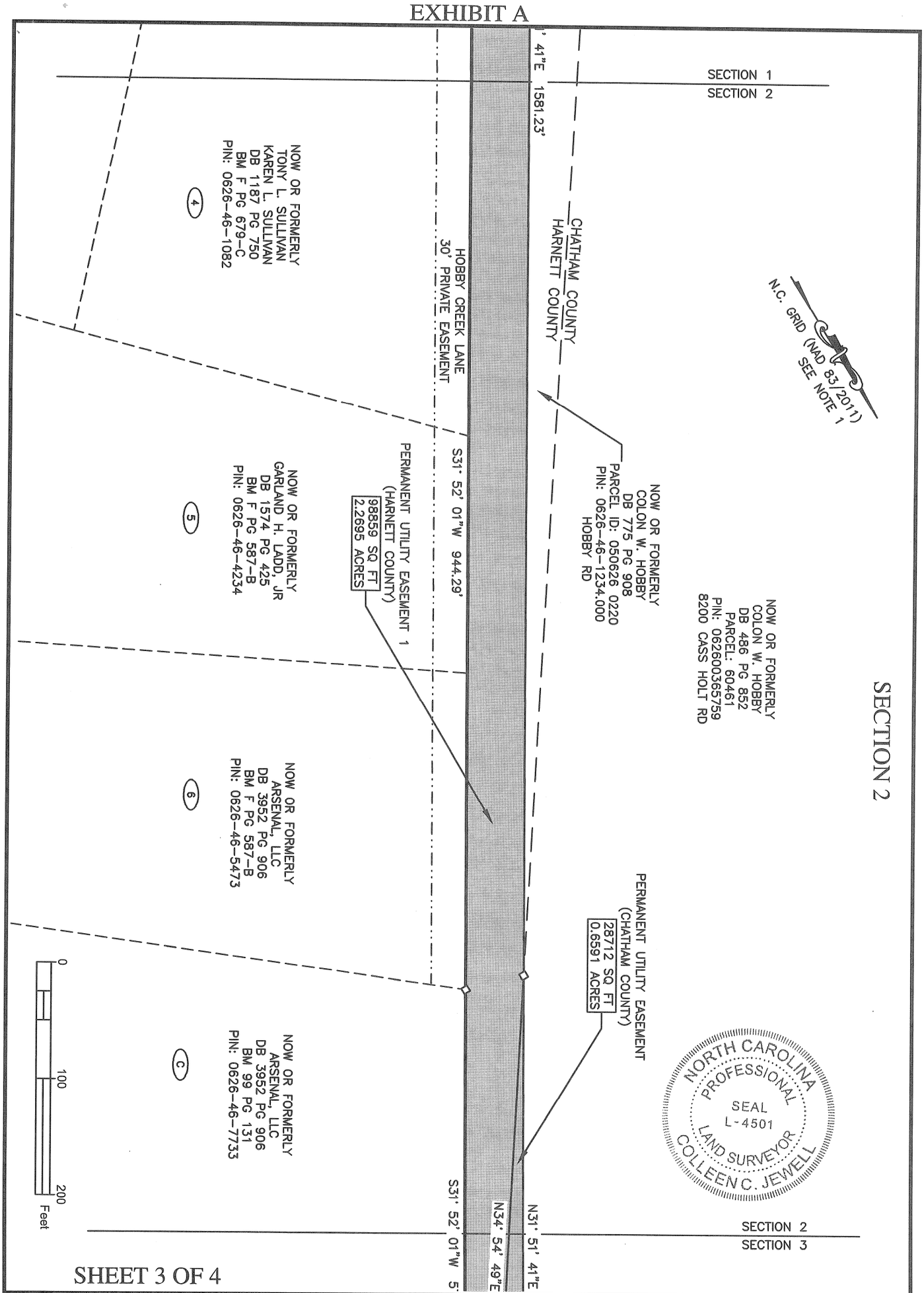

SHEET 3 OF 4

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 11 DAY OF Nov A.D.,2024.

SURVEYOR

L-4501
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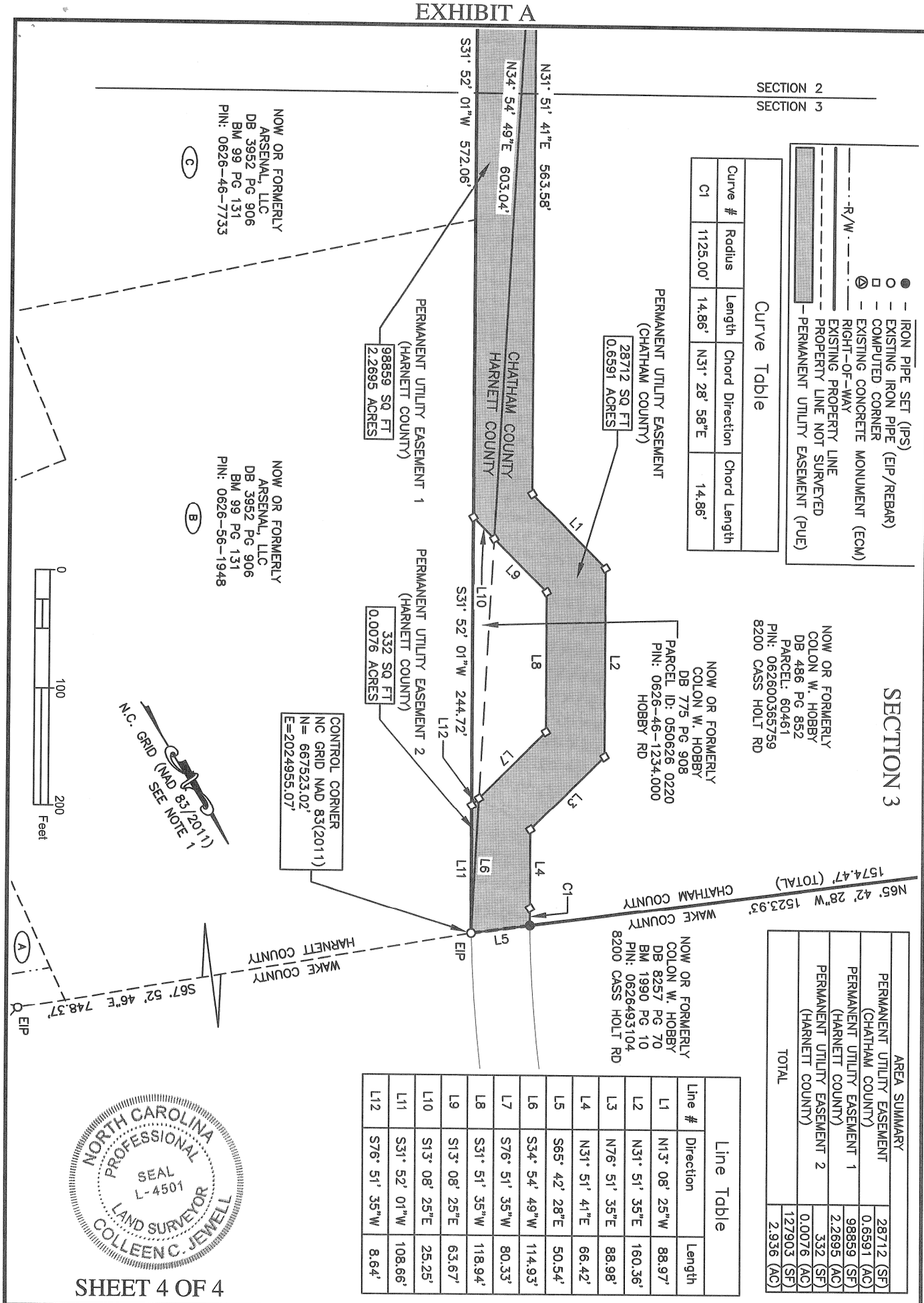

Line Table		
Line #	Direction	Length
L1	N13° 08' 25"W	88.97'
L2	N31° 51' 35"E	160.36'
L3	N76° 51' 35"E	88.98'
L4	N31° 51' 41"E	66.42'
L5	S65° 42' 28"E	50.54'
L6	S34° 54' 49"W	114.93'
L7	S76° 51' 35"W	80.33'
L8	S31° 51' 35"W	118.94'
L9	S13° 08' 25"E	63.67'
L10	S13° 08' 25"E	25.25'
L11	S31° 52' 01"W	108.66'
L12	S76° 51' 35"W	8.64'

AREA SUMMARY		
PERMANENT UTILITY EASEMENT (CHATHAM COUNTY)	28712 (SF)	0.6591 (AC)
PERMANENT UTILITY EASEMENT 1 (HARNETT COUNTY)	98859 (SF)	2.2695 (AC)
PERMANENT UTILITY EASEMENT 2 (HARNETT COUNTY)	332 (SF)	0.0076 (AC)
TOTAL	127903 (SF)	2.936 (AC)

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

SHEET 4 OF 4

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 2nd DAY OF Nov A.D.,2024.

SURVEYOR

L-4501
LICENSE NUMBER

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EASEMENT PLAT
GRANTOR: COLON W. HOBBY
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
CAPE FEAR/BUCKHORN TNSP., CHATHAM/HARNETT COUNTY, NORTH CAROLINA

GRANTOR: COLON W. HOBBY
CHATHAM COUNTY PIN: 062600365759
HARNETT COUNTY PIN: 0626461234.000

GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN EXISTING IRON PIPE HAVING N.C. GRID COORDINATES (NAD 83/2011) IN FEET OF N=667,523.02 AND E=2,024,955.07 MARKING THE COMMON CORNER OF CHATHAM COUNTY, WAKE COUNTY, AND HARNETT COUNTY AS RECORDED IN BOOK OF MAPS 2019 PAGES 89-90 OF THE CHATHAM COUNTY REGISTER OF DEEDS, THE COLON W. HOBBY AS RECORDED IN DEED BOOK 486 PAGE 852 (CHATHAM COUNTY REGISTRY) AND DEED BOOK 775 PAGE 908 (HARNETT COUNTY REGISTRY) THE COLON W. HOBBY PROPERTY RECORDED IN DEED BOOK 8257 PAGE 70 AND BOOK OF MAPS 1990 PAGE 10, AND THE ARSENAL, LLC PROPERTY AS RECORDED IN DEED BOOK 3952 PAGE 906 AND BOOK OF MAPS 99 PAGE 131 (HARNETT COUNTY REGISTRY). THENCE ALONG THE SAID COMMON LINE OF HOBBY AND ARSENAL, LLC SOUTH 31 DEGREES 52 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 108.66 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE SOUTH 76 DEGREES 51 MINUTES 35 SECONDS WEST FOR A DISTANCE OF 8.64 FEET TO A POINT ON THE CHATHAM /HARNETT COUNTY LINE. THENCE CONTINUING SOUTH 76 DEGREES 51 MINUTES 35 SECONDS WEST FOR A DISTANCE OF 80.33 FEET TO A POINT. THENCE SOUTH 31 DEGREES 51 MINUTES 35 SECONDS WEST FOR A DISTANCE OF 118.94 FEET TO A POINT. THENCE SOUTH 13 DEGREES 08 MINUTES 25 SECONDS EAST FOR A DISTANCE OF 63.67 FEET TO A POINT ON THE SAID COUNTY LINE. THENCE CONTINUING SOUTH 13 DEGREES 08 MINUTES 25 SECONDS EAST FOR A DISTANCE OF 25.25 FEET TO A POINT ON THE SAID COMMON PROPERTY LINE OF HOBBY AND ARSENAL, LLC. THENCE CONTINUING ALONG THE SAID COMMON PROPERTY LINE SOUTH 31 DEGREES 52 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 572.06 FEET TO A POINT ON THE SAID COMMON LINE; SAID POINT BEING THE NORTHERN COMMON CORNER OF LOT C OF THE ARSENAL, LLC PROPERTY SHOWN IN BOOK OF MAPS 99 PAGE 131 AND LOT 6 OF THE ARSENAL, LLC PROPERTY AS SHOWN IN BOOK OF MAPS F PAGE 587-B. THENCE CONTINUING SOUTH 31 DEGREES 52 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 944.29 FEET TO AN EXISTING IRON PIPE ON THE EASTERN RIGHT-OF-WAY OF HOBBY ROAD (SR1400 – A 60' RIGHT-OF-WAY); SAID IRON PIPE BEING A POINT ON THE COMMON LINE OF HOBBY AND THE NORTHWEST CORNER OF LOT 4 AS SHOWN IN THE ABOVE-REFERENCED MAP. THENCE CONTINUING SOUTH 31 DEGREES 52 MINUTES 01 SECONDS WEST FOR A DISTANCE OF 64.68 FEET TO AN EXISTING IRON PIPE ON THE WESTERN RIGHT-OF-WAY OF HOBBY ROAD; SAID IRON PIPE BEING A POINT ON THE COMMON LINE OF HOBBY AND THE NORTHEAST CORNER OF THE DENISE VADALA-BARBOUR AND MICKEY BARBOUR PROPERTY AS RECORDED IN DEED BOOK 3232 PAGE 170 AND BOOK OF MAPS 98 PAGE 196, HARNETT COUNTY REGISTRY. THENCE SOUTH 31 DEGREES 53 MINUTES 38 SECONDS WEST FOR A DISTANCE OF 580.59 FEET TO AN IRON PIPE SET AT THE COMMON CORNER OF COLON W. HOBBY AND GREGORY AND JULIE HOBBY AS RECORDED IN DEED BOOK 1390 PAGE 1119 AND PLAT BOOK 92 PAGE 34. THENCE ALONG THE SAID COMMON LINE NORTH 62 DEGREES 41 MINUTES 13 SECONDS WEST FOR A DISTANCE OF 49.64 FEET TO A POINT. THENCE NORTH 31 DEGREES 51 MINUTES 41 SECONDS EAST FOR A DISTANCE OF 1581.23 FEET TO A POINT ON THE CHATHAM / HARNETT COUNTY LINE. THENCE

CONTINUING NORTH 31 DEGREES 51 MINUTES 41 SECONDS EAST FOR A DISTANCE OF 563.58 FEET TO A POINT. THENCE NORTH 13 DEGREES 08 MINUTES 25 SECONDS WEST FOR A DISTANCE OF 88.97 FEET TO A POINT. THENCE NORTH 31 DEGREES 51 MINUTES 35 SECONDS EAST FOR A DISTANCE OF 160.36 FEET TO A POINT. THENCE NORTH 76 DEGREES 51 MINUTES 35 SECONDS EAST FOR A DISTANCE OF 88.98 FEET TO A POINT. THENCE NORTH 31 DEGREES 51 MINUTES 41 SECONDS EAST FOR A DISTANCE OF 66.42 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 1125.00 FEET, ARC LENGTH OF 14.86 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 31 DEGREES 28 MINUTES 58 SECONDS EAST FOR 14.86 FEET TO A POINT ON THE COMMON LINE OF HOBBY AND HOBBY THENCE SOUTH 65 DEGREES 42 MINUTES 28 SECONDS EAST FOR A DISTANCE OF 50.54 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 127,903 SQUARE FEET (2.936 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED NOVEMBER 07, 2024.

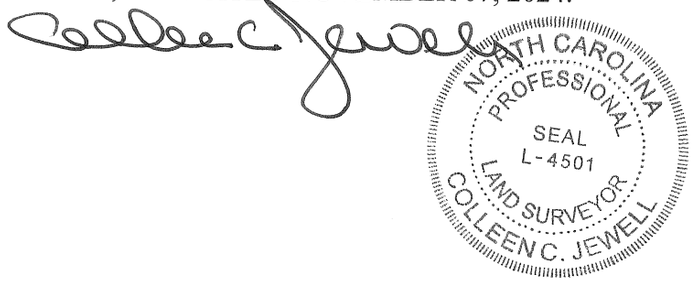
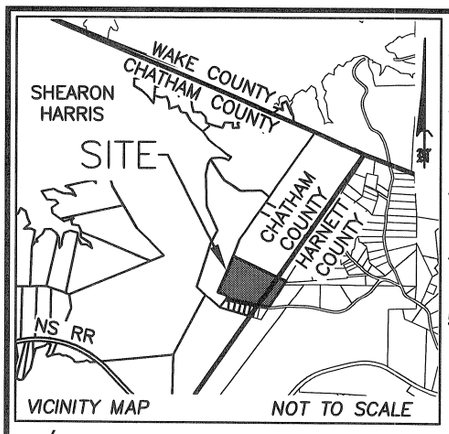


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720062600L, EFFECTIVE JULY 19, 2022.

c. 1. *This survey is of an existing parcel of land and does not create a new street or change an existing street;*

Professional Land Surveyor

This parcel is located in the CHATHAM & HARNETT COUNTY *Planning Jurisdiction*

N.C. GRID (NAD 83/2011) SEE NOTE 1

LEGEND
- IRON PIPE SET (IPS)
- EXISTING IRON PIPE (EIP/REBAR)
- COMPUTED CORNER
- EXISTING CONCRETE MONUMENT (ECM)
- UTILITY POLE
- OU — OVERHEAD UTILITY LINE(S)
- R/W — RIGHT–OF–WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT (PUE)

EIP
N17° 29' 05"E 503.86' (TIE LINE)
EIP
N20° 11' 35"E 294.28'
EIP
N26° 03' 39"E 820.47'
EIP
S65° 11' 56"E 1622.31'
EIP
EIP
EIP
EIP
REBAR/CAP
DISK
REBAR/CAP
DISK
REBAR
10

NOW OR FORMERLY
COLON W HOBBY
DB 693 PG 151
PB 95 PG 1
PARCEL: 5745
PIN: 062600151216
AUGER HOLE RD

NOW OR FORMERLY
GREGORY W. HOBBY
JULIE K. HOBBY
DB 1287 PG 334
PARCEL: 74411
PIN: 062600137646
AUGER HOLE RD

NOW OR FORMERLY
GREGORY HOBBY
JULIE HOBBY
DB 1060 PG 629 (HCR)
PB 94 PG 272 (CCR)
PARCEL: 71791
PIN: 062600240000
HOBBY RD

100' CP&L RIGHT–OF–WAY
CP&L DRAWING RW–D–6663
(UNRECORDED)

30' CP&L EASE
DB 910 PG 699

PERMANENT UTILITY EASEMENT

AUGER HOLE ROAD
SR 1915

OU
OU
OU
OU

R/W
R/W

CHATHAM COUNTY
HARNETT COUNTY

NOW OR FORMERLY
GREGORY W. HOBBY
JULIE K. HOBBY
NO DEED FOUND IN
HARNETT COUNTY
PARCEL: 050626 0219
PIN: 0626–23–3557.000
AUGER HOLE RD

NOW OR FORMERLY
TRIANGLE HOME PROS, LLC
DB 3901 PG 265
BM 2023 PG 533
(LOT 10)
PARCEL: 050626
PIN: 0626–23–5409
AUGER HOLE RD

BM 2001 PG 305
(LOTS 6–8)

BM 2000 PG130
(LOTS 1–5)

8 7 6 5 4 3 2

NOW OR FORMERLY
HARRISON, ANNE
HEAFNER TRUSTEE
DB 1877 PG 112
PARCEL: 5743
PIN: 0626018995

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 300 600 Feet

AREA SUMMARY	
PERMANENT UTILITY EASEMENT (CHATHAM COUNTY)	74293 (SF)
	1.7055 (AC)
PERMANENT UTILITY EASEMENT (HARNETT COUNTY)	20156 (SF)
	0.4627 (AC)
TOTAL	94449 (SF)
	2.168 (AC)

SHEET 1 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 7th DAY OF Oct A.D., 2023

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. *AREAS COMPUTED BY COORDINATES.* *FILE NAME:* 7122–HOBBY–7646.dwg

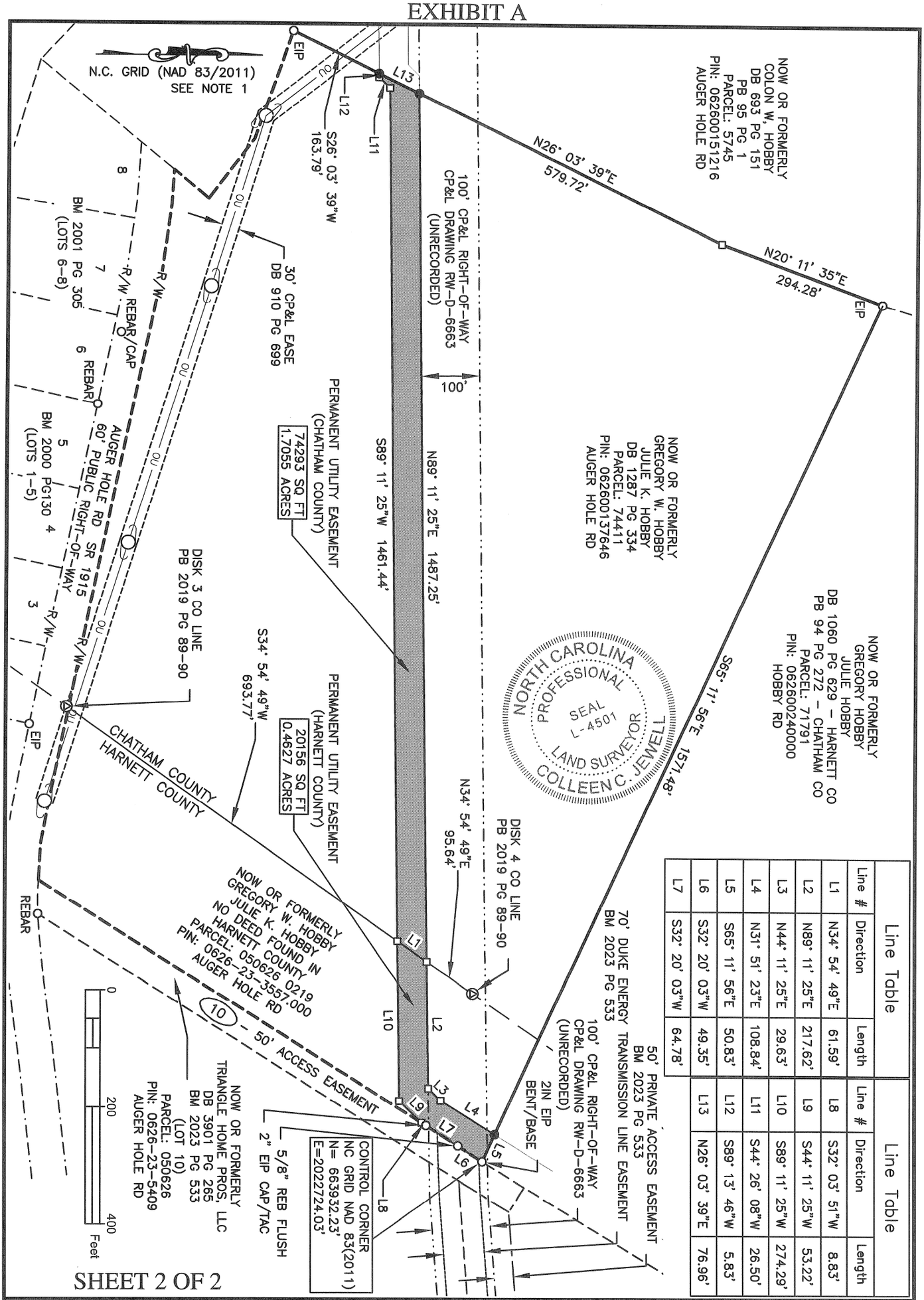
Surv'd: RAC	Drawn: MR/CRB	Chk'd: CCJ	Job No.: 7122	Date: 10/17/23	Scale: 1" = 300'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: GREGORY W. HOBBY & JULIE K. HOBBY
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM/HARNETT COUNTY, NORTH CAROLINA

EXHIBIT A



Line Table		
Line #	Direction	Length
L1	N34° 54' 49"E	61.59'
L2	N89° 11' 25"E	217.62'
L3	N44° 11' 25"E	29.63'
L4	N31° 51' 23"E	108.84'
L5	S65° 11' 56"E	50.83'
L6	S32° 20' 03"W	49.35'
L7	S32° 20' 03"W	64.78'

Line Table		
Line #	Direction	Length
L8	S32° 03' 51"W	8.83'
L9	S44° 11' 25"W	53.22'
L10	S89° 11' 25"W	274.29'
L11	S44° 26' 08"W	26.50'
L12	S89° 13' 46"W	5.83'
L13	N26° 03' 39"E	76.96'

SHEET 2 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17TH DAY OF OCT A.D.,2023.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-HOBBY-7646.dwg

Surv'd: RAC	Drawn: MR/CRB	Chk'd: CCJ	Job No.: 7122	Date: 10/17/23	Scale: 1" = 300'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE - (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: GREGORY W. HOBBY & JULIE K. HOBBY
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
CAPE FEAR TNSP., CHATHAM/HARNETT COUNTY, NORTH CAROLINA

GRANTOR: GREGORY W. AND JULIE K. HOBBY
CHATHAM COUNTY PIN: 062600137646
HARNETT COUNTY PIN: 0626-23-3557.000
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN EXISTING IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=663,932.23 AND E=2,022,724.03 ON THE WESTERN LINE A 50' ACCESS EASEMENT ON THE PROPERTY OF TRIANGLE HOME PROS, LLC AS SHOWN IN BOOK OF MAPS 2023 PAGE 533 IN THE OFFICE OF THE HARNETT COUNTY REGISTER OF DEEDS; SAID IRON PIPE IS MARKING THE COMMON CORNER OF THE GREGORY W. AND JULIE K. HOBBY PROPERTY LOCATED ON AUGER HOLE RD AS RECORDED IN DEED BOOK 1287 PAGE 334 (CHATHAM COUNTY REGISTRY) AND THE GREGORY AND JULIE HOBBY PROPERTY LOCATED ON HOBBY RD RECORDED IN DEED BOOK 1060 PAGE 629 (HARNETT COUNTY REGISTRY) AND PLAT BOOK 94 PAGE 272 (CHATHAM COUNTY REGISTRY). THENCE ALONG THE COMMON LINE OF GREGORY AND JULIE HOBBY AND TRIANGLE HOME PROS, LLC THE FOLLOWING THREE COURSES AND DISTANCES:

SOUTH 32 DEGREES 20 MINUTES 03 SECONDS WEST FOR 49.35 FEET;

SOUTH 32 DEGREES 20 MINUTES 03 SECONDS WEST FOR 64.78 FEET;

SOUTH 32 DEGREES 03 MINUTES 51 SECONDS WEST FOR 8.83 FEET;

THENCE LEAVING THE SAID COMMON LINE SOUTH 44 DEGREES 11 MINUTES 25 SECONDS WEST FOR A DISTANCE OF 53.22 FEET TO A POINT. THENCE SOUTH 89 DEGREES 11 MINUTES 25 SECONDS WEST FOR A DISTANCE OF 274.29 FEET TO A POINT MARKING THE CHATHAM AND HARNETT COUNTY LINE. THENCE SOUTH 89 DEGREES 11 MINUTES 25 SECONDS WEST FOR A DISTANCE OF 1461.44 FEET TO A POINT. THENCE SOUTH 44 DEGREES 26 MINUTES 08 SECONDS WEST FOR A DISTANCE OF 26.50 FEET TO A POINT. THENCE SOUTH 89 DEGREES 13 MINUTES 46 SECONDS WEST FOR A DISTANCE OF 5.83 FEET TO A POINT ON THE COMMON LINE WITH COLON W. HOBBY AS RECORDED IN DEED BOOK 693 PAGE 151 AND PLAT BOOK 95 PAGE 1, CHATHAM COUNTY REGISTRY. THENCE ALONG THE SAID COMMON LINE NORTH 26 DEGREES 03 MINUTES 39 SECONDS EAST FOR A DISTANCE OF 76.96 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE NORTH 89 DEGREES 11 MINUTES 25 SECONDS EAST FOR A DISTANCE OF 1487.25 FEET TO A POINT ON THE SAID COUNTY LINE. THENCE LEAVING THE SAID COUNTY LINE NORTH 89 DEGREES 11 MINUTES 25 SECONDS EAST FOR A DISTANCE OF 217.62 FEET TO A POINT. THENCE NORTH 44 DEGREES 11 MINUTES 25 SECONDS EAST FOR A DISTANCE OF 29.63 FEET TO A POINT. THENCE NORTH 31 DEGREES 51 MINUTES 23 SECONDS EAST FOR A DISTANCE OF 108.84 FEET TO AN IRON PIPE SET ON THE ABOVE-DESCRIBED COMMON LINE OF GREGORY AND JULIE HOBBY. THENCE ALONG THE SAID COMMON LINE SOUTH 65 DEGREES 11 MINUTES 56 SECONDS EAST FOR A DISTANCE OF 50.83 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 20,156 SQUARE FEET (0.4627 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.

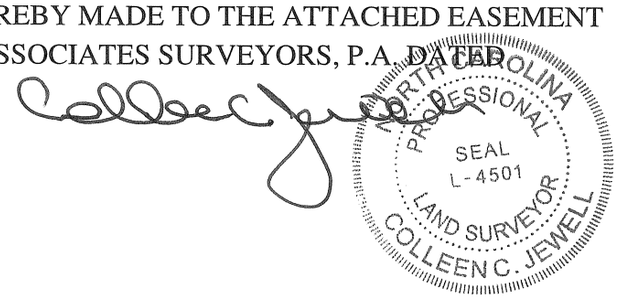
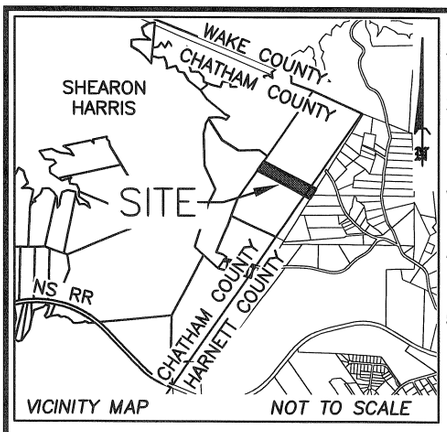


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720062600L, EFFECTIVE JULY 19, 2022.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the CHATHAM & HARNETT COUNTY Planning Jurisdiction

N.C. GRID (NAD 83/2011) SEE NOTE 1

LEGEND
- ● – IRON PIPE SET (IPS)
- ○ – EXISTING IRON PIPE (EIP/REBAR)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- ——R/W—— RIGHT–OF–WAY
- ——— EXISTING PROPERTY LINE
- – – – – – PROPERTY LINE NOT SURVEYED
- ▨ – PERMANENT UTILITY EASEMENT (PUE)

AREA SUMMARY	
PERMANENT UTILITY EASEMENT (HARNETT COUNTY)	15363 (SF)
	0.353 (AC)
TOTAL	15363 (SF)
	0.353 (AC)

NOW OR FORMERLY
COLON W HOBBY
DB 702 PG 872
PIN:062600178644
PARCEL ID:62360
HOBBY RD

EIP

N34° 27' 26"E
2246.29'

EIP

(TIE LINE)
N35° 15' 57"E
197.12'

EIP

N35° 15' 57"E
312.70'

EIP

NOW OR FORMERLY
GREGORY W. HOBBY
JULIE K. HOBBY
DB 1390 PG 1119
PB 92 PG 34
PARCEL: 70313
PIN: 062600344921
HOBBY RD
(CHATHAM COUNTY)

NOW OR FORMERLY
COLON W. HOBBY
DB 486 PG 852
PB92 PG 34
PARCEL ID: 60461
PIN: 062600365759
HOBBY RD

NOW OR FORMERLY
COLON W HOBBY
DB 693 PG 151
PB 95 PG 1
PARCEL: 5745
PIN: 062600151216
AUGER HOLE RD

S62° 41' 13"E
1629.32'

DISK 5 CO LINE
PB 2019 PG 89–90

BM F PG 587B
LOTS 4–6

(TIE LINE)
N14° 44' 40"W
134.89'

1.25IN EIP FLUSH

1.25IN EIP FLUSH

MNF

HOBBY RD.
60' PUBLIC R/W
SR 1400
R/W
R/W

N62° 40' 45"W
1647.93'

(TIE LINE)
S34° 18' 20"W
979.88'

NOW OR FORMERLY
GREGORY W. HOBBY
JULIE K. HOBBY
DB 2489 PG 540
PARCEL: 050623 0310
PIN: 0626–35–4298.000
HOBBY RD
(HARNETT COUNTY)

S62° 41' 13"E
49.64'

N31° 53' 38"E
580.59'
(TIE LINE)

BM 98 PG 196

N31° 51' 41"E
310.90'

PERMANENT UTILITY EASEMENT
(HARNETT COUNTY)
15363 SQ FT
0.353 ACRES

CONTROL CORNER
NC GRID NAD 83(2011)
N= 665387.49'
E=2023627.21'

EIP

N62° 40' 45"W
49.59'

8A

BM 2018 PG 170

8B

S31° 53' 38"W
22.03'

S31° 53' 38"W
179.73'

S31° 49' 36"W
109.15'

NOW OR FORMERLY
GREGORY HOBBY
JULIE HOBBY
DB 1060 PG 629 (HCR)
PB 94 PG 272 (CCR)
PARCEL: 71791
PIN: 062600240000
HOBBY RD

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

CHATHAM COUNTY / HARNETT COUNTY

NOW OR FORMERLY
JEFFREY A. PAYNE
DB 3621 PG 67
BM 2018 PG 170
PARCEL: 050623 0006 01
PIN: 0626–34–7922.000
335 HOBBY RD
(HARNETT COUNTY)

NOW OR FORMERLY
DENISE V. BARBOUR
MICKEY BARBOUR
DB 3232 PG 170
BM 98 PG 196
PARCEL: 050623 0300 02
PIN: 0626–35–9414.000
411 HOBBY RD
(HARNETT COUNTY)

0 400 800 Feet

SHEET 1 OF 1

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 8th DAY OF Nov A.D.,2024.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | *AREAS COMPUTED BY COORDINATES.* | *FILE NAME:* 7122–HOBBY–4921.dwg

Surv'd: RAC	Drawn: CRB	Chk'd: CCJ	Job No.: 7122	Date: 11/08/24	Scale: 1" = 400'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: GREGORY W. HOBBY & JULIE K. HOBBY
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR/BUCKHORN TNSP., CHATHAM/HARNETT COUNTY, NORTH CAROLINA

GRANTOR: GREGORY W. AND JULIE K. HOBBY
CHATHAM COUNTY PIN: 062600344921
HARNETT COUNTY PIN: 0626354298

GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN IRON PIPE SET MARKING THE COMMON CORNER OF THE GREGORY W. AND JULIE K. HOBBY PROPERTY AS RECORDED IN DEED BOOK 1390 PAGE 1119 AND COLON W. HOBBY AS RECORDED IN DEED BOOK 486 PAGE 852 AND SHOWN IN PLAT BOOK 92 PAGE 34 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS; SAID POINT HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=665,387.49 AND E=2,023,627.21. THENCE SOUTH 31 DEGREES 53 MINUTES 38 SECONDS WEST FOR A DISTANCE OF 22.03 FEET TO AN EXISTING IRON PIPE; SAID IRON PIPE MARKING A CORNER OF THE DENISE AND MICKEY BARBOUR PROPERTY AS RECORDED IN DEED BOOK 3232 PAGE 170 AND BOOK OF MAPS 98 PAGE 196 IN THE HARNETT COUNTY REGISTER OF DEEDS. THENCE SOUTH 31 DEGREES 53 MINUTES 38 SECONDS WEST FOR A DISTANCE OF 179.73 FEET TO A POINT; SAID POINT BEING A COMMON CORNER OF THE ABOVE-DESCRIBED BARBOUR PROPERTY AND THE JEFFREY A. PAYNE PROPERTY AS RECORDED IN DEED BOOK 3621 PAGE 67 AND BOOK OF MAPS 2018 PAGE 170. THENCE SOUTH 31 DEGREES 49 MINUTES 36 SECONDS WEST FOR A DISTANCE OF 109.15 FEET TO AN IRON PIPE SET AT THE COMMON CORNER OF THE GREGORY W. AND JULIE K. HOBBY PROPERTY REFERENCED ABOVE AND THE GREGORY W. AND JULIE K. HOBBY PROPERTY AS RECORDED IN DEED BOOK 2489 PAGE 540; SAID IRON PIPE MARKING A POINT ON THE COMMON LINE WITH JEFFREY A. PAYNE. THENCE LEAVING THE SAID COMMON CORNER AND THE LINE OF PAYNE NORTH 62 DEGREES 40 MINUTES 45 SECONDS WEST FOR A DISTANCE OF 49.59 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE NORTH 31 DEGREES 51 MINUTES 41 SECONDS EAST FOR A DISTANCE OF 310.90 FEET TO A POINT ON THE SAID COMMON LINE OF GREGORY AND JULIE HOBBY AND COLON HOBBY. THENCE ALONG THE SAID COMMON LINE SOUTH 62 DEGREES 41 MINUTES 13 SECONDS EAST FOR A DISTANCE OF 49.64 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 15,363 SQUARE FEET (0.353 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED NOVEMBER 08, 2024.

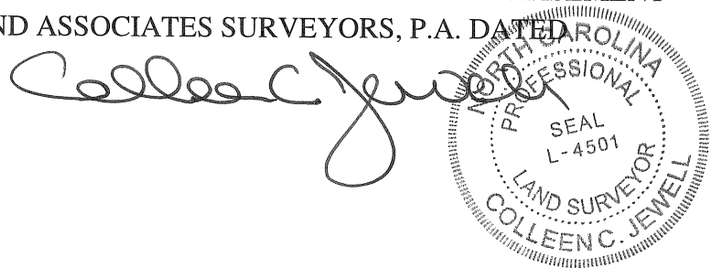
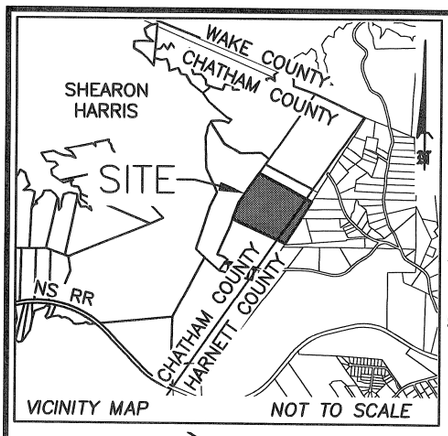


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720062600L, EFFECTIVE JULY 19, 2022.

c. 1. *This survey is of an existing parcel of land and does not create a new street or change an existing street;*

Professional Land Surveyor

This parcel is located in the CHATHAM & HARNETT COUNTY *Planning Jurisdiction*

N.C. GRID (NAD 83/2011) SEE NOTE 1

EIP

EIP

(TIE LINE) N35° 15' 57"E 509.82'

NOW OR FORMERLY
COLON W HOBBY
DB 486 PG 852
PIN:062600365759
PARCEL ID:60461
HOBBY RD

EIP

NOW OR FORMERLY
GREGORY HOBBY
JULIE HOBBY
DB 1390 PG 1119
PB 92 PG 34
PARCEL: 70313
PIN: 062600344921
HOBBY RD

S62° 40' 45"E 1697.52'

N34° 18' 20"E 979.88'

NOW OR FORMERLY
COLON W HOBBY
DB 693 PG 151
PB 95 PG 1
PARCEL: 5745
PIN: 062600151216
AUGER HOLE RD

NOW OR FORMERLY
GREGORY HOBBY
JULIE HOBBY
DB 1060 PG 629 HARNETT CO.
PB 94 PG 272 CHATHAM CO.
PARCEL: 71791
PIN: 062600240000
HOBBY RD

EIP

N17° 29' 05"E 503.86'

CHATHAM COUNTY
HARNETT COUNTY

8A

BM 2018 PG 170

8B

(TIE LINE) S20° 11' 35"W 294.28'

EIP

NOW OR FORMERLY
GREGORY HOBBY
JULIE HOBBY
DB 1060 PG 629 HARNETT CO.
PB 94 PG 272 CHATHAM CO.
PARCEL: 050623 0309
PIN: 0626–24–9593.000
HOBBY RD

PERMANENT UTILITY EASEMENT

N65° 11' 56"W 1622.31'

NOW OR FORMERLY
GREGORY W. HOBBY
JULIE K. HOBBY
DB 1287 PG 334
PARCEL: 74411
PIN: 062600137646
AUGER HOLE RD

DISK 4 CO LINE
PB 2019 PG 89–90

BM 2023 PG 533

10

9

EIP

S26° 03' 39"W 820.47' (TIE LINE)

S86° 36' 26"W 287.61' (TIE LINE)

100' CP&L RIGHT–OF–WAY
CP&L DRAWING RW–D–6663
(UNRECORDED)

EIP

CHATHAM COUNTY
HARNETT COUNTY

NOW OR FORMERLY
TRIANGLE HOME PROS, LLC
DB 3901 PG 265
BM 2023 PG 533
(LOT 10)
PARCEL: 050626
PIN: 0626–23–5409
AUGER HOLE RD

0 400 800 Feet

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 11TH DAY OF OCT A.D., 2023.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.			*AREAS COMPUTED BY COORDINATES.*	*FILE NAME:* 7122–HOBBY–71791.dwg	
Surv'd: RAC	*Drawn:* MR/CRB	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 10/17/23	*Scale:* 1" = 400'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
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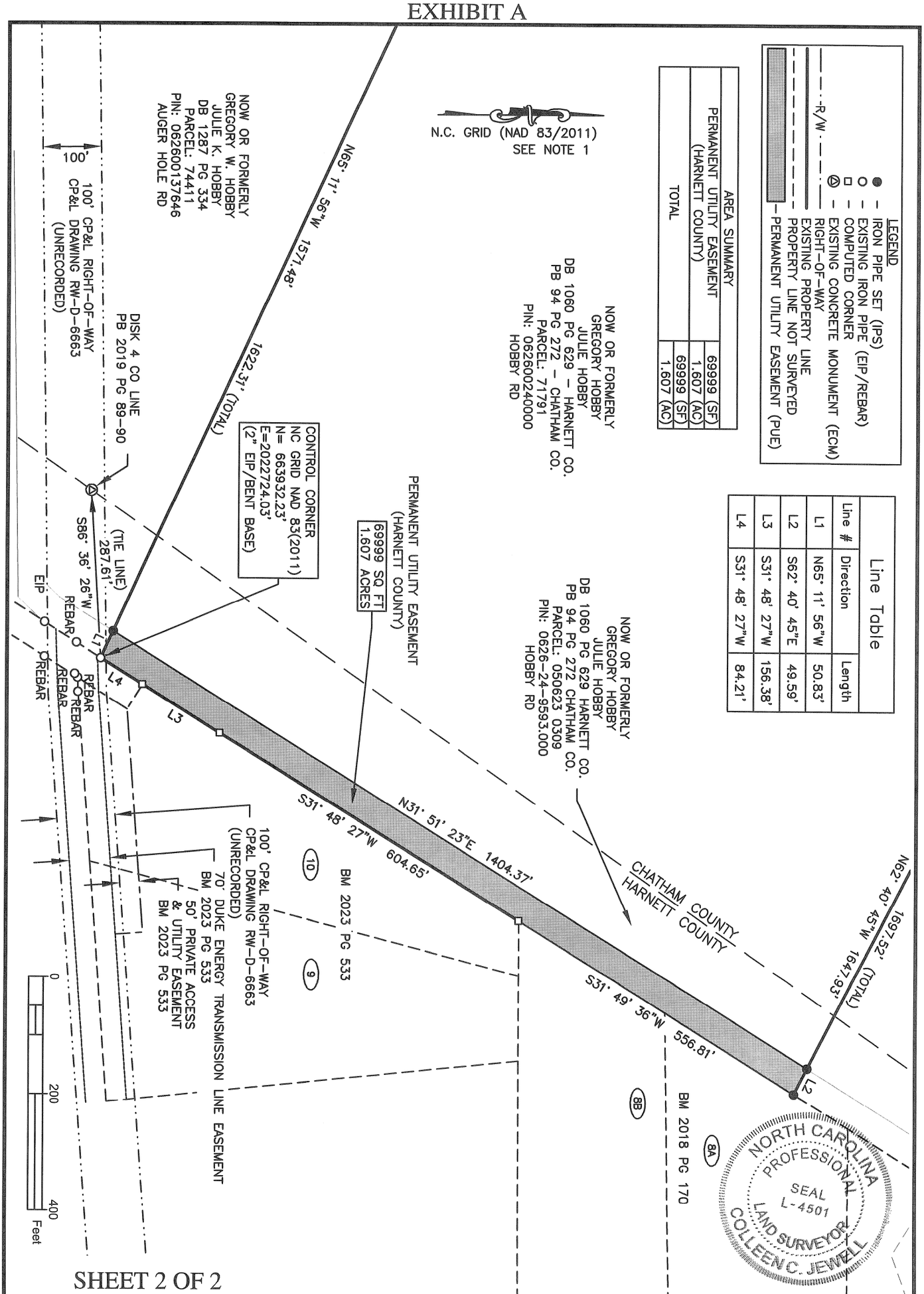
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: GREGORY W. HOBBY & JULIE K. HOBBY
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR/BUCKHORN TNSP., CHATHAM/HARNETT COUNTY, NORTH CAROLINA

EXHIBIT A



SHEET 2 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 12 DAY OF OCT A.D., 2023

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-HOBBY-71791.dwg

Surv'd: RAC | Drawn: MR/CRB | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 400'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE - (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: GREGORY W. HOBBY & JULIE K. HOBBY
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
CAPE FEAR/BUCKHORN TNSP., CHATHAM/HARNETT COUNTY, NORTH CAROLINA

GRANTOR: GREGORY AND JULIE HOBBY
CHATHAM COUNTY PIN: 062600240000
HARNETT COUNTY PIN: 0626-24-9593.000
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN IRON PIPE SET MARKING THE COMMON CORNER OF THE GREGORY W. AND JULIE K. HOBBY PROPERTY LOCATED ON AUGER HOLE RD AS RECORDED IN DEED BOOK 1287 PAGE 334 (CHATHAM COUNTY REGISTRY) AND THE GREGORY AND JULIE HOBBY PROPERTY LOCATED ON HOBBY RD RECORDED IN DEED BOOK 1060 PAGE 629 (HARNETT COUNTY REGISTRY) AND PLAT BOOK 94 PAGE 272 (CHATHAM COUNTY REGISTRY). THENCE ALONG THE SAID COMMON LINE NORTH 65 DEGREES 11 MINUTES 56 SECONDS WEST FOR A DISTANCE OF 50.83 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE NORTH 31 DEGREES 51 MINUTES 23 SECONDS EAST FOR A DISTANCE OF 1404.37 FEET TO AN IRON PIPE SET ON THE COMMON LINE OF THE GREGORY AND JULIE HOBBY PROPERTY RECORDED IN DEED BOOK 1390 PAGE 1119 AND PLAT BOOK 92 PAGE 34, CHATHAM COUNTY REGISTRY. THENCE ALONG THE SAID COMMON LINE SOUTH 62 DEGREES 40 MINUTES 45 SECONDS EAST FOR A DISTANCE OF 49.59 FEET TO AN IRON PIPE SET AT THE COMMON CORNER OF THE SAID GREGORY AND JULIE HOBBY PROPERTIES AND A CORNER OF LOT 8A OF THE LANDON AND MARTHA CHANDLER AND JEFFREY ALAN PAYNE SUBDIVISION AS RECORDED IN BOOK OF MAPS 2018 PAGE 170, HARNETT COUNTY REGISTRY. THENCE ALONG THE SAID COMMON LINE OF THE ABOVE-REFERENCED SUBDIVISION AND GREGORY AND JULIE HOBBY SOUTH 31 DEGREES 49 MINUTES 36 SECONDS WEST FOR A DISTANCE OF 556.81 FEET TO A POINT; SAID POINT BEING THE COMMON CORNER WITH THE ABOVE-REFERENCED SUBDIVISION AND LOT 10 OF THE TRIANGLE HOME PROS, LLC SUBDIVISION AS RECORDED IN BOOK OF MAPS 2023 PAGE 533, HARNETT COUNTY REGISTRY. THENCE CONTINUING ALONG THE COMMON LINE OF THE SAID SUBDIVISION SOUTH 31 DEGREES 48 MINUTES 27 SECONDS WEST FOR A DISTANCE OF 845.24 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 69,999 SQUARE FEET (1.607 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.

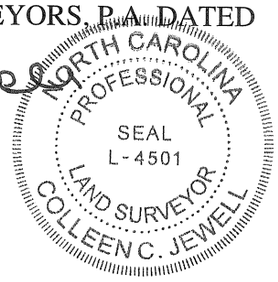
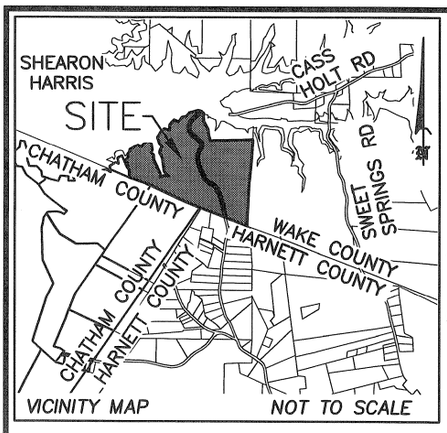


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720062600L, EFFECTIVE JULY 19, 2022.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the WAKE COUNTY *Planning Jurisdiction*

N.C. GRID (NAD 83/2011) SEE NOTE 1

NOW OR FORMERLY
DUKE ENERGY PROGRESS
SHEARON HARRIS NUCLEAR PLANT
DB 15289 PG 2437
PIN:0627123577

NOW OR FORMERLY
TRIANGLE LAND
CONSERVANCY
DB 13316 PG 641
PIN:0626597678
8125 CASS HOLT RD

NOW OR FORMERLY
COLON W. HOBBY
DB 8257 PG 70
PIN:0626493104
8200 CASS HOLT RD

CASS HOLT ROAD
SR 1116

SEE SECTION 2
ON SHEET 2 OF 3

SEE SECTION 1
ON SHEET 2 OF 3

PERMANENT UTILITY
EASEMENT #2

PERMANENT UTILITY
EASEMENT #1

EIP

NOW OR FORMERLY
COLON W HOBBY
DB 702 PG 872
PIN:062600178644
PARCEL ID:0062360
HOBBY RD

WAKE COUNTY
CHATHAM COUNTY

NOW OR FORMERLY
RANDY L DICKENS
KATHY J DICKENS
DB 15909 PG 2477 WCR
DB 3280 PG 235 HCR
WAKE COUNTY PIN:0626777815
HARNETT COUNTY PIN:0626668276

NOW OR FORMERLY
COLON W HOBBY
DB 486 PG 852
PIN:062600365759
PARCEL ID:0060461
HOBBY RD

WAKE COUNTY
HARNETT COUNTY

CHATHAM COUNTY
HARNETT COUNTY

ROLLINS MILL ROAD
SR 1401

0 600 1200 Feet

SHEET 1 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 7TH DAY OF OCT A.D., 2023.

SURVEYOR

L–4501
LICENSE NUMBER

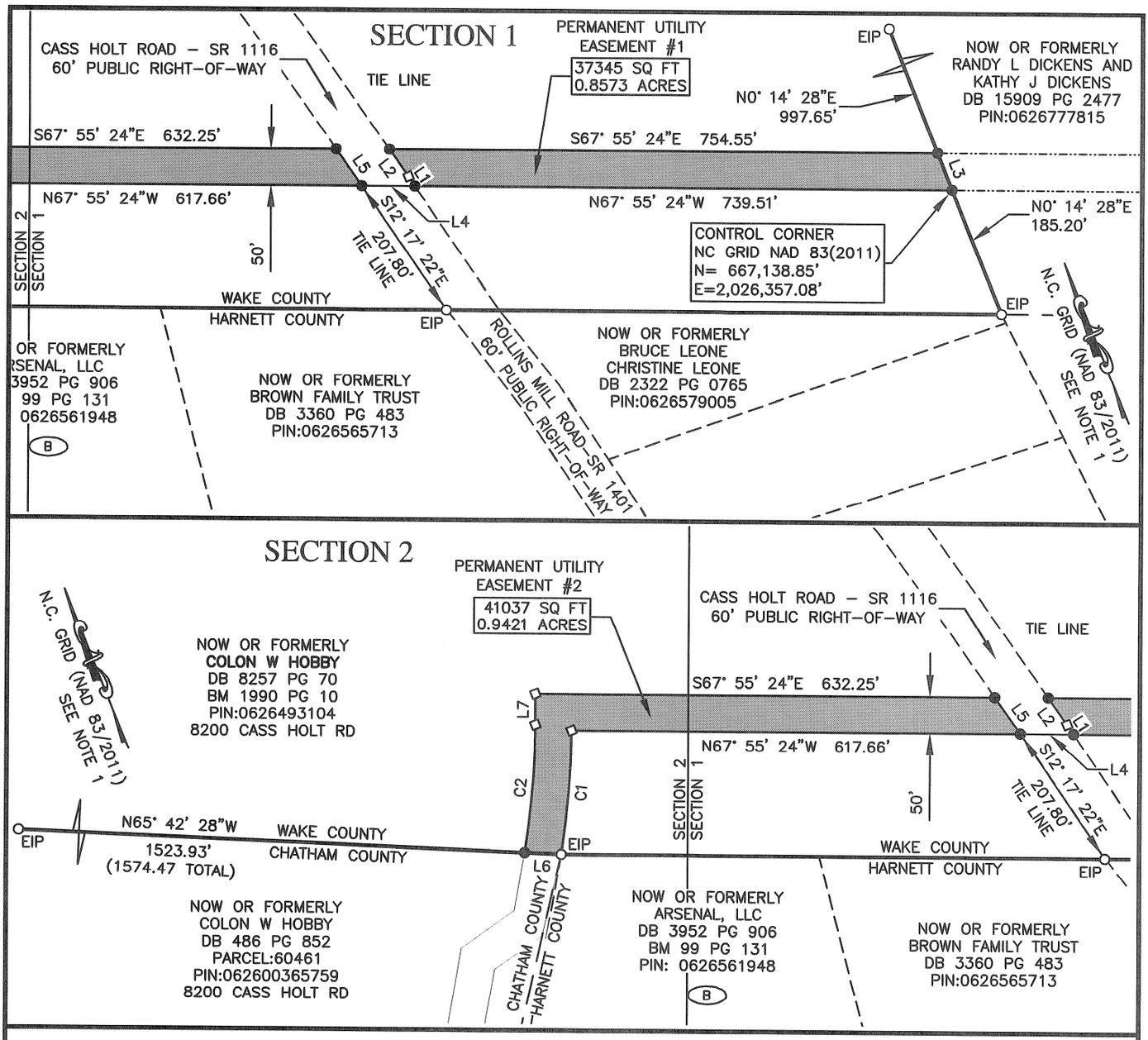
NORTH CAROLINA PROFESSIONAL SEAL L-4501 SURVEYOR COLLEEN C. JEWELL

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.		AREAS COMPUTED BY COORDINATES.		FILE NAME: 7122–HOBBY–3104–EASE.dwg	
Surv'd: RAC	Drawn: MR	Chk'd: CCJ	Job No.: 7122	Date: 10/17/23	Scale: 1" = 600'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: COLON W. HOBBY
GRANTEE: TOWN OF FUQUAY–VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA



LEGEND

- ● – IRON PIPE SET (IPS)
- ○ – EXISTING IRON PIPE (EIP)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- – POWER POLE
- OU – OVERHEAD UTILITY LINE(S)
- – RIGHT–OF–WAY
- – EXISTING PROPERTY LINE
- – PROPERTY LINE NOT SURVEYED
- – PERMANENT UTILITY EASEMENT

AREA SUMMARY	
PERMANENT UTILITY EASEMENT #1	37345 (SF)
	0.8573 (AC)
PERMANENT UTILITY EASEMENT #2	41037 (SF)
	0.9421 (AC)
TOTAL	78382 (SF)
	1.799 (AC)

Curve Table

Curve #	Radius	Length	Chord Direction	Chord Length
C1	1213.17'	171.62'	S26° 33' 44"W	171.48'
C2	1126.81'	177.26'	N26° 35' 36"E	177.08'

Line Table

Line #	Direction	Length
L1	N12° 15' 25"W	15.58'
L2	N13° 12' 47"W	45.49'
L3	S0° 14' 28"W	53.86'
L4	N67° 55' 24"W	73.19'
L5	S13° 12' 47"E	61.26'
L6	N65° 42' 28"W	50.54'
L7	N22° 03' 50"E	42.47'

0 200 400 Feet

SHEET 2 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17 DAY OF OCT A.D.,2024

NORTH CAROLINA PROFESSIONAL SEAL L-4501 SURVEYOR COLLEEN C. JEWELL

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122–HOBBY–3104–EASE.dwg

Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 200'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: COLON W. HOBBY
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA

GRANTOR: COLON W. HOBBY
WAKE COUNTY PIN: 0626493104
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT #1

BEGINNING AT AN IRON PIPE SET MARKING A POINT ON THE COMMON LINE OF COLON H. HOBBY AS RECORDED IN DEED BOOK 8257 PAGE 70 AND BOOK OF MAPS 1990 PAGE 10 AND RANDY L. AND KATHY J. DICKENS AS RECORDED IN DEED BOOK 15909 PAGE 2477 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=667,138.85 AND E=2,026,357.08. THENCE NORTH 67 DEGREES 55 MINUTES 24 SECONDS WEST FOR A DISTANCE OF 739.51 FEET TO A POINT ON THE EASTERN RIGHT-OF-WAY OF CASS HOLT RD (SR 1116), A 60' PUBLIC RIGHT-OF-WAY. THENCE ALONG THE SAID RIGHT-OF-WAY NORTH 12 DEGREES 15 MINUTES 25 SECONDS WEST FOR A DISTANCE OF 15.58 FEET TO A POINT. THENCE CONTINUING ALONG THE SAID RIGHT-OF-WAY NORTH 13 DEGREES 12 MINUTES 47 SECONDS WEST FOR DISTANCE OF 45.49 FEET TO A POINT. THENCE LEAVING THE SAID RIGHT-OF-WAY SOUTH 67 DEGREES 55 MINUTES 24 SECONDS EAST FOR A DISTANCE OF 754.55 FEET TO A POINT ON THE SAID COMMON LINE OF HOBBY AND DICKENS. THENCE ALONG THE SAID COMMON LINE SOUTH 00 DEGREES 14 MINUTES 28 SECONDS WEST FOR A DISTANCE OF 53.86 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 37,345 SQUARE FEET (0.8573 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.

PERMANENT UTILITY EASEMENT #2

COMMENCING AT AN IRON PIPE SET MARKING A POINT ON THE COMMON LINE OF COLON H. HOBBY AS RECORDED IN DEED BOOK 8257 PAGE 70 AND BOOK OF MAPS 1990 PAGE 10 AND RANDY L. AND KATHY J. DICKENS AS RECORDED IN DEED BOOK 15909 PAGE 2477 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=667,138.85 AND E=2,026,357.08. THENCE NORTH 67 DEGREES 55 MINUTES 24 SECONDS WEST FOR A DISTANCE OF 739.51 FEET TO A POINT ON THE EASTERN RIGHT-OF-WAY OF CASS HOLT RD (SR 1116), A 60' PUBLIC RIGHT-OF-WAY. THENCE CONTINUING ACROSS CASS HOLT RD NORTH 67 DEGREES 55 MINUTES 24 SECONDS WEST FOR A DISTANCE OF 73.19 FEET TO A POINT ON THE WESTERN RIGHT-OF-WAY LINE; THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT #2. THENCE LEAVING THE SAID RIGHT-OF-WAY NORTH 67 DEGREES 55 MINUTES 24 SECONDS WEST FOR A DISTANCE OF 617.66 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 1213.17 FEET, AN ARC LENGTH OF 171.62 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 26 DEGREES 33 MINUTES 44 SECONDS WEST FOR 171.48 FEET TO AN EXISTING IRON PIPE ON THE SOUTHERN LINE OF THE COLON W. HOBBY PROPERTY REFERENCED ABOVE AND A COMMON CORNER OF THE COLON W. HOBBY PROPERTY AS RECORDED IN DEED BOOK 486 PAGE 852 AND ARSENAL, LLC AS RECORDED IN DEED BOOK 3952 PAGE 906 AND BOOK OF MAPS 99 PAGE 131 IN THE OFFICE OF THE HARNETT COUNTY REGISTER OF DEEDS. THENCE

ALONG THE SAID COMMON LINE NORTH 65 DEGREES 42 MINUTES 28 SECONDS WEST FOR A DISTANCE OF 50.54 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 1126.81 FEET, AN ARC LENGTH OF 177.26 FEET, AND A CHORD BEARING A DISTANCE OF NORTH 26 DEGREES 35 MINUTES 36 SECONDS EAST FOR 177.08 FEET TO A POINT. THENCE NORTH 22 DEGREES 03 MINUTES 50 SECONDS EAST FOR A DISTANCE OF 42.47 FEET TO A POINT. THENCE SOUTH 67 DEGREES 55 MINUTES 24 SECONDS EAST FOR A DISTANCE OF 632.25 FEET TO A POINT ON THE SAID WESTERN RIGHT-OF-WAY OF CASS HOLT RD. THENCE ALONG THE SAID RIGHT-OF-WAY SOUTH 13 DEGREES 12 MINUTES 47 SECONDS EAST FOR A DISTANCE OF 61.26 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 41,037 SQUARE FEET (0.9421 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.

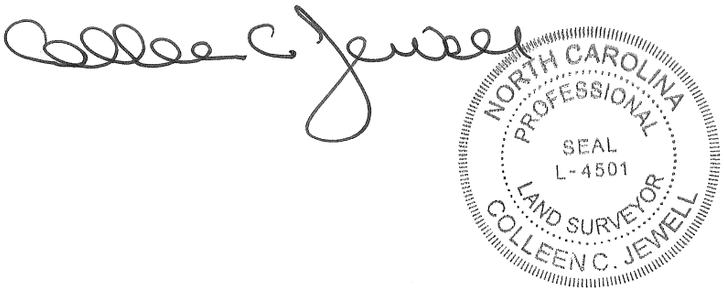
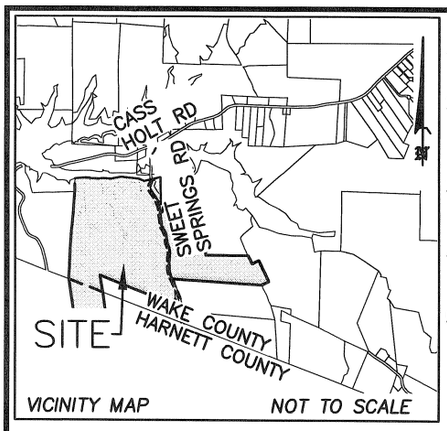


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720062600L, EFFECTIVE JULY 19, 2022.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the WAKE COUNTY *Planning Jurisdiction*

N.C. GRID (NAD 83/2011) SEE NOTE 1

NOW OR FORMERLY
TRIANGLE LAND
CONSERVANCY
DB 13316 PG 641
PIN:0626597678
8125 CASS HOLT RD

NOW OR FORMERLY
BELVIN F AKINS TRUSTEE
DB 17703 PG 2240
BM 1977 PG 39
PIN:0636084853
6904 SWEET SPRINGS RD

NOW OR FORMERLY
RANDY L DICKENS
KATHY J DICKENS
DB 15909 PG 2477 WCR
DB 3280 PG 235 HCR
WAKE COUNTY PIN:0626777815
HARNETT COUNTY PIN:0626668276

NOW OR FORMERLY
COLON W HOBBY
DB 8257 PG 70
PIN:0626493104
8200 CASS HOLT RD

EIP

SWEET SPRINGS ROAD
SR 1117

100' CP&L RIGHT–OF–WAY

NOW OR FORMERLY
MARTIN MARIETTA
MATERIALS REAL ESTATE
INVESTMENTS, INC.
DB 19434 PG 1125
BM 2005 PG 2046
PIN:0636276049

SEE SECTION 3
ON SHEET 3 OF 3

PERMANENT UTILITY
EASEMENT #2

PERMANENT UTILITY
EASEMENT #1

SEE SECTION 1
ON SHEET 2 OF 3

SEE SECTION 2
ON SHEET 2 OF 3

NOW OR FORMERLY
WATSON ADCOCK LLC
DB 8493 PG 1412
PIN:06362983690 6925
CASS HOLT RD

WAKE COUNTY
HARNETT COUNTY

NOW OR FORMERLY
NOLOC LLC
DB 18438 PG 1920 WCR
DB 3963 PG 953 HCR
WAKE COUNTY PIN:0626862447
HARNETT COUNTY PIN:0626850956
0 SWEET SPRINGS RD (WAKE)
WADE STEPHENSON RD (HARNETT)

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 800 1600 Feet

SHEET 1 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT/RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17 DAY OF OCT A.D.,2023.

SURVEYOR

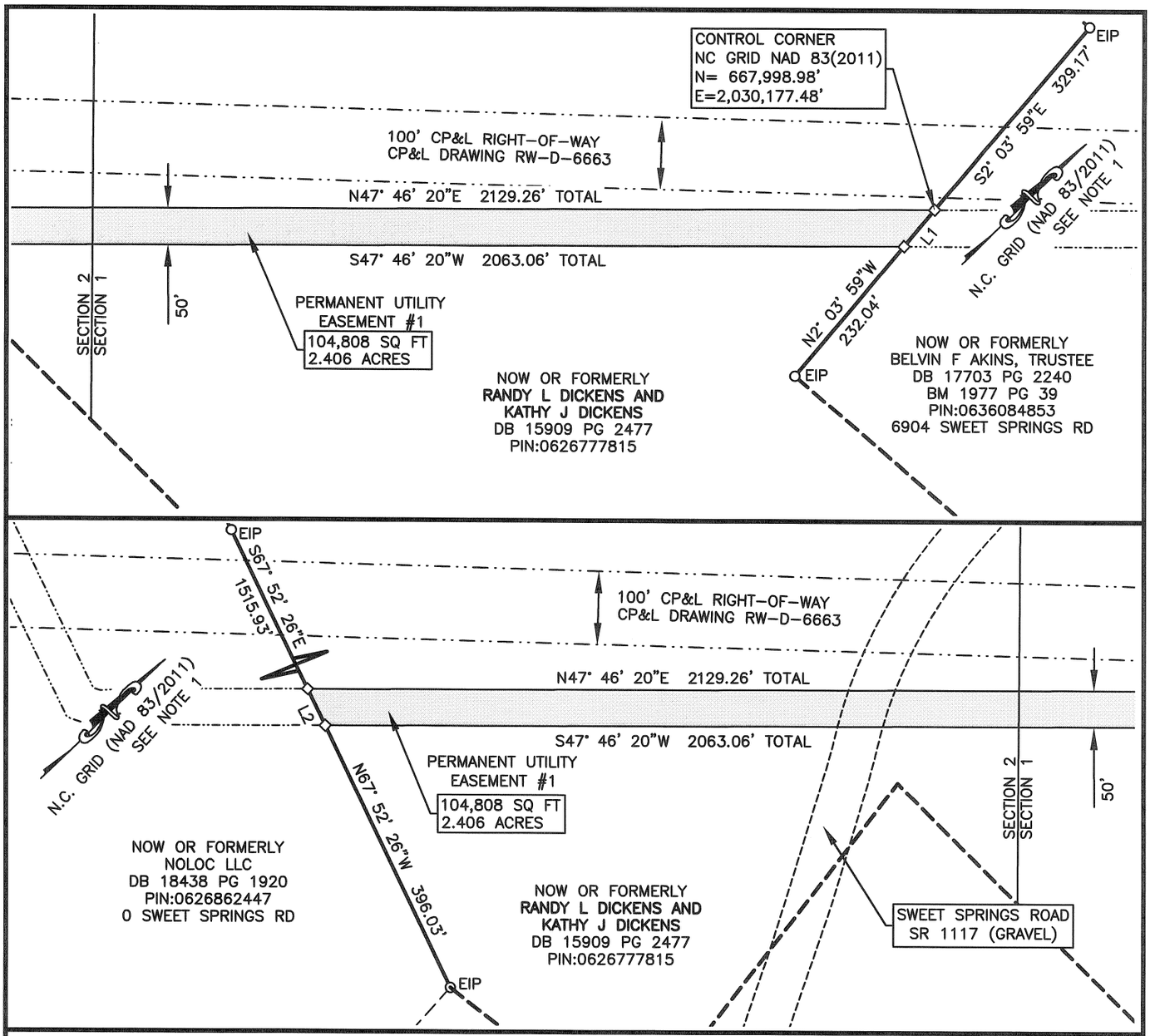
L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.			*AREAS COMPUTED BY COORDINATES.*	*FILE NAME:* 7122–DICKENS–7815–EASE.dwg	
Surv'd: RAC	*Drawn:* MR	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 10/17/23	*Scale:* 1" = 800'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: RANDY L. AND KATHY J. DICKENS
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRING TNSP., WAKE COUNTY, NORTH CAROLINA



LEGEND

- EIP – EXISTING IRON PIPE (EIP)
- COMPUTED CORNER
- EXISTING CONCRETE MONUMENT (ECM)
- POWER POLE
- OU – OVERHEAD UTILITY LINE(S)
- R/W – RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT

Line Table		
Line #	Direction	Length
L1	S2° 03' 59"E	65.43'
L2	N67° 52' 26"W	55.46'
L3	N0° 14' 28"E	53.86'
L4	S7° 17' 05"E	57.37'

AREA SUMMARY	
PERMANENT UTILITY EASEMENT #1	104,808 (SF)
	2.406 (AC)
PERMANENT UTILITY EASEMENT #2	47,595 (SF)
	1.093 (AC)
TOTAL	152,403 (SF)
	3.499 (AC)

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 200 400 Feet

SHEET 2 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17 DAY OF OCT A.D.,2023.

SURVEYOR

L-4501
LICENSE NUMBER

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Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 200'

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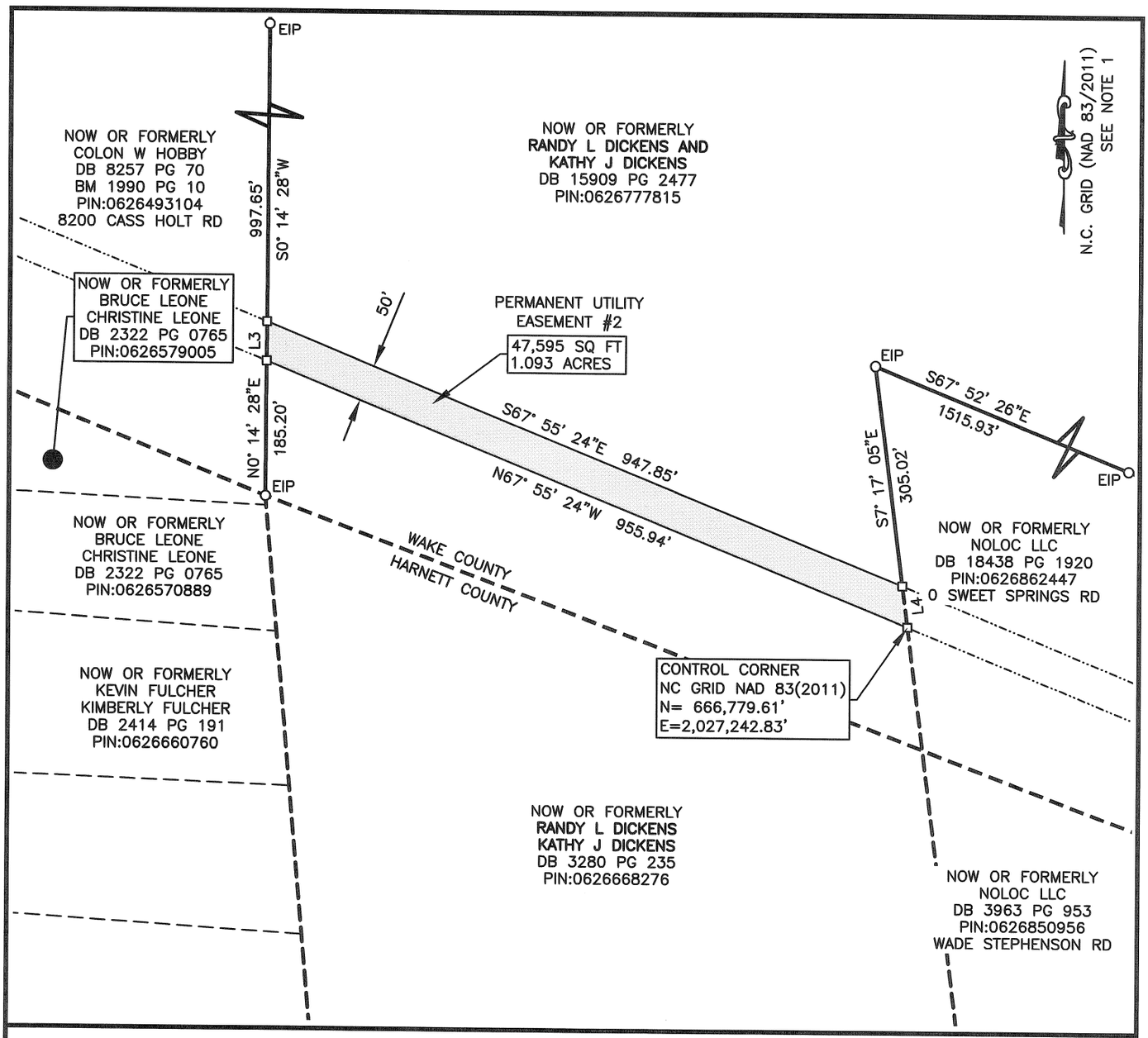
CARY, NC 27511
OFFICE – (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: RANDY L. AND KATHY J. DICKENS
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA



LEGEND

- O – EXISTING IRON PIPE (EIP)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- – POWER POLE
- OU – OVERHEAD UTILITY LINE(S)
- R/W – RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT

Line Table		
Line #	Direction	Length
L1	S2° 03' 59"E	65.43'
L2	N67° 52' 26"W	55.46'
L3	N0° 14' 28"E	53.86'
L4	S7° 17' 05"E	57.37'

AREA SUMMARY	
PERMANENT UTILITY EASEMENT #1	104,808 (SF)
	2.406 (AC)
PERMANENT UTILITY EASEMENT #2	47,595 (SF)
	1.093 (AC)
TOTAL	152,403 (SF)
	3.499 (AC)

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 200 400 Feet

SHEET 3 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 13 DAY OF OCT A.D.,2023.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-DICKENS-7815-EASE.dwg

Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 200'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: RANDY L. AND KATHY J. DICKENS
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA

GRANTOR: RANDY L. AND KATHY J. DICKENS
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT #1

BEGINNING AT A POINT HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=667,998.98 AND E=2,030,177.48; SAID POINT BEING ON THE COMMON PROPERTY LINE OF RANDY L. AND KATHY J. DICKENS AS RECORDED IN DEED BOOK 15909 PAGE 2477 AND THE BELVIN F. AKINS TRUSTEE PROPERTY AS RECORDED IN DEED BOOK 17703 PAGE 2240 AND BOOK OF MAPS 1977 PAGE 39 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS AND BEING SOUTH 02 DEGREES 03 MINUTES 59 SECONDS EAST A DISTANCE OF 329.17 FEET FROM AN EXISTING IRON PIPE MARKING A COMMON CORNER OF THE SAID AKINS AND DICKENS PROPERTY. THENCE ALONG THE SAID COMMON LINE SOUTH 02 DEGREES 03 MINUTES 59 SECONDS EAST A DISTANCE OF 65.43 FEET TO A POINT; SAID POINT BEING NORTH 02 DEGREES 03 MINUTES 59 SECONDS WEST A DISTANCE OF 232.04 FEET FROM AN EXISTING IRON PIPE MARKING A COMMON CORNER OF THE DICKENS AND AKINS PROPERTY. THENCE SOUTH 47 DEGREES 46 MINUTES 20 SECONDS WEST FOR A DISTANCE OF 2063.06 FEET TO A POINT ON THE COMMON LINE OF NOLOC, LLC AS RECORDED IN DEED BOOK 18438 PAGE 1920; SAID POINT BEING NORTH 67 DEGREES 52 MINUTES 26 SECONDS WEST A DISTANCE OF 396.03 FEET FROM AN EXISTING IRON PIPE MARKING A COMMON CORNER WITH DICKENS AND NOLOC, LLC. THENCE ALONG THE SAID COMMON LINE NORTH 67 DEGREES 52 MINUTES 26 SECONDS WEST FOR A DISTANCE OF 55.46 FEET TO A POINT; SAID POINT BEING SOUTH 67 DEGREES 52 MINUTES 26 SECONDS EAST A DISTANCE OF 1515.93 FEET FROM AN EXISTING IRON PIPE MARKING A COMMON CORNER WITH DICKENS AND NOLOC, LLC. THENCE LEAVING THE SAID COMMON LINE NORTH 47 DEGREES 46 MINUTES 20 SECONDS EAST FOR A DISTANCE OF 2129.26 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT HAVING 104,808 SQUARE FEET (2.406 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.

PERMANENT UTILITY EASEMENT #2

BEGINNING AT A POINT HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=667,192.71 AND E=2,026,357.30 ON THE COMMON PROPERTY LINE OF RANDY L. AND KATHY J. DICKENS AS RECORDED IN DEED BOOK 15909 PAGE 2477 AND THE COLON W. HOBBY PROPERTY AS RECORDED IN DEED BOOK 8257 PAGE 70 AND BOOK OF MAPS 1990 PAGE 10; SAID POINT BEING SOUTH 00 DEGREES 14 MINUTES 28 SECONDS WEST A DISTANCE OF 997.65 FEET FROM AN EXISTING IRON PIPE ON THE SAID COMMON PROPERTY LINE. THENCE LEAVING THE SAID COMMON PROPERTY LINE SOUTH 67 DEGREES 55 MINUTES 24 SECONDS EAST FOR A DISTANCE OF 947.85 FEET TO A POINT ON THE COMMON PROPERTY LINE WITH DICKENS AND NOLOC, LLC; SAID POINT BEING SOUTH 07 DEGREES 17 MINUTES 05 SECONDS EAST A DISTANCE OF 305.02 FEET FROM AN EXISTING IRON PIPE MARKING A COMMON CORNER OF DICKENS AND NOLOC, LLC. THENCE ALONG THE SAID COMMON LINE SOUTH 07 DEGREES 17 MINUTES 05 SECONDS EAST FOR A DISTANCE OF 57.37 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE NORTH 67 DEGREES 55 MINUTES 24 SECONDS WEST FOR A DISTANCE OF 955.94 FEET TO A POINT ON THE COMMON LINE WITH DICKENS AND

HOBBY; SAID POINT BEING NORTH 00 DEGREES 14 MINUTES 28 SECONDS EAST A DISTANCE OF 185.20 FROM AN EXISTING IRON PIPE MARKING A COMMON CORNER OF DICKENS AND HOBBY. THENCE ALONG THE SAID COMMON LINE NORTH 00 DEGREES 14 MINUTES 28 SECONDS EAST FOR A DISTANCE OF 53.86 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT HAVING 47,595 SQUARE FEET (1.093 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.

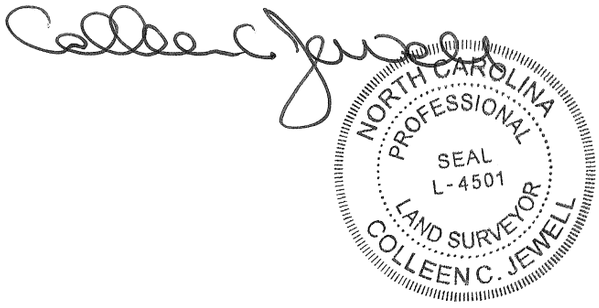
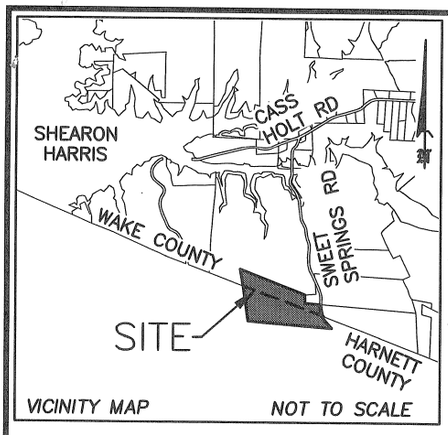


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720062600L, EFFECTIVE JULY 19, 2022.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the WAKE COUNTY *Planning Jurisdiction*

N.C. GRID (NAD 83/2011) SEE NOTE 1

NOW OR FORMERLY
RANDY L DICKENS
KATHY J DICKENS
DB 15909 PG 2477 WCR
DB 3280 PG 235 HCR
WAKE COUNTY PIN:0626777815
HARNETT COUNTY PIN:0626668276

SWEET SPRINGS ROAD
SR 1117

EIP

PERMANENT UTILITY EASEMENT

SEE SECTION 1 ON SHEET 2 OF 2

NOW OR FORMERLY
RONALD C GRIFFIN
JENNIFER B GRIFFIN
DB 16881 PG 523
BM 2017 PG 1370
PIN:0626962259
8032 SWEET SPRINGS RD

EIP

EIP

SEE SECTION 2 ON SHEET 2 OF 2

NOW OR FORMERLY
NOLOC LLC
DB 18438 PG 1920 WCR
DB 3963 PG 953 HCR
WAKE COUNTY PIN:0626862447
HARNETT COUNTY PIN:0626850956
0 SWEET SPRINGS RD (WAKE)
WADE STEPHENSON RD (HARNETT)

WAKE COUNTY
HARNETT COUNTY

100' CP&L RIGHT–OF–WAY

NOW OR FORMERLY
BETTS PROPERTIES LLC
DB 2322 PG 948
HARNETT COUNTY PIN:0626848662

WADE STEPHENSON ROAD
SR 1407

REVISION: 03/24/25
ADDED (IPS) TO LEGEND.

0 500 1000 Feet

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M.
WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17TH DAY OF OCT A.D.,2023.

SURVEYOR

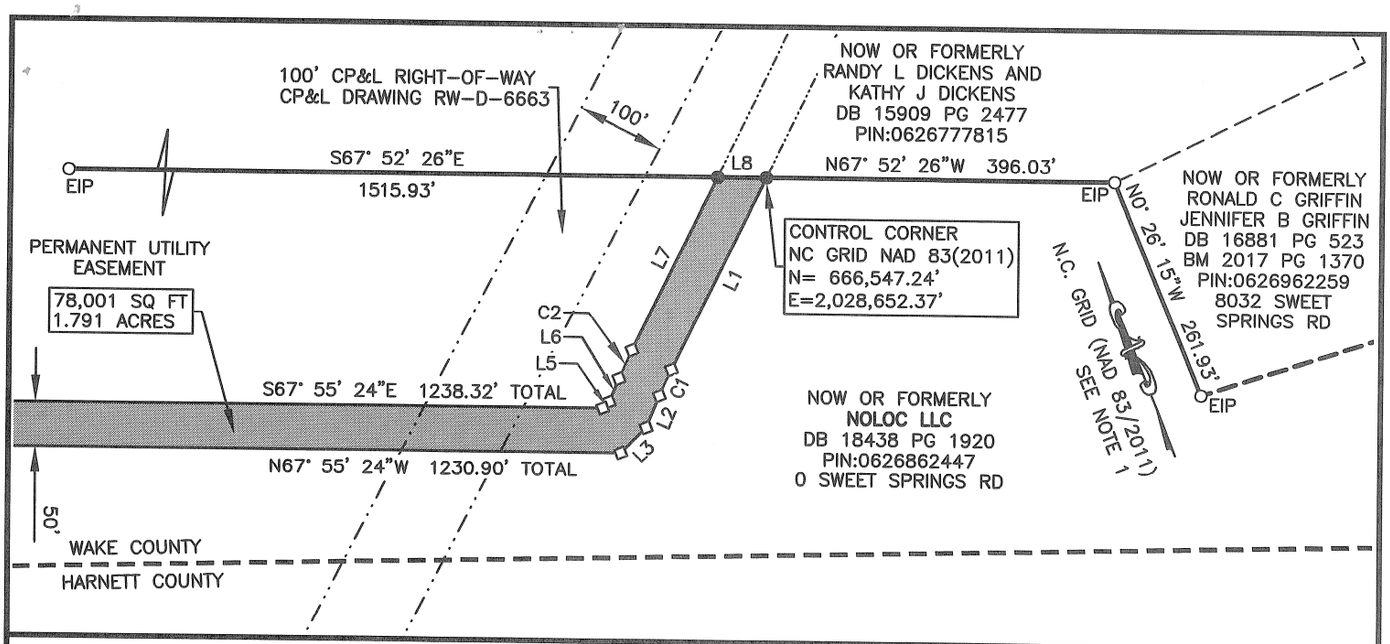
L–4501
LICENSE NUMBER

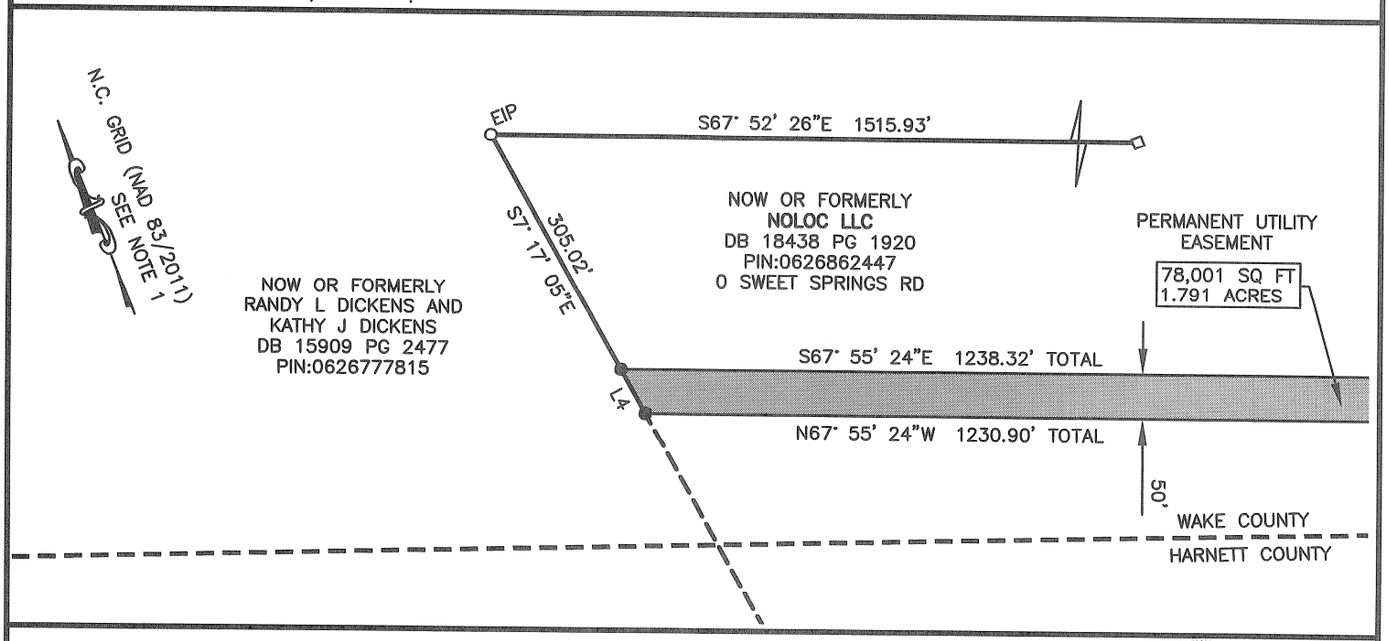
ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.			*AREAS COMPUTED BY COORDINATES.*	*FILE NAME:* 7122–NOLOC–2447–EASE.dwg	
Surv'd: RAC	*Drawn:* MR	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 10/17/23	*Scale:* 1" = 500'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: NOLOC, LLC
GRANTEE: TOWN OF FUQUAY–VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA





Line Table		
Line #	Direction	Length
L1	S47° 46' 20"W	244.44'
L2	S44° 34' 36"W	38.66'
L3	S67° 04' 36"W	40.60'

Line Table		
Line #	Direction	Length
L4	N7° 17' 05"W	57.37'
L5	N67° 04' 36"E	9.94'
L6	N44° 34' 36"E	28.72'

Line Table		
Line #	Direction	Length
L7	N47° 46' 20"E	220.44'
L8	S67° 52' 26"E	55.46'

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

Curve Table				
Curve #	Radius	Length	Chord Direction	Chord Length
C1	585.00'	32.63'	S46° 10' 28"W	32.62'
C2	635.00'	35.42'	N46° 10' 28"E	35.41'

AREA SUMMARY	
PERMANENT UTILITY EASEMENT	78,001 (SF)
	1.791 (AC)
TOTAL	78,001 (SF)
	1.791 (AC)

LEGEND
- ● – IRON PIPE SET (IPS)
- ○ – EXISTING IRON PIPE (EIP)
- □ – COMPUTED CORNER
- ⏢ – EXISTING CONCRETE MONUMENT (ECM)
- – POWER POLE
- OU – OVERHEAD UTILITY LINE(S)
- R/W – RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- – PERMANENT UTILITY EASEMENT

REVISION: 03/24/25
ADDED (IPS) TO LEGEND.

SHEET 2 OF 2

0 200 400 Feet

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17 DAY OF OCT A.D.,2023.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-NOLOC-2447-EASE.dwg

Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 200'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: NOLOC, LLC
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA

GRANTOR: NOLOC, LLC
WAKE COUNTY PIN: 0626862447
GRANTEE: TOWN OF FUQUAY-VARINA AND
TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN IRON PIPE SET ON THE COMMON LINE OF NOLOC, LLC AS RECORDED IN DEED BOOK 18438 PAGE 1920 AND RANDY L. AND KATHY J. DICKENS AS RECORDED IN DEED BOOK 15909 PAGE 2477 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=666,547.24 AND E=2,028,652.37. THENCE LEAVING THE SAID COMMON LINE SOUTH 47 DEGREES 46 MINUTES 20 SECONDS WEST FOR A DISTANCE OF 244.44 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 585.00 FEET, AN ARC LENGTH OF 32.63 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 46 DEGREES 10 MINUTES 28 SECONDS WEST FOR 32.62 FEET TO A POINT. THENCE SOUTH 44 DEGREES 34 MINUTES 36 SECONDS WEST FOR A DISTANCE OF 38.66 FEET TO A POINT. THENCE SOUTH 67 DEGREES 04 MINUTES 36 SECONDS WEST FOR A DISTANCE OF 40.60 FEET TO A POINT. THENCE NORTH 67 DEGREES 55 MINUTES 24 SECONDS WEST FOR A DISTANCE OF 1230.90 FEET TO A POINT ON A COMMON LINE OF THE ABOVE-REFERENCED PROPERTIES. THENCE ALONG THE SAID COMMON LINE NORTH 07 DEGREES 17 MINUTES 05 SECONDS WEST FOR A DISTANCE OF 57.37 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE SOUTH 67 DEGREES 55 MINUTES 24 SECONDS EAST FOR A DISTANCE OF 1238.32 FEET TO A POINT. THENCE NORTH 67 DEGREES 04 MINUTES 36 SECONDS EAST FOR A DISTANCE OF 9.94 FEET TO A POINT. THENCE NORTH 44 DEGREES 34 MINUTES 36 SECONDS EAST FOR A DISTANCE OF 28.72 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 635.00 FEET, AN ARC LENGTH OF 35.42 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 46 DEGREES 10 MINUTES 28 SECONDS EAST FOR 35.41 FEET TO A POINT. THENCE NORTH 47 DEGREES 46 MINUTES 20 SECONDS EAST FOR A DISTANCE OF 220.44 FEET TO A POINT ON THE SAID COMMON LINE OF NOLOC, LLC AND DICKENS. THENCE ALONG THE SAID COMMON LINE SOUTH 67 DEGREES 52 MINUTES 26 SECONDS EAST FOR A DISTANCE OF 55.46 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 78,001 SQUARE FEET (1.791 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.

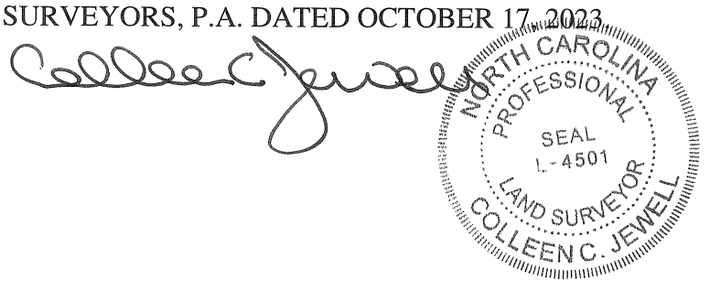
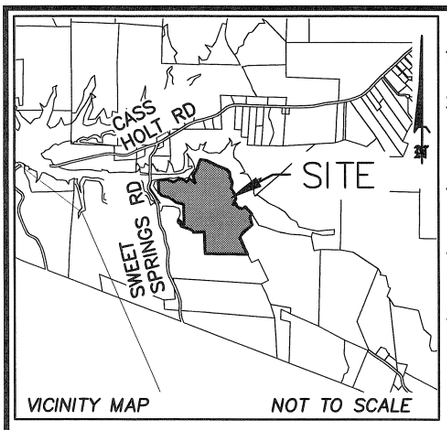


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720062600L, EFFECTIVE JULY 19, 2022.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the WAKE COUNTY *Planning Jurisdiction*

N.C. GRID (NAD 83/2011) SEE NOTE 1

NOW OR FORMERLY
DUKE ENERGY PROGRESS INC
DB 2110 PG 513
DB 2090 PG 567
DB 15289 PG 2437
PIN:0637008411

NOW OR FORMERLY
BELVIN F AKINS TRUSTEE
DB 17703 PG 2240
BM 1977 PG 39
PIN:0636084853
6904 SWEET SPRINGS RD

EIP

EIP

100' CP&L RIGHT–OF–WAY

EIP

NOW OR FORMERLY
RANDY L DICKENS AND
KATHY J DICKENS
DB 15909 PG 2477
PIN:0626777815

PERMANENT UTILITY EASEMENT

NOW OR FORMERLY
MARTIN MARIETTA
MATERIALS REAL ESTATE
INVESTMENTS, INC.
DB 19434 PG 1125
BM 2005 PG 2046
PIN:0636276049

EIP

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 500 1000 Feet

SHEET 1 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17 DAY OF OCT A.D.,2023.

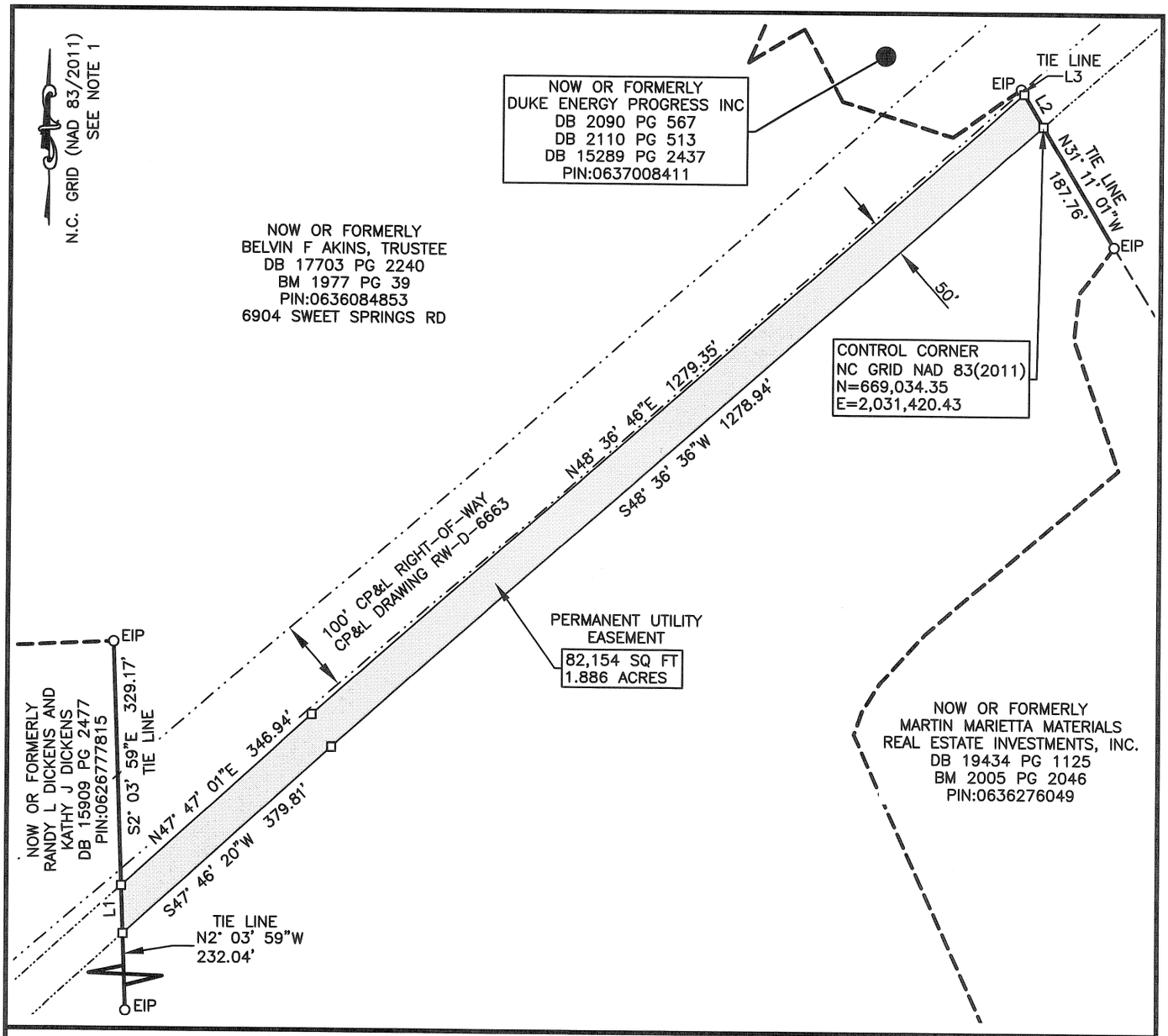
SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.			*AREAS COMPUTED BY COORDINATES.*	*FILE NAME:* 7122–AKINS–4853–EASE.dwg	
Surv'd: RAC	*Drawn:* MR	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 10/17/23	*Scale:* 1" = 500'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: BELVIN F. AKINS, TRUSTEE
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA



LEGEND

- EXISTING IRON PIPE (EIP)
- COMPUTED CORNER
- EXISTING CONCRETE MONUMENT (ECM)
- POWER POLE
- OU — OVERHEAD UTILITY LINE(S)
- R/W — RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT

Line Table		
Line #	Direction	Length
L1	N2° 03' 59"W	65.43'
L2	S31° 11' 01"E	50.80'
L3	S31° 11' 01"E	7.93'

AREA SUMMARY		
PERMANENT UTILITY EASEMENT	82,154	(SF)
	1.886	(AC)
TOTAL	82,154	(SF)
	1.886	(AC)

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 200 400 Feet

SHEET 2 OF 2

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 7th DAY OF OCT A.D.,2023.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-AKINS-4853-EASE.dwg

Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 200'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE - (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: BELVIN F. AKINS, TRUSTEE
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA

GRANTOR: BELVIN F. AKINS, TRUSTEE
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT A POINT ON THE COMMON PROPERTY LINE OF THE BELVIN F. AKINS TRUSTEE PROPERTY AS RECORDED IN DEED BOOK 17703 PAGE 2240 AND BOOK OF MAPS 1977 PAGE 39 AND THE MARTIN MARIETTA MATERIALS REAL ESTATE INVESTMENTS, INC PROPERTY AS RECORDED IN DEED BOOK 19434 PAGE 1125 AND BOOK OF MAPS 2005 PAGE 2046 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=669,034.35 AND E=2,031,420.43; SAID POINT BEING NORTH 31 DEGREES 11 MINUTES 01 SECONDS WEST A DISTANCE OF 187.76 FEET FROM AN EXISTING IRON PIPE MARKING A COMMON CORNER WITH AKINS AND MARTIN MARIETTA. THENCE SOUTH 48 DEGREES 36 MINUTES 36 SECONDS WEST FOR A DISTANCE OF 1278.94 FEET TO A POINT. THENCE SOUTH 47 DEGREES 46 MINUTES 20 SECONDS WEST FOR A DISTANCE OF 379.81 FEET TO A POINT ON THE COMMON PROPERTY LINE OF RANDY L. AND KATHY J. DICKENS AS RECORDED IN DEED BOOK 15909 PAGE 2477; SAID POINT BEING NORTH 02 DEGREES 03 MINUTES 59 SECONDS WEST A DISTANCE OF 232.04 FEET FROM AN EXISTING IRON PIPE MARKING A COMMON CORNER OF AKINS AND DICKENS. THENCE ALONG THE SAID COMMON LINE NORTH 02 DEGREES 03 MINUTES 59 SECONDS WEST FOR A DISTANCE OF 65.43 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE NORTH 47 DEGREES 47 MINUTES 01 SECONDS EAST FOR A DISTANCE OF 346.94 FEET TO A POINT. THENCE NORTH 48 DEGREES 36 MINUTES 46 SECONDS EAST FOR A DISTANCE OF 1279.35 FEET TO A POINT ON THE ABOVE-DESCRIBED COMMON LINE OF AKINS AND MARTIN MARIETTA; SAID POINT BEING SOUTH 31 DEGREES 11 MINUTES 01 SECONDS EAST A DISTANCE OF 7.93 FEET FROM AN EXISTING IRON PIPE MARKING THE COMMON CORNER OF AKINS, MARTIN MARIETTA, AND THE DUKE ENERGY PROGRESS, INC. PROPERTY. THENCE ALONG THE COMMON LINE WITH AKINS AND MARTIN MARIETTA SOUTH 31 DEGREES 11 MINUTES 01 SECONDS EAST FOR A DISTANCE OF 50.80 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 82,154 SQUARE FEET IN AREA (1.886 ACRES). REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.

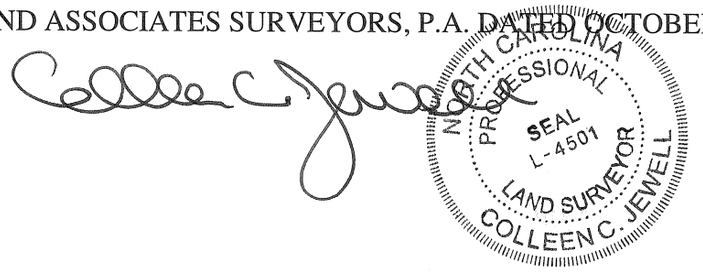
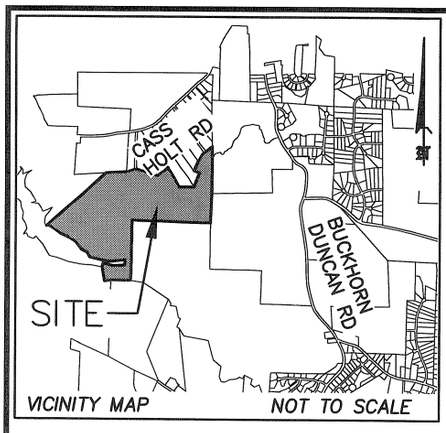


EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT AND TEMPORARY CONSTRUCTION EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

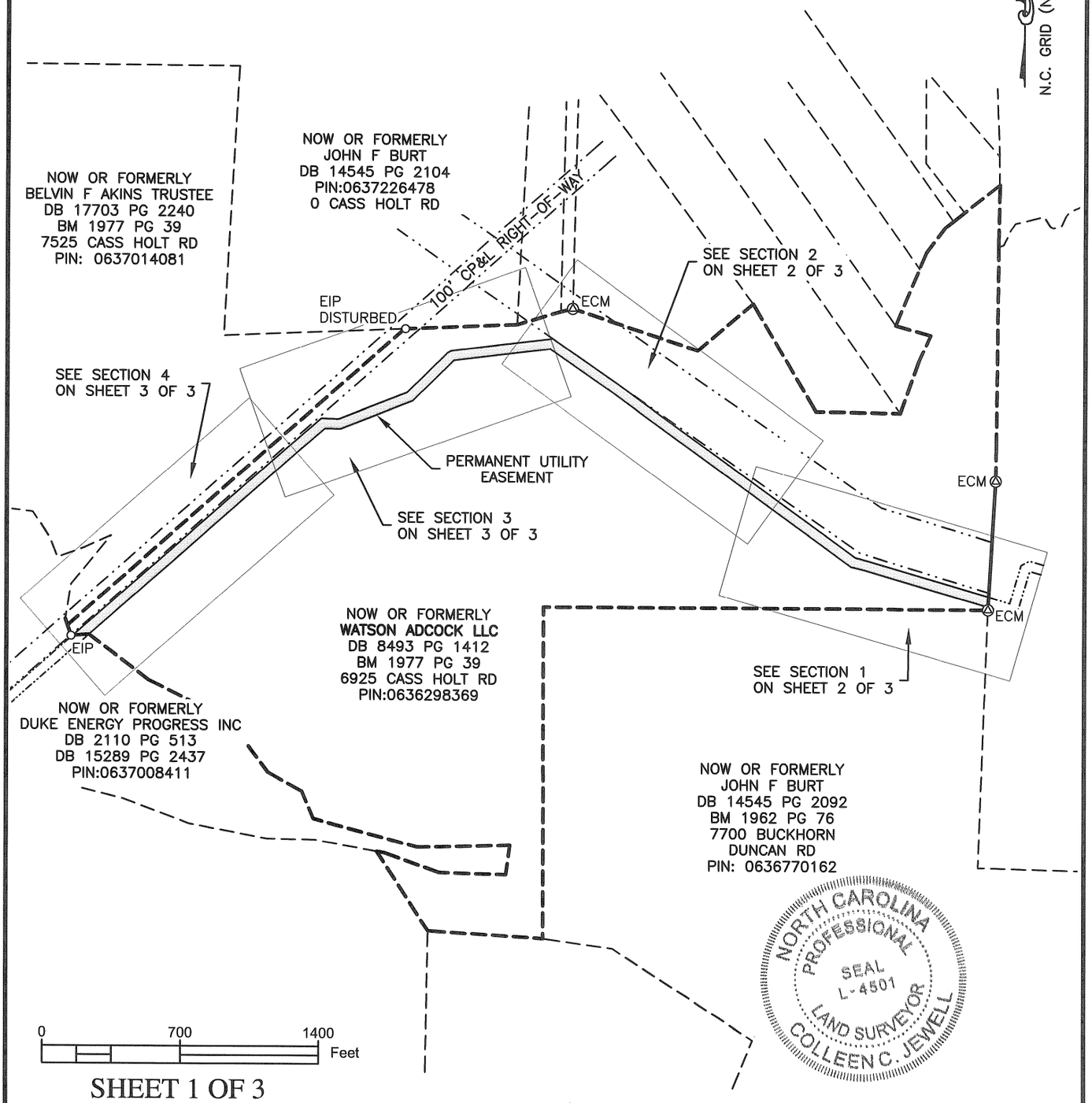
5)– THIS PROPERTY IS NOT LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720062600L, EFFECTIVE JULY 19, 2022.

c. 1. This survey is of an existing parcel of land and does not create a new street or change an existing street;

Professional Land Surveyor

This parcel is located in the WAKE COUNTY *Planning Jurisdiction*

N.C. GRID (NAD 83/2011) SEE NOTE 1



NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

SHEET 1 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17th DAY OF Dec A.D.,2023.

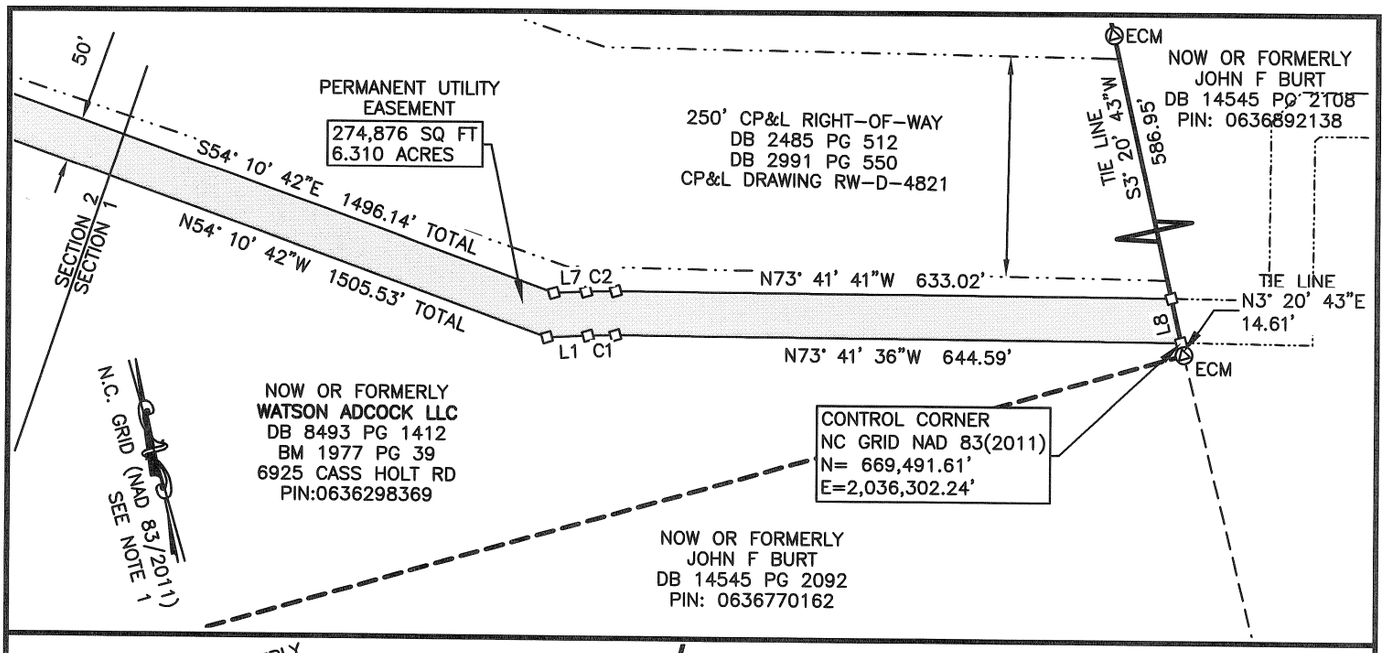
SURVEYOR

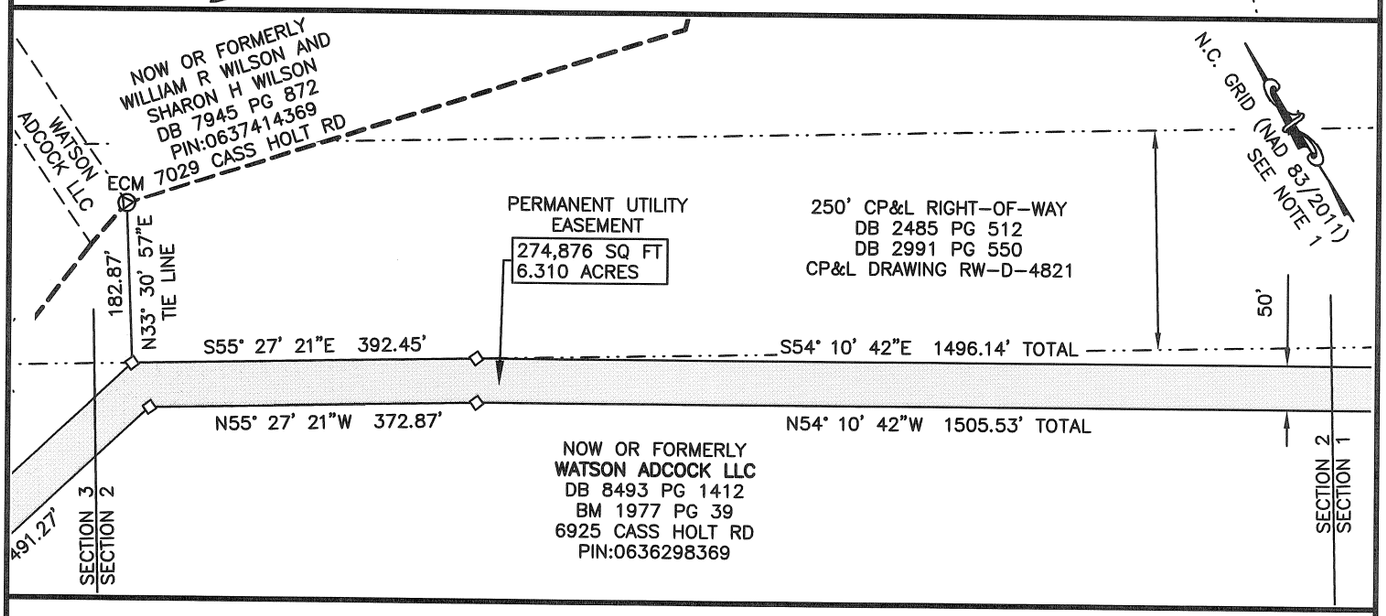
L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.		AREAS COMPUTED BY COORDINATES.		FILE NAME: 7122–WATSON–8369–EASE.dwg	
Surv'd: RAC	Drawn: MR	Chk'd: CCJ	Job No.: 7122	Date: 10/17/23	Scale: 1" = 700'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: WATSON ADCOCK, LLC
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA





LEGEND

- O – EXISTING IRON PIPE (EIP)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- – POWER POLE
- OU – OVERHEAD UTILITY LINE(S)
- R/W – RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT

Curve Table				
Curve #	Radius	Length	Chord Direction	Chord Length
C1	585.00'	31.10'	N75° 09' 18"W	31.09'
C2	635.00'	33.75'	S75° 09' 18"E	33.75'

Line Table		
Line #	Direction	Length
L1	N76° 40' 40"W	46.88'
L2	N89° 03' 58"W	79.45'
L3	N52° 55' 49"W	0.03'
L4	S85° 55' 58"W	82.43'
L5	S89° 03' 58"E	88.85'
L6	N60° 22' 30"E	21.21'
L7	S76° 40' 40"E	36.93'
L8	S3° 20' 43"W	51.32'
L9	N85° 55' 58"E	8.91'

AREA SUMMARY		
PERMANENT UTILITY EASEMENT	274,876 (SF)	
	6.310 (AC)	
TOTAL	274,876 (SF)	
	6.310 (AC)	

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 200 400 Feet

SHEET 2 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17TH DAY OF OCT A.D.,2023.

SURVEYOR

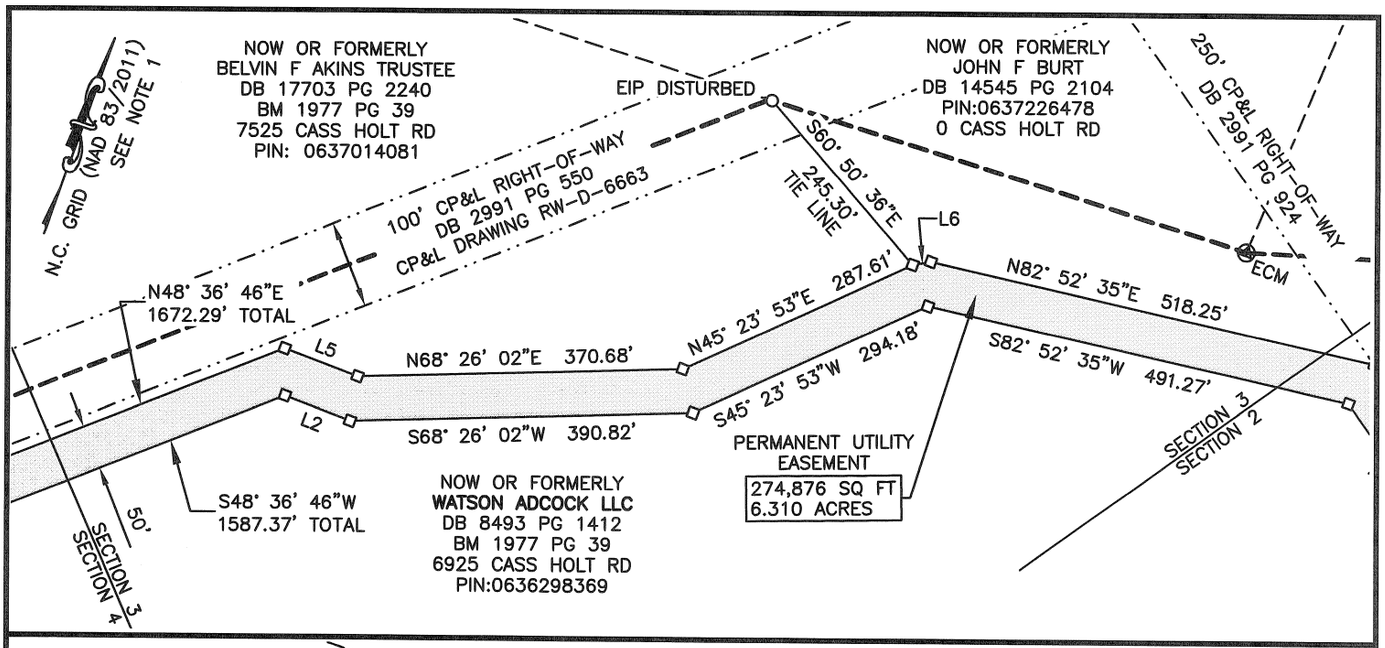
L-4501
LICENSE NUMBER

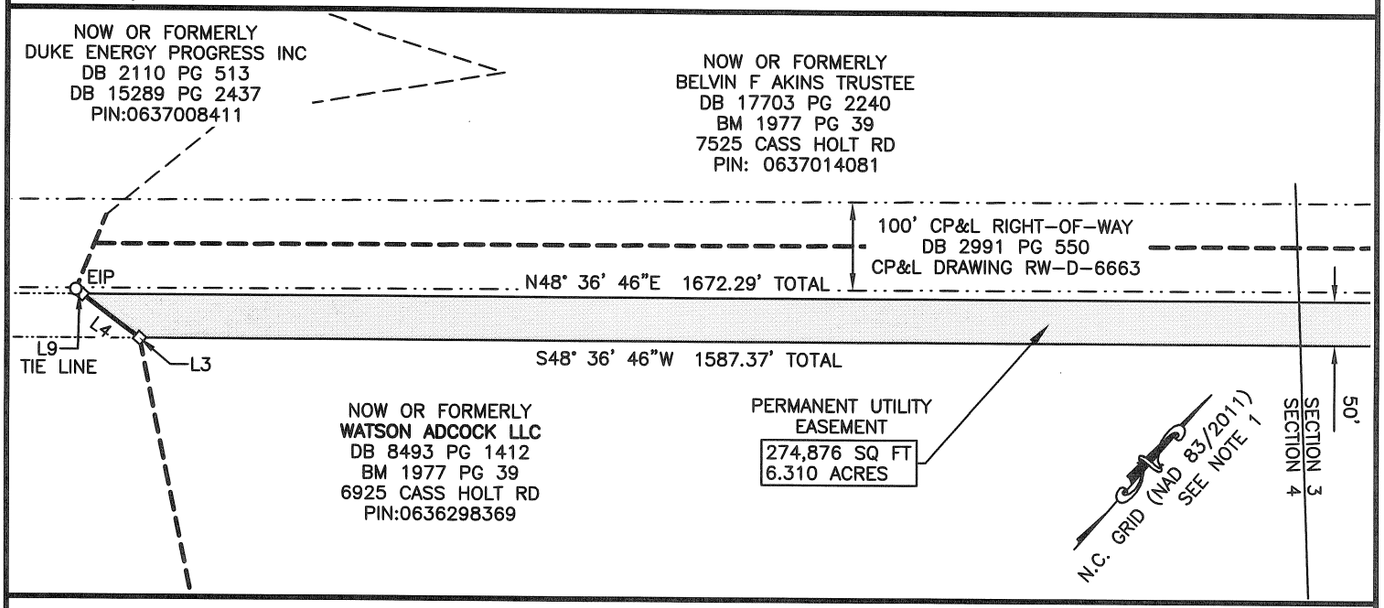
ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-WATSON-8369-EASE.dwg

Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 200'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT
GRANTOR: WATSON ADCOCK, LLC
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA





LEGEND

- ○ – EXISTING IRON PIPE (EIP)
- □ – COMPUTED CORNER
- △ – EXISTING CONCRETE MONUMENT (ECM)
- – POWER POLE
- OU – OVERHEAD UTILITY LINE(S)
- R/W – RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT

Curve Table

Curve #	Radius	Length	Chord Direction	Chord Length
C1	585.00'	31.10'	N75° 09' 18"W	31.09'
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Line Table

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L7	S76° 40' 40"E	36.93'
L8	S3° 20' 43"W	51.32'
L9	N85° 55' 58"E	8.91'

AREA SUMMARY

PERMANENT UTILITY EASEMENT	274,876 (SF)	6.310 (AC)
TOTAL	274,876 (SF)	6.310 (AC)

NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

0 200 400 Feet

SHEET 3 OF 3

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 17 DAY OF OCT A.D., 2023.

SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-WATSON-8369-EASE.dwg

Surv'd: RAC | Drawn: MR | Chk'd: CCJ | Job No.: 7122 | Date: 10/17/23 | Scale: 1" = 200'

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CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469-1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

EASEMENT PLAT

GRANTOR: WATSON ADCOCK, LLC
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT –
HOLLY SPRINGS TNSP., WAKE COUNTY, NORTH CAROLINA

GRANTOR: WATSON ADCOCK, LLC
WAKE COUNTY PIN: 0636298369
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

COMMENCING AT AN EXISTING CONCRETE MONUMENT MARKING A COMMON CORNER OF WATSON ADCOCK, LLC AS RECORDED IN DEED BOOK 8493 PAGE 1412 AND BOOK OF MAPS 1977 PAGE 39 AND JOHN F. BURT AS RECORDED IN DEED BOOK 14545 PAGE 2092 AND A POINT ON THE COMMON LINE WITH JOHN F. BURT AS RECORDED IN DEED BOOK 14545 PAGE 2108 IN THE OFFICE OF THE WAKE COUNTY REGISTER OF DEEDS; SAID CONCRETE MONUMENT HAVING N.C. GRID COORDINATES (NAD 83/2011) IN FEET TO N=669,477.02 AND E=2,036,301.38. THENCE ALONG THE SAID COMMON LINE OF JOHN F. BURT AND WATSON ADCOCK, LLC NORTH 03 DEGREES 20 MINUTES 43 SECONDS EAST FOR A DISTANCE OF 14.61 FEET TO THE POINT AND PLACE OF BEGINNING OF THIS PERMANENT UTILITY EASEMENT. THENCE LEAVING THE SAID COMMON LINE THE FOLLOWING TEN COURSES AND DISTANCES:

NORTH 73 DEGREES 41 MINUTES 36 SECONDS WEST FOR 644.59 FEET TO A POINT;

AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 585.00 FEET, AN ARC LENGTH OF 31.10 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 75 DEGREES 09 MINUTES 18 SECONDS WEST FOR 31.09 FEET TO A POINT;

NORTH 76 DEGREES 40 MINUTES 40 SECONDS WEST FOR 46.88 FEET TO A POINT;

NORTH 54 DEGREES 10 MINUTES 42 SECONDS WEST FOR 1505.53 FEET TO A POINT;

NORTH 55 DEGREES 27 MINUTES 21 SECONDS WEST FOR 372.87 FEET TO A POINT;

SOUTH 82 DEGREES 52 MINUTES 35 SECONDS WEST FOR 491.27 FEET TO A POINT;

SOUTH 45 DEGREES 23 MINUTES 53 SECONDS WEST FOR 294.18 FEET TO A POINT;

SOUTH 68 DEGREES 26 MINUTES 02 SECONDS WEST FOR 390.82 FEET TO A POINT;

NORTH 89 DEGREES 03 MINUTES 58 SECONDS WEST FOR 79.45 FEET TO A POINT;

SOUTH 48 DEGREES 36 MINUTES 46 SECONDS WEST FOR 1587.37 FEET TO A POINT ON THE COMMON LINE WITH DUKE ENERGY PROGRESS INC AS RECORDED IN DEED BOOK 2110 PAGE 513. THENCE FOLLOWING THE SAID COMMON LINE SOUTH 85 DEGREES 55 MINUTES 58 SECONDS WEST FOR A DISTANCE OF 82.43 FEET TO A POINT;

SAID POINT IS LOCATED NORTH 85 DEGREES 55 MINUTES 58 SECONDS EAST A DISTANCE OF 8.91 FEET FROM AN EXISTING IRON PIPE MARKING A CORNER OF THE WATSON ADCOCK, LLC AND DUKE ENERGY PROGRESS, INC. PROPERTIES.

THENCE LEAVING THE SAID COMMON LINE THE FOLLOWING TEN COURSES AND DISTANCES:

NORTH 48 DEGREES 36 MINUTES 46 SECONDS EAST FOR 1672.29 FEET TO A POINT;

SOUTH 89 DEGREES 03 MINUTES 58 SECONDS EAST FOR 88.85 FEET TO A POINT;

NORTH 68 DEGREES 26 MINUTES 02 SECONDS EAST FOR 370.68 FEET TO A POINT;

NORTH 45 DEGREES 23 MINUTES 53 SECONDS EAST FOR 287.61 FEET TO A POINT;

NORTH 60 DEGREES 22 MINUTES 30 SECONDS EAST FOR 21.21 FEET TO A POINT;

NORTH 82 DEGREES 52 MINUTES 35 SECONDS EAST FOR 518.25 FEET TO A POINT;

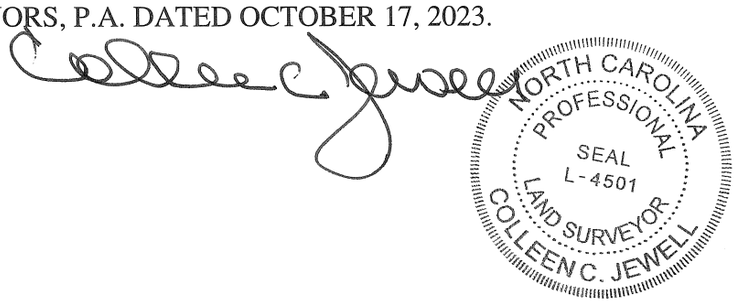
SOUTH 55 DEGREES 27 MINUTES 21 SECONDS EAST FOR 392.45 FEET TO A POINT;

SOUTH 54 DEGREES 10 MINUTES 42 SECONDS EAST FOR 1496.14 FEET TO A POINT;

SOUTH 76 DEGREES 40 MINUTES 40 SECONDS EAST FOR 36.93 FEET TO A POINT;

AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 635.00 FEET, AN ARC LENGTH OF 33.75 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 75 DEGREES 09 MINUTES 18 SECONDS EAST FOR 33.75 FEET TO A POINT;

SOUTH 73 DEGREES 41 MINUTES 41 SECONDS EAST FOR 633.02 FEET TO A POINT ON THE SAID COMMON LINE OF JOHN F. BURT. THENCE ALONG THE SAID COMMON LINE SOUTH 03 DEGREES 20 MINUTES 43 SECONDS WEST FOR A DISTANCE OF 51.32 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 274,876 SQUARE FEET (6.310 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED OCTOBER 17, 2023.



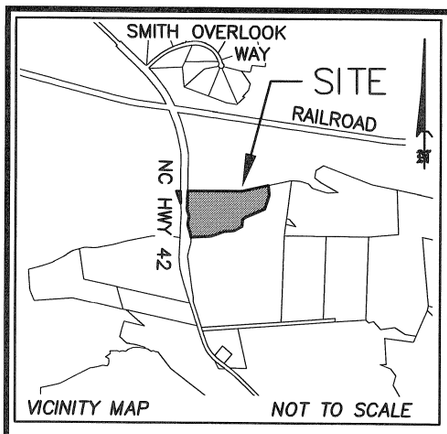
GRANTOR: ROBIN C. ARNOLD
CHATHAM COUNTY PIN: 060500895088
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS

PERMANENT UTILITY EASEMENT

BEGINNING AT AN IRON PIPE SET MARKING A POINT ON THE COMMON LINE OF ROBIN C. ARNOLD AS RECORDED IN DEED BOOK 2381 PAGE 882 AND PLAT BOOK 89 PAGE 82 AND DUKE ENERGY PROGRESS, LLC AS RECORDED IN DEED BOOK 1811 PAGE 572 IN THE OFFICE OF THE CHATHAM COUNTY REGISTER OF DEEDS; SAID IRON PIPE HAVING N.C. GRID COORDINATES (NAD83/2011) IN FEET OF N=659,487.62 AND E=2,009,094.20. THENCE LEAVING THE SAID COMMON LINE OF ARNOLD AND DUKE ENERGY SOUTH 31 DEGREES 52 MINUTES 24 SECONDS EAST FOR A DISTANCE OF 242.58 FEET TO A POINT. THENCE SOUTH 79 DEGREES 59 MINUTES 48 SECONDS EAST FOR A DISTANCE OF 1.25 FEET TO A POINT. THENCE AROUND A CURVE TO THE LEFT HAVING A RADIUS OF 1125.00, ARC LENGTH OF 64.61 FEET, AND A CHORD BEARING AND DISTANCE OF SOUTH 81 DEGREES 38 MINUTES 31 SECONDS EAST FOR 64.60 FEET TO A POINT. THENCE SOUTH 83 DEGREES 17 MINUTES 14 SECONDS EAST FOR A DISTANCE OF 124.44 FEET TO A POINT ON THE COMMON LINE WITH ARNOLD AND STEVEN G. AND JUDY C. POLLARD AS RECORDED IN DEED BOOK 1843 PAGE 595. THENCE ALONG THE SAID COMMON LINE SOUTH 18 DEGREES 39 MINUTES 48 SECONDS WEST FOR A DISTANCE OF 51.11 FEET TO A POINT. THENCE LEAVING THE SAID COMMON LINE NORTH 83 DEGREES 17 MINUTES 14 SECONDS WEST FOR A DISTANCE OF 113.85 FEET TO A POINT. THENCE AROUND A CURVE TO THE RIGHT HAVING A RADIUS OF 1175.00, ARC LENGTH OF 67.48 FEET, AND A CHORD BEARING AND DISTANCE OF NORTH 81 DEGREES 38 MINUTES 31 SECONDS WEST FOR 67.48 FEET TO A POINT. THENCE NORTH 79 DEGREES 59 MINUTES 48 SECONDS WEST FOR A DISTANCE OF 23.58 FEET TO A POINT. THENCE NORTH 31 DEGREES 52 MINUTES 24 SECONDS WEST FOR A DISTANCE OF 283.39 FEET TO A POINT ON THE SAID COMMON LINE OF ARNOLD AND DUKE ENERGY; SAID POINT BEING NORTH 78 DEGREES 25 MINUTES 23 SECONDS EAST A DISTANCE OF 34.67 FEET FROM AN EXISTING IRON PIPE MARKING A COMMON CORNER OF ARNOLD AND DUKE ENERGY. THENCE ALONG THE SAID COMMON LINE NORTH 78 DEGREES 25 MINUTES 23 SECONDS EAST FOR A DISTANCE OF 53.31 FEET TO THE POINT AND PLACE OF BEGINNING. THIS EASEMENT CONTAINS 23,030 SQUARE FEET (0.529 ACRES) IN AREA. REFERENCE IS HEREBY MADE TO THE ATTACHED EASEMENT PLAT PREPARED BY COOPER AND ASSOCIATES SURVEYORS, P.A. DATED AUGUST 29, 2024.



EXHIBIT A



NOTES

1)– THE N.C. GRID COORDINATES SHOWN WERE DETERMINED USING REAL TIME KINEMATIC GPS OBSERVATIONS TAKEN ON 11/14/22.

2)– THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

3)– THIS EXHIBIT DOES NOT REPRESENT A BOUNDARY SURVEY. ALL BOUNDARIES ARE DRAWN FROM RECORD DEEDS AND/OR PLATS AND ARE SUBJECT TO ALL EASEMENTS, AGREEMENTS, AND RIGHTS–OF–WAY OF RECORD.

4)– THE SOLE PURPOSE OF THIS MAP IS TO GRAPHICALLY SHOW THE PERMANENT UTILITY EASEMENT FOR ACQUISITION PURPOSES ONLY FOR THE SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT.

5)– THIS PROPERTY IS LOCATED WITHIN A FEMA SPECIAL FLOOD HAZARD AREA AS SHOWN ON MAP NO. 3720060400L, EFFECTIVE 02/02/07.

c. 4. This survey is of a proposed easement for public utility as defined in G.S. 62–3.

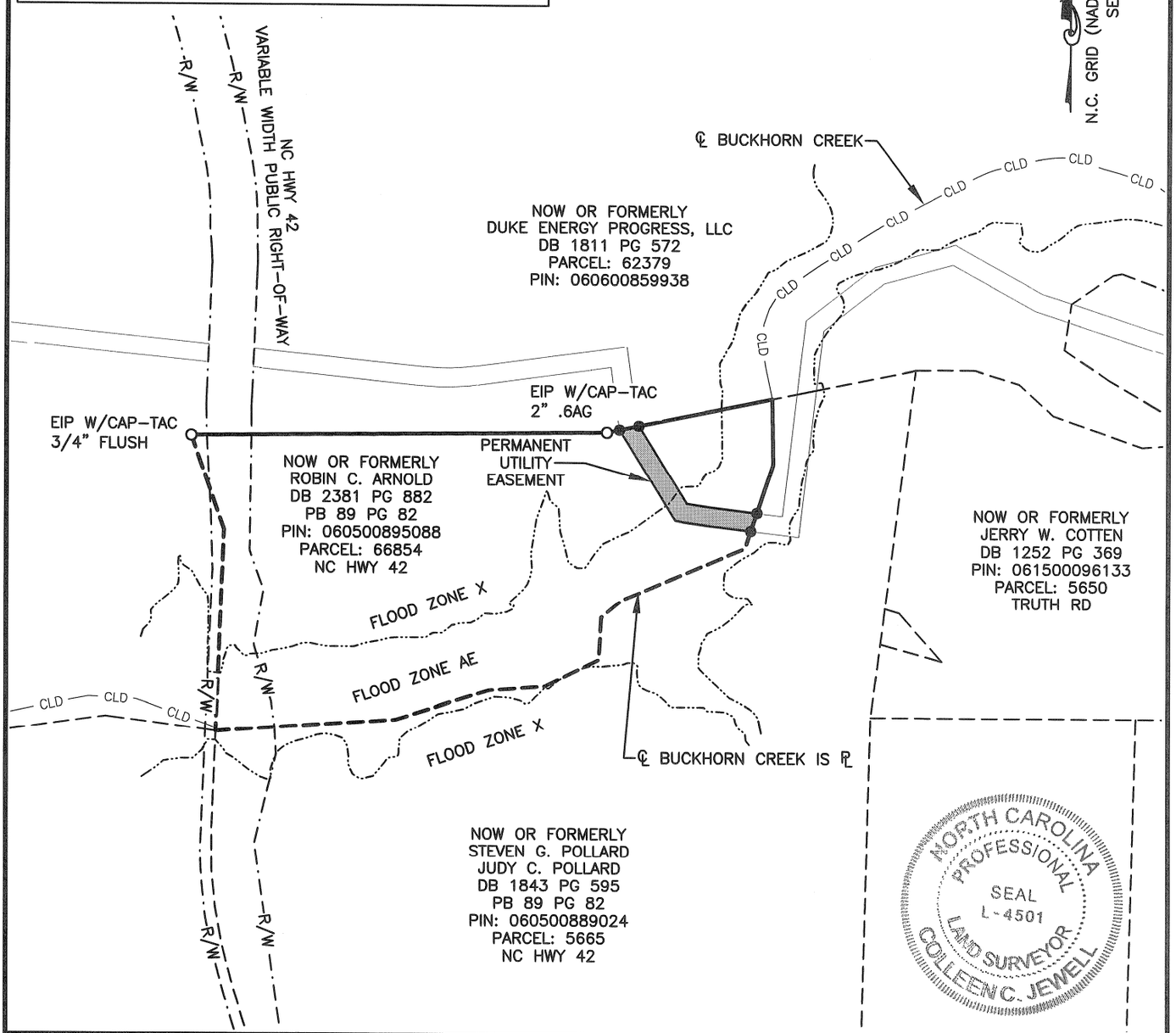
Professional Land Surveyor

This parcel is located in the CHATHAM COUNTY Planning Jurisdiction

LEGEND

- ● – IRON PIPE SET (IPS)
- ○ – EXISTING IRON PIPE (EIP/REBAR)
- □ – COMPUTED CORNER
- Ⓐ – EXISTING CONCRETE MONUMENT (ECM)
- —R/W— – RIGHT–OF–WAY
- EXISTING PROPERTY LINE
- PROPERTY LINE NOT SURVEYED
- PERMANENT UTILITY EASEMENT (PUE)

N.C. GRID (NAD 83/2011) SEE NOTE 1



NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

SHEET 1 OF 2

0 400 800 Feet

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 29th DAY OF Aug A.D.,2024.

SURVEYOR

L–4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET.	*AREAS COMPUTED BY COORDINATES.*	*FILE NAME:* 7122–5088–ARNOLD.dwg

Surv'd: MR	*Drawn:* CRB	*Chk'd:* CCJ	*Job No.:* 7122	*Date:* 08/29/24	*Scale:* 1" = 400'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C–1461)
P.O. Box 3444
CARY, NC 27519
404 E. CHATHAM ST. SUITE E
CARY, NC 27511
OFFICE – (919)469–1760
EMAIL: SURVEYS@COOPERSURVEYORS.COM

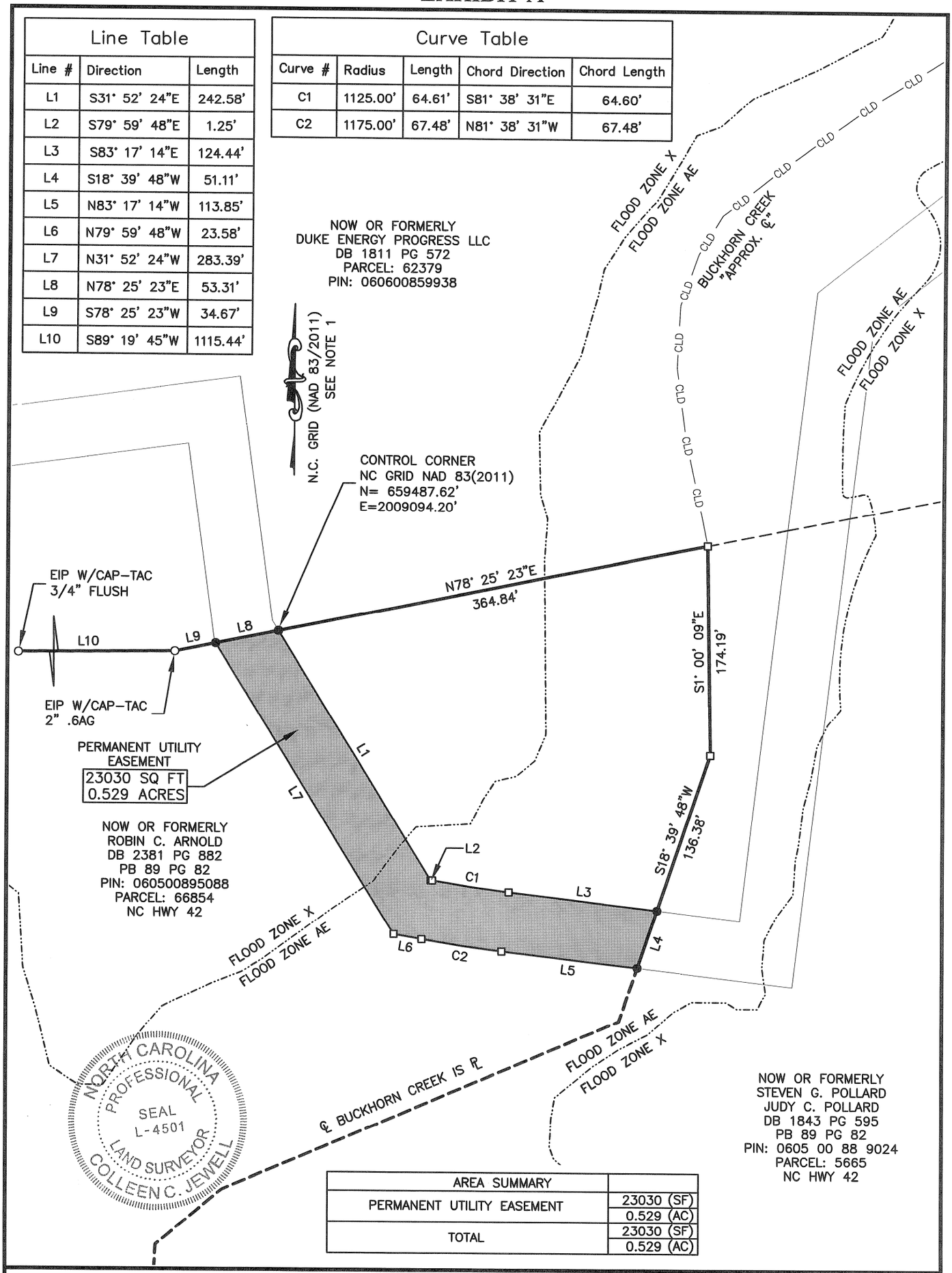
EASEMENT PLAT

GRANTOR: ROBIN C. ARNOLD
GRANTEE: TOWN OF FUQUAY–VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
– SANFORD TO FUQUAY–VARINA WATERLINE CONVEYANCE PROJECT –
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

EXHIBIT A

Line Table		
Line #	Direction	Length
L1	S31° 52' 24"E	242.58'
L2	S79° 59' 48"E	1.25'
L3	S83° 17' 14"E	124.44'
L4	S18° 39' 48"W	51.11'
L5	N83° 17' 14"W	113.85'
L6	N79° 59' 48"W	23.58'
L7	N31° 52' 24"W	283.39'
L8	N78° 25' 23"E	53.31'
L9	S78° 25' 23"W	34.67'
L10	S89° 19' 45"W	1115.44'

Curve Table				
Curve #	Radius	Length	Chord Direction	Chord Length
C1	1125.00'	64.61'	S81° 38' 31"E	64.60'
C2	1175.00'	67.48'	N81° 38' 31"W	67.48'



NORTH CAROLINA PROFESSIONAL SEAL L-4501 LAND SURVEYOR COLLEEN C. JEWELL

AREA SUMMARY	
PERMANENT UTILITY EASEMENT	23030 (SF)
	0.529 (AC)
TOTAL	23030 (SF)
	0.529 (AC)

SHEET 2 OF 2

0 100 200 Feet

I, COLLEEN C. JEWELL, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION USING REFERENCES SHOWN HEREON; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND AND REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMENDED AND MEETS THE ATTACHMENT RULE OF PARAGRAPH M. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL, THIS 29th DAY OF July A.D.,2024.

Colleen C. Jewell
SURVEYOR

L-4501
LICENSE NUMBER

ALL DISTANCES SHOWN ARE HORIZONTAL GROUND MEASURED IN FEET. | AREAS COMPUTED BY COORDINATES. | FILE NAME: 7122-5088-ARNOLD.dwg

Surv'd: MR | Drawn: CRB | Chk'd: CCJ | Job No.: 7122 | Date: 08/29/24 | Scale: 1" = 100'

COOPER AND ASSOCIATES SURVEYORS, P.A.
(C-1461)
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EASEMENT PLAT

GRANTOR: ROBIN C. ARNOLD
GRANTEE: TOWN OF FUQUAY-VARINA AND TOWN OF HOLLY SPRINGS AS JOINT TENANTS
- SANFORD TO FUQUAY-VARINA WATERLINE CONVEYANCE PROJECT -
CAPE FEAR TNSP., CHATHAM COUNTY, NORTH CAROLINA

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 13.

Consent Agenda
Title: Engineering Design and Construction Standards Supplement #12
Strategic Priority Area: Community Safety
Organizational Excellence
Vibrant Community
Growth Management & Economic Vitality
Staff Resource: Theresa Randall, Utilities and Infrastructure, Sara Emig, Utilities and Infrastructure, Kendra Parrish, Utilities and Infrastructure

Action(s):

1. Approve Supplement #12 to the Engineering Design and Construction Standards (EDCS).
2. Retire the 2008 Street Light Policy.

Explanation:

- The purpose of the Engineering Design and Construction Standards (EDCS) is to establish consistent requirements for the design and construction of public infrastructure, including streets, sidewalks, water, wastewater and stormwater systems. The EDCS ensures quality, safety, consistency, and operational efficiency across all engineered projects (public and private).
- Supplement #12 to the EDCS includes:
    - New Section 3.15 Street Lights: Integrated into Section 3.00 (Streets, Driveways, and Parking Lots), this section replaces the outdated 2008 Street Light Policy and aligns with the Unified Development Ordinance (UDO) and other street design requirements. The 2008 policy was outdated and did not reflect evolving lighting technology, design practices, or coordination with street layouts.
    - Update to Section 3.06 Fire Lanes: Added language on the use of thermoplastic paint to enhance visibility and durability; Under heavy traffic or weather exposure, it is more durable and reduces long-term maintenance frequency.
    - Updated Construction Details for Clarity and Alignment:
        - HS311 – Standard Street Cross Sections – Alleys: Minimum roadway increased from 16’ to 20’ (The increase to 20' reflects current best practices for service and emergency vehicle access and public works vehicles)
        - HS625 – Standard Detached Fire Department Connections (FDCs): Replaced “Siamese Connection” with “FDC." Clarified that “Wall-mounted FDCs are allowed on single-story buildings only;" Wall-mounted FDCs are sufficient to connect hoses and supply water to the building's fire sprinkler system without needing to pressurize water to higher floors
        - HS398 – Primary Gateway Sign: Color changed from “Gold” to “Green” to align with Town branding guidelines.

- With the inclusion of street lighting requirements in the EDCS, the 2008 Street Light Policy is recommended for retirement.

Background:

- The Engineering Design and Construction Standards (EDCS) establish the minimum specifications required by the Town for public infrastructure, including but not limited to utilities, roadways, and greenways.
- Both private development and Town capital projects must adhere to these standards to ensure high-quality infrastructure that can be efficiently maintained as part of the Town's public system.
- Consistent enforcement of the EDCS leads to infrastructure that is sustainable, durable, cost-effective and aligned with long-term asset maintenance goals.
- Design and construction best practices and materials are constantly evolving and improving in quality, availability, and efficiency; Town staff from multiple departments regularly review and contribute updates to the standards to reflect current construction materials and best practices.

Funding Source(s):

N/A

Attachment(s):

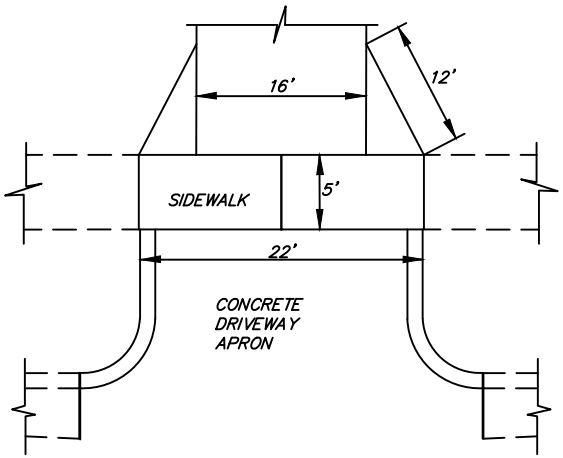
1. EDCS Supp 12 Summary of Changes
2. HS311
3. HS625
4. 3.00 Supp#12_Final

Engineering Construction and Design Standards

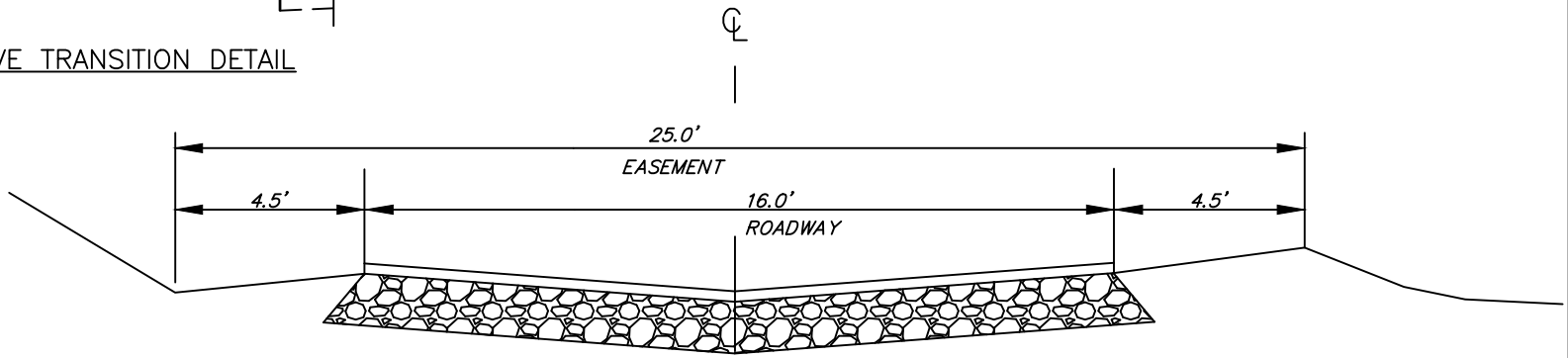
Supplement # 12 Log - June 2025

Section	Sub-Section	Item	Description
3.00	N/A	Table of Contents	Updated Table of Contents to include added Street Lights section 3.15
	3.06	Fire Lanes	Added Thermoplastic Paint verbiage in regards to yellow striping
	3.15	Street Lights	Retiring 2008 Street Light Policy and added Street Lights section to standards to include updated requirements and to be consistent with the Unified Development Ordinance (UDO)

Revised DETAILS	Name
HS311	Updated the minimum roadway section from 16' to 20'
HS625	Replaced “Siamese Connection” verbiage with “Fire Department Connections (FDC's)”. Added verbiage that “Wall mounted FDC’s are allowed on single story buildings only"



ALLEY DRIVE TRANSITION DETAIL



25' PRIVATE EASEMENT
16' ROADWAY SECTION

MINIMUM PAVEMENT DESIGN

2" I–2

8" A.B.C.

NOTES:

1. DRAINAGE VALLEY OF 1/4" PER FOOT UNLESS OTHERWISE DIRECTED BY THE DIRECTOR OF ENGINEERING.
2. PAVEMENT DESIGN SHALL BE AS SHOWN, OR AS CALCULATED, WHICHEVER IS GREATER.
3. PAVEMENT RADIUS AT INTERSECTION SHALL BE 20FT.
4. PROPERTY LINE RADIUS AT INTERSECTIONS SHALL BE 20FT.
5. IF CURB AND GUTTER IS PROVIDED ON ALLEYWAY IT MUST BE ADDITIONAL TO 16' PAVED TRAVEL LANE.

DRAWING NOT TO SCALE

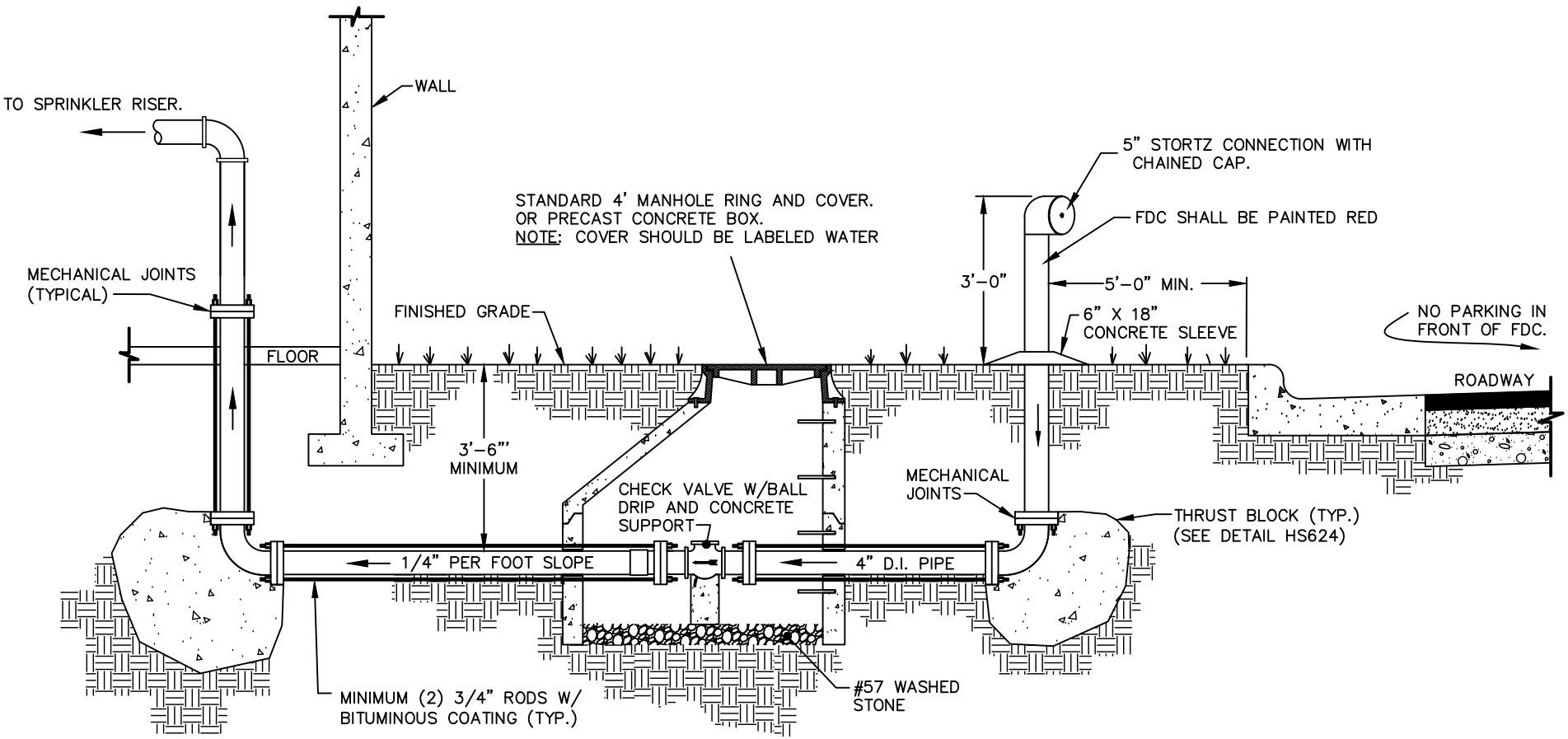
STANDARD STREET CROSS SECTIONS-ALLEYS WITH INVERTED CROWN

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: **HS311**

DATE	REVISIONS
2/8/10	

Holly Springs
Discover The Source.



NOTES:

1) ALL CONNECTION'S MUST BE WITHIN 100 FEET OF A FIRE HYDRANT.

2) FDC CONNECTION CAN BE ATTACHED TO SINGLE STORY BUILDINGS ONLY. CHECK VALVE W/ BALL DRIP NOT REQUIRED IF CONNECTION IS TIED DIRECTLY TO THE BUILDING.

DRAWING NOT TO SCALE

STANDARD DETACHED FDC CONNECTION

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: **HS625**

DATE	REVISIONS
11/9/21	
7/1/25	

Holly Springs
Discover The Source.

SECTION 3.00
STREETS, DRIVEWAYS, AND PARKING LOTS

SUB-INDEX

3.01 GENERAL

3.02 DESIGN

A. Street Classifications for Town Specifications

B. Horizontal Street Design

C. Vertical Design

D. Geometrics-Radii

E. Cul-de-sacs

F. Driveways/Access

G. Curb and Gutter

H. Parking Lots/Off-Street Parking

I. Sidewalks and Sidepaths

J. Pavement Design

K. Pavement Markings and Signage

M. Shoulder Sections

N. Roadway Network

O. Signal Poles

3.03 SIGHT DISTANCE

A. Intersection Sight Distance

B. Stopping Sight Distance

3.04 MATERIALS

3.05 CONSTRUCTION AND INSPECTION

A. Streets

B. Curb and Gutter, Driveways, Sidewalks, and Concrete Sidepaths

3.06 FIRE LANES

3.07 TRAFFIC CONTROL, TRAFFIC SIGNALS, AND STREET NAME SIGNS & POSTS

3.08 TRAFFIC CALMING DEVICES

3.09 PEDESTRIAN CROSSINGS

3.10 STREET TREES

3.11 THOROUGHFARE/MEDIAN PLANTINGS

3.12 GREENWAY SPECIFICATIONS

3.13 SMALL WIRELESS TELECOMMUNICATION FACILITIES (LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY)

3.14 BUS STOP AND BUS SHELTER

3.15 STREET LIGHTS

3.01 GENERAL

The latest revision of the *Standard Specifications for Roads and Structures* of the North Carolina Department of Transportation shall apply unless otherwise specified herein.

Whenever the following terms are used in above said specifications the intended meaning of such terms shall be as follows:

"State" or "Commission" shall be replaced by "Town of Holly Springs."

"Resident Engineer" shall be replaced by the words "Executive Director of Utilities and Infrastructure."

"Sampling and testing by Commission" shall be replaced by the words "sampling and testing by the Town or its authorized testing agent."

"Inspection by Commission" shall be replaced by "Inspection by Town or its duly authorized representative."

All utility and roadwork that will affect the traveling public must follow the Town of Holly Springs Public Communication Guidelines so that proper notifications are given prior to work commencing and all safety measure in place. A notification must be conveyed to the Town of Holly Springs Development Inspector three (3) weeks prior to the start of road or utility work in the roadway or work will be shut down until proper notification is complete.

3.02 DESIGN

All streets (private and public) shall be designed and fully constructed to the Town of Holly Springs Engineering Design and Construction Standards in accordance with all ordinances and policies of the Town. Refer to the Town of Holly Springs UDO and Comprehensive Transportation Plan for requirements for improving existing thoroughfares and streets. NCDOT standards shall be used on all existing State roads, extensions of existing State roads, or roads to be maintained by NCDOT.

Street design is based primarily on criteria dictated by the street classification, design speed, surrounding terrain, and traffic volumes. The following factors shall also be considered in determining street and right-of-way widths: urban-type development, on-street parking, alley-loaded units, zoning, depth of lots (length of driveways), garages, street trees, street network, setbacks, street classification, speed limit, and sidewalks. The Executive Director of Utilities and Infrastructure shall make the final approval for necessary street and right-of-way widths. The following are intended to be recommended street and right-of-way widths for suburban-type developments. Specific information and documentation on

development and/or product types to be serviced by roadways should be provided for consideration of street widths, and such information may be incorporated into development and/or plan approval conditions. Streets shall be designed to accommodate all movements necessary for WB-50 designed vehicle. Turning templates may be required to verify WB-50 movements.

Note that a Transportation Impact Analysis (TIA), or trip generation memorandum may be required to accompany plans submitted to the Town, or required as early as rezoning petition submittal, for consideration of traffic impacts due to development. The Executive Director of Utilities and Infrastructure will determine what level of analysis is required based on preliminary trip generation information provided to Staff by the Applicant. Impacts identified as part of a plan submittal or rezoning petition shall be the responsibility of the development.

For any development project submitted into the review process in a location where a Town road widening project has been identified in the Community Investment Plan Project List, the developer shall be responsible for the full cost of construction across the project's property frontage, until such time that the Town's road widening project is completed.

In special circumstances, the Town may elect to require payment of a fee-in-lieu of installation of roadway improvements.

A. Street Classifications for Town Specifications

*See above paragraph regarding factors that determine street cross-section and right-of-way section. Early communication (in preliminary design) with the Executive Director of Utilities and Infrastructure to determine the appropriate street and right-of-way width for the particular development is encouraged. The following street cross sections comprise the most typically utilized sections for the Town. The details at the end of these design and construction standards include additional cross sections that are utilized when other factors are considered. Note that reduced roadway cross sections may be permitted for streets serving areas for which a master land use plan is approved, with approval of the Executive Director of Utilities and Infrastructure.

In areas where an entrance median is desired, the width of the median shall be in addition to required cross sections as specified.

Alleys

Typical width: 20 feet on 25-foot private easement

All alleys are private. They are encouraged in the Downtown Area and in areas which feature neotraditional and mixed-use developments, and adjacent to limited-access facilities. The purpose of an alley is to provide utility and vehicular access along the rear or side of new residential and non-residential structures. All alleys

are to be privately maintained with measures to ensure the travel way is not obstructed in any manner, including by parking or loading. Alleys that will be used for public services (e.g., sanitation) pavement design shall be designed and fully constructed to the Town of Holly Springs Engineering Design and Construction Standards in accordance with all ordinances and policies of the Town. A drainage system shall be provided and shall conform with all public street design drainage standards as outlined in this Manual.

The Town shall not be responsible for damage occurring to the pavement structure due to use of the private alley for access in providing public services. When alleys are used for the provision of these services, the Homeowner Association covenants for the development shall clearly state this. Alleys shall be constructed on a 25-foot private easement with a paved travel lane of 16 feet, and clear shoulders of a minimum width 4.5 feet along each side. Alley driveway entrance shall be as per TOHS Detail HS311.

Under unique, site-specific circumstances, including such factors as the absence of utility lines in the alley and/or lack of real property, consideration of a reduction of rights of way and travel lane widths may be made.

Residential Cul-de-sac (1000 feet or less)

A street which serves abutting residential land use and which terminates in a turnaround and originates at the intersection with another street. With the exception of cul-de-sacs, other street types shall not intersect onto this street classification segment. Cul-de-sacs shall only be permitted on a case-by-case basis where extreme topographical or environmental concerns exist, or where future connection to other streets is impossible due to pre-existing development. Where the design will accommodate double sided on-street parking the Executive Director of Utilities and Infrastructure shall determine the minimum width. Additional pavement marking and signage may be required where on-street parking is to be prohibited.

Residential Street

A street where the primary function is to serve the immediately abutting residential land use (i.e. only local traffic generated by the residents in proximity of the street). If traffic volumes flowing from other intersecting residential streets exceeds the traffic volumes generated by the land use abutting the street or this street classification serves more than 150 dwelling units, a different street classification shall be used. Where the design will accommodate double sided on-street parking the Executive Director of Utilities and Infrastructure shall determine the minimum width. Additional pavement marking and signage may be required where on-street parking is to be prohibited.

Non-Residential 2-Lane Collector Street or Cul-de-sac (1000 feet or less)

A street which serves various land use classifications, and whose primary function is traffic service, collecting traffic from streets intersecting it and funneling it to thoroughfares. Design shall accommodate the vehicle type generally expected to use the roadway facility which is typically larger than a passenger car, for example WB-50 and SU type vehicles. Where the design will accommodate double sided on-street parking the Executive Director of Utilities and Infrastructure shall determine the minimum width. Additional pavement marking and signage may be required where on-street parking is to be prohibited.

Residential 2-Lane Collector Street – No Load

A street which serves various land use classifications, and whose primary function is traffic service, collecting traffic from streets intersecting it and funneling it to thoroughfares. A residential collector street shall be provided when the roadway is the sole traffic route for more than 150 dwelling units, collects traffic from a commercial area of 20 acres or more, or contains other land uses which would account for similar traffic volumes. Where the design will accommodate double sided on-street parking the Executive Director of Utilities and Infrastructure shall determine the minimum width. Additional pavement marking and signage may be required where on-street parking is to be prohibited. This type of roadway shall have no individual driveway accesses.

If project frontage is within 500 feet of a major intersection, additional turn lanes and right-of-way widths may be required as determined by the Executive Director of Utilities and Infrastructure.

Non-Residential 3-Lane Collector Street

A street which serves various land use classifications, and whose primary function is traffic service, collecting traffic from streets intersecting it and funneling it to thoroughfares. Design shall accommodate the vehicle type generally expected to use the roadway facility which is typically larger than a passenger car, for example WB-50 and SU type vehicles. Where the design will accommodate double sided on-street parking the Executive Director of Utilities and Infrastructure shall determine the minimum width. Additional pavement marking and signage may be required where on-street parking is to be prohibited.

Thoroughfare

Typical width: as required on Town Comprehensive Transportation Plan

A street which serves as a primary traffic artery of the urban area, serving the major centers of activity and carrying traffic between such centers at moderate speeds. Access to abutting property may be permitted by the Executive Director of Utilities and Infrastructure only on a very limited, controlled basis and in cases of a divided roadway will be limited to right in/right out unless a median and turn lanes are approved. However, the primary function of this street is to carry traffic having origin and destination removed from the street proper. The thoroughfare classifications carry the majority of trips entering and leaving the urban area as well as the through trips. Access is primarily provided by at-grade intersections which may be signal controlled. Where the design will accommodate double sided on-street parking the Executive Director of Utilities and Infrastructure shall determine the minimum width. Additional pavement marking and signage may be required where on-street parking is to be prohibited.

A slope easement of 20 feet in width shall be required adjoining each side of the right-of-way for this type of facility unless the complete facility is being constructed as part of the adjoining property development. The Executive Director of Utilities and Infrastructure may reduce or increase the slope easement width if necessary due to terrain.

If property owner submits to the Executive Director of Utilities and Infrastructure (prior to construction drawing or preliminary plan approval) sufficient information to show that improvements to be located in the slope easement do not interfere with the right of the public to construct within adjoining right-of-way, then the Executive Director of Utilities and Infrastructure may permit the proposed improvement to occur.

If project frontage is within 1000 feet of a major intersection, additional turn lanes and right-of-way widths may be required as determined by the Executive Director of Utilities and Infrastructure.

Limited Access Thoroughfare

Typical width: as required on Comprehensive Transportation Plan no on-street parking permitted

An urban major roadway where sole function is to carry large volumes of traffic safely and expediently through the urban area. Access onto the facility is controlled to occur only at intersections with thoroughfares or in some cases limited to right-in/right-out access subject to approval by the Executive Director of Utilities and Infrastructure. Such intersections are spaced at intervals which promote traffic progression with the absolute minimal delays incurred. The highest practical level of design shall be incorporated into facilities of this classification.

A slope easement of 20 feet in width shall be required adjoining each side of a street right-of-way unless the complete facility is being constructed as part of the adjoining property development. The Executive Director of Utilities and

Infrastructure may reduce or increase the slope easement width if necessary due to terrain.

If property owner submits to the Executive Director of Utilities and Infrastructure (prior to construction drawing or preliminary plan approval) sufficient information to show that improvements to be located in the slope easement do not interfere with the right of the public to construct within adjoining right-of-way then the Executive Director of Utilities and Infrastructure may permit the proposed improvement to occur.

If project frontage is within 1000 feet of a major intersection, as determined by the Executive Director of Utilities and Infrastructure, then additional turn lanes and right-of-way widths may be required.

Controlled Access Highway

Typical width: as required by Federal Highway Administration and AASHTO
no on-street parking permitted

A State highway, or section of State highway, especially designed for through traffic, from or to which highway owners or occupants of abutting property, or others, shall have only a controlled right or easement of access.

A slope easement of 20 feet in width shall be required adjoining each side of a street right-of-way unless the complete facility is being constructed as part of the adjoining property development. The Executive Director of Utilities and Infrastructure may reduce or increase the slope easement width if necessary due to terrain.

If property owner submits to the Executive Director of Utilities and Infrastructure (prior to construction drawing or preliminary plan approval) sufficient information to show that improvements to be located in the slope easement do not interfere with the right of the public to construct within adjoining right-of-way then the Executive Director of Utilities and Infrastructure may permit the proposed improvement to occur.

If project frontage is within 1000 feet of a major intersection as determined by the Executive Director of Utilities and Infrastructure, then additional turn lanes and right-of-way widths may be required.

B. Horizontal Street Design

All streets shall conform to the Town of Holly Springs Comprehensive Transportation Plan and shall be designed and located in proper relation to existing streets and environment. Collector streets and thoroughfares shall be as directional as possible but consistent with topography and preserving developed properties and community values. Residential streets shall be designed to minimize cuts and fills,

and emphasis shall be placed on encouraging slower speeds in order to protect pedestrians using the facility and minimize persistent cut through traffic.

In addition to the Town of Holly Springs Comprehensive Transportation Plan, the Town maintains "Small Area Plans" to guide the development of various areas in Town. These Plans are for the purpose of master-planning various critical areas. Schematics include general roadway configurations and/or connections that are desirable and shall be used as a guideline for development of the areas and are approved in a Town Policy Statement. For development planned in those areas, the developer is encouraged to meet with Town Staff to review the "Small Area Plans" approved by the Town for that area, and to develop plans consistent with that information.

The design of streets shall conform to the horizontal curve controls in Table 3.1 at the end of this subsection.

A minimum tangent of 150 feet is required between reverse curves for major streets, highways, and collector and other non-residential streets. The tangent shall be extended as necessary to provide the minimum runoff lengths for the superelevated curves per AASHTO guidelines. The minimum tangent length approaching an intersection is 30 feet for residential streets. All intersections of streets classified as collector or greater shall have a tangent section not less than 100 feet approaching the intersection.

Compound horizontal curves with the same direction of curvature shall have the radius of the flatter circular arc no more than 1½ times the radius of the sharper circular arc. Streets shall intersect each other at right angles whenever possible. The minimum desirable intersection angle is 80°. At no time shall a street intersect any other street at less than 75°.

Intersections with thoroughfares, or highways shall be at least 800 feet apart. Note that median spacing will require NCDOT and Town approval and shall require greater spacing. There shall be a minimum of 200 feet between centerlines of street jogs on collectors, and major streets. Residential and marginal access streets shall not be offset less than 125 feet from their centerlines.

Thoroughfares, and collectors shall be superelevated. Superelevation shall conform to Table 3.1 and shall conform to NCDOT and AASHTO standards.

Tapers shall be used as necessary in street design. Approach tapers shall be used to shift lanes laterally. The following equations shall be used as applicable:

$L = WS$ for posted speeds of 45 mph and greater
$L = WS^2$ for posted speeds of 40 mph or less
L = Length in feet
S = Speed in miles per hour
W = Lateral offsets in feet

Turn bay tapers shall be at least 15:1 for posted speeds of 45 miles per hour and more. The minimum turn bay taper allowed is 8:1. Symmetrical reverse curve tapers are recommended for streets classified as collector or less. Storage lengths for the turn bays shall be calculated using an acceptable method.

Streets with medians shall be designated to allow for proper turning movements for a SU (single unit truck) design vehicle. AASHTO guidelines shall be utilized for the actual median design and median opening dimension.

C. Vertical Design

Street grades shall be established with respect to existing topography to avoid excessive grading and the removal of existing trees and vegetation whenever practical.

The minimum grade allowed on any street shall be ½%.

The maximum grade allowed when approaching an intersection is 5% for the last 100 feet of pavement before the intersection unless otherwise approved by the Executive Director of Utilities and Infrastructure.

The vertical curve controls found in Table 3.1 shall also be utilized in street design.

TABLE 3.1
CURVE CONTROLS

	Horizontal Curve Controls			Vertical Curve Controls			
	Minimum Design speed (mph)[1]	Maximum Super-elevation (ft./ft.)[2]	Minimum Radii (ft.)	Maximum Grade[3] (percent)	Length Crest	Length Sag	Minimum Length (ft.)
Limited Access Thoroughfare	Design standards to be determined for each case individually by the Executive Director of Utilities and Infrastructure						
Thoroughfare, Boulevard, Parkway	Design standards to be determined for each case individually by the Executive Director of Utilities and Infrastructure						
Non-Residential Collector	40	0.04	565	9%	44A	64A	120
Residential Collector Streets & No Load Residential Collector	25	0.04	300	9%	29A	49A	120

Residential streets	30	Normal crown	205	10%	12A	26A	75
Cul-de-sacs 1000’ or less	30	Normal crown	150	10%	12A	26A	75
Loop road 1500’ or less	30	Normal crown	150	10%	12A	26A	75

[1] Design speed shall be at least 5 mph greater than posted speed.
[2] The superelevation tables found in *A Policy on Design of Urban Highways and Arterial Streets - 2001* published by the American Association of State Highway Officials will be used for determining the actual “e” for various radii.
[3] Design criteria can vary on a case-by-case basis if approved by the Executive Director of Utilities and Infrastructure.
[4] Note: At the discretion of the Utilities and Infrastructure Services, the K values in sags may be adjusted with additional street lighting
A - Algebraic difference in grades.

D. Geometrics-Radii

A minimum radius of 25 feet to the back of curb shall be required where residential streets intersect.

A minimum radius of 30 feet measured to the back of curb shall be required where a residential street intersects with a non-residential street. It is recommended that the designer consider larger radii or 3-centered compound curves where needed to provide for turning movements of larger vehicles.

A minimum radius of 40 feet shall be required where collectors intersect thoroughfare or boulevard streets.

E. Cul-de-sacs

The minimum allowable cul-de-sac radius is 37.5 feet. The maximum allowable length of a cul-de-sac is 1000 feet, measured from the last point of alternate access within the subdivision.

No median shall be allowed in a 37.5-foot radius cul-de-sac. A median may be permitted where the cul-de-sac radius is increased, and it can be demonstrated that all emergency and service vehicles can be readily accommodated.

F. Driveways/Access

In the interest of public safety and convenience, the Town of Holly Springs may restrict the placement of a driveway to a particular location along the property owner’s frontage. Driveways will not generally be allowed along acceleration or deceleration lanes and associated tapers. No driveway will be allowed within the intersection of radii of intersecting roadways.

Non-Residential

Standard concrete driveway aprons as shown in the Standard Detail Section of these Standards shall be used when the ADT for the driveway is less than 500 vehicles.

Street type turnouts shall be used when the driveway ADT is greater than 500 vehicles or when access by larger trucks must be accommodated. The minimum radius for street type turnouts shall be designed to accommodate a WB-50 design vehicle and meet a minimum of 25' radius. Documentation using WB-50 templates will be required. The maximum vertical grade allowable for a distance of 25 feet into the site from the right-of-way line shall be 8%. In addition, the designer shall insure that adequate sight distance for all driveways is provided in accordance with AASHTO Standards.

Non-residential driveways that are unpaved shall have a minimum 30-foot paved surface strip measured from the back of the driveway apron.

Driveways without islands shall be a minimum of 22 feet wide, excluding curb and gutter or 27' back-to-back with standards curb and gutter. Driveways with islands shall have a 21-foot back-to-back of curb entrance lane. A 21-foot-wide back-to-back curb exit lane shall be required when only one lane is specified, and a 22-foot wide exit lane shall be used when two exit lanes are specified (all minimum measurements stated exclude curb and gutter). A minimum throat distance of 80 feet shall be required at all egress and ingress points from thoroughfares.

The number of street and driveway connections permitted serving a single property frontage or commercial development shall be the minimum deemed necessary by the Executive Director of Utilities and Infrastructure for reasonable service to the property without undue impairment of safety, convenience, and utility of the roadway. Normally, one driveway shall be permitted for any single property frontage. The use of shared driveways and joint access easements may be required for new accesses to "managed access" roadways.

The arrangement of driveways should be related to adjacent driveways and nearby street intersections. Driveways close to street intersections shall be at least 25 feet from the point of tangency of the radius of curvature of the intersecting street. All driveways serving shopping center and other high-volume generators shall be located a minimum of 200 feet from the intersection of public roads unless otherwise approved by the Executive Director of Utilities and Infrastructure.

Where two driveways are proposed and approved along a single property frontage to facilitate operations, the minimum distance between the centerlines of the drives shall be 100 feet. The minimum distance between the centerlines of driveways into shopping centers and other high-volume generators shall be 400 feet.

For all median divided roadways, all driveways shall be limited to right in/right out unless located at approved planned median breaks.

Residential

Residential driveways shall measure 12 feet wide from the curb cut to the right-of-way for a single car garage/driveway, shall measure 16 feet wide from the curb cut to the right-of-way for a double or greater car garage/driveway, and shall conform to the applicable TOHS Detail HS320 for concrete driveway aprons. A minimum driveway length of 25 feet shall be provided between any building and the right-of-way line. Triple-width parking areas or any request to widen a driveway shall require a UDO Permit approval and may require additional length.

All lots shall be served off the more minor classification of roadway, and there shall be only one driveway per residential lot.

Residential driveways shall be located a minimum of 10 feet from the point of tangency of curb radii at street intersections. Additional distance will be required for roadways classified as collectors and higher.

For guidance needed regarding Fire Dept Access/turn around requirements, please reference Section 6.08 Fire Dept Access in these standards.

G. Curb and Gutter

Curb and gutter shall be required on all streets and parking lots (including loading areas), unless otherwise approved by the Executive Director of Utilities and Infrastructure. Exceptions may be granted by the Executive Director of Utilities and Infrastructure in instances where:

1. The curb and gutter will only be temporary in nature;
2. There are environmental restrictions;
3. Drainage problems will be created;
4. In non-gateway Industrial areas per the UDO.

Streets without curb and gutter may also be approved in very low density, wide-frontage lots. They must meet all of the following requirements and be approved by the Executive Director of Utilities and Infrastructure:

1. Minimum 50-foot right-of-way;
2. 5% maximum vertical grade and 0.5% minimum grade;
3. Adequate swale system to carry the 10-year storm in a non-erosive manner – this must be demonstrated by performance during the one-year warranty period or a change in the material of swales will be required;
4. Driveways across swales shall be constructed to provide for the passage of the 10-year storm;
5. All driveway pipes shall have flared end sections or headwalls on inlet and outlet ends of the pipe.

Exceptions for curb and gutter may not be issued for streets classified as collector or greater, all streets located in attached or apartment dwelling developments, and the Downtown Area. In these areas, standard 2'6" curb and gutter shall be used. For other streets, 2'6" standard or 2'6" valley curb and gutter may be used. Median curb shall be a minimum width of 1'6" standard mountable curb or 1'6", 2'0" of 2'6" standard curb and gutter. In parking lots, curb and gutter may be 1'6", 2'0", or 2'6" standard curb and gutter. When flat curb is permitted, refer to Holly Spring Detail HS364.

Where 2'6" standard curb and gutter is used, driveway and utility service locations shall be shown in detail on construction drawings.

A minimum 5-foot section of curb and gutter shall remain when removing any section of curb for the installation of a driveway, street turnout or repair of curb and gutter. When less than 5 feet of the curb remains, the full section of curb shall be removed to the next joint. Full removal of both the curb and gutter is required when installing a driveway.

For parking lots, cut and fill slopes shall not begin immediately at the back of curb, instead a minimum 4-foot shoulder for fill slopes or 2-foot shoulder for cut slopes is required behind the back of curb. For roadways, cut and fill slopes shall begin outside a minimum 10' or 12' shoulder as shown on the details.

On streets a minimum depth of 3.5 inches of ABC shall be placed under the curb and gutter.

H. Parking Lots/Off-Street Parking

Parking lots shall be designed to provide safe maneuverability of vehicles. A minimum parking stall dimension of 9' x 18' shall be provided. Parking stalls designated strictly for golf cart parking shall be a minimum of 5' x 10'. Refer to TOHS Detail HS350 for more information on parking dimensions. An aisle width of 24 feet is required for two-way traffic aisles. Handicap parking spaces shall reserve a minimum dimension of 8' wide with a 5' wide lane adjacent to the space, properly marked with signage in accordance with the N.C. Building Code. All parking facilities shall have dimensions per TOHS Detail HS350. All minimum stall depths and module widths shall be measured to the face of curb when curb and gutter is used. Parking bumpers, when used, shall be placed 2 feet from the face of the curb.

At locations where sidewalk and/or walkway abuts an 18-foot-deep parking bay, the sidewalk shall be a minimum of 6 feet wide.

A minimum pavement structure consisting of 8 inches of ABC and 3 inches of S9.5C asphalt shall be used along the travel aisle on parking facilities for multi-family (excluding duplex and triplex development) and non-residential

developments. Access drives for these facilities shall also meet this minimum pavement standard.

All paved parking facilities shall be striped in accordance with the MUTCD with 4-inch white lines, other than fire lanes which shall be yellow.

On all parking facilities, cut and fill slopes shall not begin immediately at the back of curb, instead a minimum 4-foot shoulder for fill slopes and 2-foot shoulder for cut slopes is required behind the back of curb.

Minimum throat distance of 80 feet shall be required for parking lot entrances off thoroughfares. Parking lots that exceed 1500 spaces will require a permit from NCDEQ.

Refer to Section G for additional parking lot requirements.

I. Sidewalks and Sidepaths

Sidewalks and sidepaths shall be constructed within the street right-of-way in accordance with these standards at locations as specified in the Town ordinances or within an approved Public Sidepath Easement. Sidewalks and sidepaths shall be installed at the time of roadway construction or widening unless otherwise approved by the Executive Director of Utilities and Infrastructure. The minimum thickness of a sidewalk or sidepath shall be 4 inches. At locations where a driveway crosses a sidewalk or sidepath, a 6-inch depth is required. (Sidewalks shall have a uniform slope toward the roadway of ¼ inch per foot.) The utility strip between the sidewalk or sidepath and the back of curb shall have a uniform slope of ½" per foot toward the roadway.

Sidewalks and sidepaths shall be located a minimum distance of 5 feet off the back of curb. This minimum requirement may not be varied without the approval of the Executive Director of Utilities and Infrastructure.

Where sidewalks, sidepaths and/or greenways intersect any section of curb and gutter, curb ramps shall be installed on both sides of the roadway to the Town of Holly Springs Engineering Design and Construction Standards.

J. Pavement Design

A pavement design shall be required for all thoroughfares, and collector streets. The pavement design and traffic analysis shall be signed and sealed by a North Carolina Professional Engineer. Pavement design shall be based on subgrade conditions, a 20-year design life and projected traffic loading. Subgrade conditions shall be based upon corrected soaked CBR values at 0.1 inch penetration as per ASTM D1883. Soil samples used for these CBR tests shall be obtained at intervals not greater than 500 feet. Should a Professional Engineer with expertise in geotechnical engineering certify that the soil in question is of the same type with

similar engineering properties this spacing may be increased to a 700-foot maximum spacing. Boring logs and scaled drawings designating boring locations with CBR tests and other pertinent data shall accompany the pavement design.

In streets and utilities located in the Triassic Basin as shown in TOHS Detail HS356 (where Triassic soils on compressible miniature Triassic sedimentary rock-like material exists) there will be certain special criteria required for roadway construction.

The following minimums will be required of developers:

1. Pre-qualified geo-technical firm approved by the town must be on site full time while the utilities and roadways are being constructed.
2. Documentation of moisture content, compaction, density, geogrid design criteria, etc. must be provided to town inspector.
3. All Roadways will have to be proof rolled at both sub grade and stone grade by town inspector as well.
4. The standard roadway cross-section will be woven geo-fabric design criteria HP 270 or equal on entire road (and must be approved by the Town of Holly Springs), 7" ABC stone, with asphalt completed in staged construction of 2.5" I-19 asphalt and 1.5" S9.5C in stage one and 1.5" S9.5C final overlay Initial one-year warranty with an additional year extension starting after final overlay-shall be required for roadways. For the extended warranty period, it will be required to post a bond, LOC, or cash for 50% of actual cost of roadway (storm drainage, curb & gutter, sidewalk and pavement).
5. Where manholes are located in streets it will be required to have suitable off-site structural material or ABC stone to backfill around excavation of manholes up to subgrade.
6. An additional foot of stone will be required 10' either side of manhole for entire width of roadway.

Additional measures may be deemed necessary by the Town pending severity of the soils.

The pavement thickness of any street shall, at a minimum, equal the design shown in the Standard Details section of these standards for the various street widths.

Approved pavement design methods include those as proposed by NCDOT, the 1986 AASHTO Guidelines and the 1981 Asphalt Institute MS 1 document.

The AASHTO method will require use of a terminal serviceability index of 2.0 for collectors and 2.5 for thoroughfares, So = 0.49 for flexible pavement and So = 0.39 for rigid pavements, and a reliability of 98% for thoroughfares and a reliability of 95% for collectors.

All streets maintained by the NCDOT must receive approval of the pavement design from NCDOT prior to the beginning of construction. Normal crown for the pavement section shall be ¼"/foot, except as approved for superelevated cross-sections.

K. Pavement Markings and Signage

All roadways shall be marked and signed in accordance with the latest revisions of the MUTCD unless otherwise approved by the Executive Director of Utilities and Infrastructure. Pavement markings and signage shall be shown on roadway and subdivision plans and shall be installed prior to the issuance of Certificates of Occupancy for the development or final acceptance of the roadway. The pavement markings for all collector streets and thoroughfares shall be thermoplastic.

The pavement markings along thoroughfares shall be installed such that the outside lanes are 14 feet in width to accommodate bicycle traffic unless otherwise approved by the Executive Director of Utilities and Infrastructure.

Speed Limit (R2-1) signs shall be located at points of change from one speed limit to another. Speed limit signs shall be required at all entrances to a subdivision.

Speed limit signs shall be required at a location approximately 125 feet upon turning onto any public street longer than 500 feet. Speed limit signs may be required at additional locations where it is necessary to remind road users of the speed limit.

At any time prior to 1-year warranty additional pavement markings and/or signage may be required by the Executive Director of Utilities and Infrastructure, at the developer's expense.

L. Bridge Design

All public or private bridges shall be designed to withstand HS-20 highway loading unless otherwise approved by the Executive Director of Utilities and Infrastructure and shall be properly signed and sealed by a North Carolina Professional Engineer.

M. Shoulder Sections

Shoulders shall be sufficient to permit the adequate installation and maintenance of sidewalks and utilities, as well as provide sufficient clear zone distance as defined by NCDOT.

Shoulder sections without sidewalk shall be 12 feet wide on all streets with a cross section of 35 feet and greater.

Shoulder sections without curb and gutter must be a minimum of 6 feet wide.

N. Roadway Network

Developments shall provide at least one public vehicular access to each abutting property. This shall be accomplished via a public street and/or by joining adjacent parking lots and sharing driveways, at the discretion of the Executive Director of Utilities and Infrastructure. Development plans accomplishing this with parking lots and/or sharing driveways should provide a written, executed, and recorded cross-access easement and physically complete the connection if an immediate benefit can be derived by completing the link. If no immediate benefit can be derived, development plans should provide cross access and construction easements and arrange the site design so when the adjoining property owner extends the connection to the property line, the link will be completed. If the link is to be completed in the future, the grade of the connection, parking, landscaping and/or other improvements must be designed and installed to allow for extension onto or into the adjacent properties in the supporting engineering design and calculations being provided.

For roadways that stub-out to adjacent properties, sufficient information shall be provided to demonstrate the feasibility of extending the roadway to the adjacent properties. This shall include both plan and profile information for the extensions. In the event that the roadway, when extended, will cross a stream or creek, the vertical and horizontal alignment design for a minimum distance of 200 feet, plus Town culvert report shall be completed. Design shall be per Town geometric standards. Information on State and Federal regulatory permit ability shall also be provided to further demonstrate feasibility of the extension. In some instances, these permits may be required.

All street stubs to adjacent properties or stubs to future phases that exceed 150' shall provide an all-weather turn around suitable for fire and rescue equipment as required in Fire Code Appendix D.

Whenever possible, internal access drives should be located to join together at existing public streets and/or connect to adjacent private drives so that the internal circulation functions as an integral part of the surrounding transportation network.

Where street networks have been approved with master plans of nearby developments, streets shall be designed for interconnection with those plans.

Any development with more than 100 dwelling units must have a secondary means of public access and with each additional 300 units, another public access must be added.

During all phases of construction roadway network construction may not be phased in such a manner to create a dead-end roadway or roadway network exceeding 2000 feet in length or serving more than 150 dwelling units. Where a development plan or master plan has been approved and a development schedule can be provided that documents completion of future phases to eliminate the dead-end exceeding 2000

feet within a reasonable time frame, the Executive Director of Utilities and Infrastructure may approve an exception to this requirement if an alternate emergency access is approved and provided in the interim period. The Executive Director of Utilities and Infrastructure reserves the right to mandate more restrictive requirements after consultation with the other Department Directors or for other extenuating circumstances.

No subdivision sub-phase shall consist of less than 25 contiguous lots. All phasing will require that utility and roadway network will meet necessary standards.

Intersections shall be spaced no more than 1200 feet to 1500 feet in each direction.

O. Signal Poles

Metal poles with mast arms shall be employed at all intersections at which signal improvements are being installed. Where applicable, consideration should be given to standard designs of metal poles and mast arms and footings as approved by NCDOT.

All mast arms shall be monocurve in design. If the mast arm lengths exceed 60', then metal strain poles should be considered in place of the mast arm poles.
Wooden poles should only be used for temporary signal installations as approved by Development Services Director or designee.

For signals located within the boundary of the Downtown Area as specified in the Comprehensive Plan, Section 1 Land Use & Character, architectural powder coated black metal mast arms with decorative base and finial shall be used. The signal poles and mast arms will be treated with a low gloss two-part epoxy primer and have a semi-gloss two-part epoxy acrylic urethane finish. More details will be specified during the review process.

3.03 SIGHT DISTANCE

General

Sight distance triangles shall be shown on roadway layout sheet(s), the signage sheet(s), and the landscape sheet(s) within the plan set for all street intersections, multi-family, site, and non-residential driveway intersections.

Sight distance requirements, including but not limited to intersection approach, intersection departure, and stopping, and shall be subject to design standards as specified in the latest version of the AASHTO Policy on Geometric Design of Highways and Streets (Green Book) or as approved by the Executive Director of Utilities and Infrastructure.

Sight distance shall mean the length of roadway visible to the driver traveling along the roadway or waiting to enter or cross the roadway. Both horizontal and vertical planes shall be considered in the determination of required sight distance. Sight distance triangles are created from the sight distance, the stopping or crossing distance, and the line of sight between the two.

It shall be the responsibility of the designer for all proposed developments, including site, subdivision, landscape, infrastructure, and sign plans to meet these requirements as a part of the plan project design and approval process. Between the latest version of the AASHTO Green Book and the Standard's stated herein, the more restrictive standard shall apply.

Objects that may be permitted within sight distance triangle areas include fire hydrants, utility poles, and traffic control devices, which should be located to minimize visual obstruction. Plantings, structures, fences, or walls may be allowed within the sight distance triangles with supporting evidence that it would not be a significant obstruction to the visibility of the driver and approval from the Executive Director of Utilities and Infrastructure.

A sight distance easement will be required for any area that is within a sight distance triangle and is not within the right-of-way.

The information and tabular data herein are provided as a guideline. The registered engineer shall ultimately be responsible for determining the design criteria and design.

A. Intersection Sight Distance

In order for vehicles to safely maneuver into or through an intersection, sufficient sight distance must be provided so as to avoid collisions. The horizontal line of sight as shown in TOHS Detail HS334 is a visual line connecting the driver's eye and the approaching vehicle, both of which are in the center of the travelway as shown in TOHS Detail HS334. If this line of sight and the area of the triangle it creates is impeded by any obstructions, either the obstruction should be moved, or the alignment adjusted. The vertical intersection sight distance is measured along the centerline of the major street between the drivers of the two opposing vehicles. The vertical line of sight as shown in TOHS Detail HS337 is a visual line connecting the driver's eye, which is located 3.5 feet above the roadway surface, with the approaching vehicle, which is located 3.5 feet above the roadway surface as shown in TOHS Detail HS337. If this line of sight is impeded by any obstructions, either the obstruction should be moved, or the alignment adjusted.

The amount of sight distance required at an intersection depends on the type of traffic control at the intersection and the speeds of the vehicles.

1. **Yield Sign Control**

This type of design requires that the side street be posted with yield signs. The intersection approach sight distance for the driver on the side street must be sufficient for the driver to observe a vehicle on the through street approaching from either the left or the right and bring his/her vehicle to a stop prior to reaching the intersection as shown in TOHS Detail HS336. The assumed operating speed approaching the yield sign is 10 mph resulting in a stopping sight distance of 45 feet. Where proper sight distance cannot be achieved for the driver on the side street at the design speed of the roadway, it may be necessary to have a posted speed reduction on the approach to the intersection or to replace the yield sign with a stop sign. Due to the possibility that a vehicle must stop at the yield sign, adequate sight distance at the intersection shall be provided for safe departure from a stopped condition as required by the section on stop sign controlled intersections.

2. Stop Sign Control

At intersections that are controlled by stop signs or at driveways and alleys where the driver is required to stop before entering the street by the Town Code, the driver must have an unobstructed view of the entire intersection and adequate sight distance for any of the various vehicular movements allowed upon departure of the intersection. These movements may include crossing the street, turning left or turning right onto the street. Where the through street is either undivided or divided with a median narrower than 20 feet, the crossing or left turn movements are treated as a single operation. Where the median can provide storage for the design vehicle (20 feet wide for a passenger car), the crossing or left turn movement may be considered in two phases of operation. Any median under 20 feet must be accounted for in the equivalent number of lanes with 12 feet being the standard lane width, for example an 18-foot median would be equivalent to 1.5 lanes. The measurement method for determining the sight triangle for left, right, and through movements from the stop-controlled street is based on values listed in Table 3.2 on the following page and illustrated per detail. This table only covers passenger cars at grades of 3 percent or less. For other conditions, the time gap should be adjusted, and the Intersection Sight Distance formula used.

An obstruction to the driver's view shall not be located within the sight triangles as defined herein to permit adequate view of the intersection. In addition, there shall be no sight obstruction located in the triangular areas shown in TOHS Detail HS333 to allow for safe departure through the intersection. The measurement of intersection sight distance is along the centerline of the appropriate lane of the roadway and is measured from an

eye height of 3.5 feet above the surface of the roadway to an object 3.5 feet above the surface of the roadway. The location of the driver's eye (d1) is dependent on the classification of the intersecting streets. For all intersections where the through street is a thoroughfare, the driver's eye location shall be 18 feet back from the face of curb extended through the intersection or the edge of pavement if there is no curb. At all intersections where the through street is a local or collector street, and for ramp type driveways, the driver's eye shall be located 15 feet behind the face of curb extended, or the edge of pavement if there is no curb. The sight distance lengths d2, d3, and d4 shown in TOHS Detail HS333 for left or right turns onto the through street are dependent on the design speed of the roadway and are presented in Table 3.2 or the most current version of AASHTO guidelines. TOHS Detail HS335 shows the measurement method for determining the sight line for left turns from the through street and is presented in Table 3.2 or the most current version of AASHTO guidelines.

3. Traffic Signal Control

At intersections controlled by traffic signals, the minimum sight distance will be stopping sight distance (Tables 3.3 and 3.4) for all side street movements except for the right turn movement. The right turn movement shall have intersection sight distance to allow right turn on red, except where it is economically impractical due to existing major features such as permanent buildings and existing, large, mature trees. The minimum sight distance for the right turn movement limited by existing major features shall be stopping sight distance. Where intersection sight distance cannot be achieved, right turn on red will be restricted.

TABLE 3.2 MINIMUM INTERSECTION DEPARTURE SIGHT DISTANCE

Posted Speed (Major Road)	Design Speed (Major Road)	Left Turn from Stop				Right Turn & Thru from Stop
		2-lane Undivided	3-lane or equivalent	4-lane or equivalent	5-lane or equivalent	
20	25	280	300	315	335	240
25	30	335	355	375	400	290
30	35	390	415	440	465	335
35	40	445	475	500	530	385
40	45	500	530	565	600	430
45	50	555	590	625	665	480
50	55	610	650	690	730	530
55	60	665	710	750	795	575

Reference: AASHTO 2018 Edition Table 9.7, Table 9.9, and Table 9.11 using the Intersection Sight Distance equation (9-1):
$ISD = 1.47\ V_{major}\ t_g$, where
ISD = Intersection sight distance (length of sight triangle along major road)
V_{major} = design speed of major road (mph)
t_g = time gap for crossing distance (7.5 seconds for 2-lane undivided plus 0.5 seconds for each additional lane or lane equivalent median).

B. Stopping Sight Distance

At minimum, stopping sight distance must be available to the driver at all locations along roadways. Stopping sight distance applies to horizontal as well as vertical alignments. Stopping sight distance on horizontal curves is measured along the centerline of the inside lane around the curve and the line of sight is a straight line between two points on the centerline of the lane. On vertical curves, stopping sight distance is measured on a straight line between the driver's eye and an object on the roadway surface. The height of the driver's eye shall be measured at 3.5 feet above the roadway surface and the object shall be 2.0 feet above the roadway surface. TOHS Detail HS334 and HS337 illustrate the measurement of stopping sight distance horizontally and vertically, respectively. A more detailed explanation of the measurement of stopping sight distance is included in *A Policy on Geometric Design of Highways and Streets,* 2018 Edition, by AASHTO (AASHTO Green Book). The minimum stopping sight distance required is based on wet pavements and depends on the design speed and the grade of the roadway. Table 3.3 presents the minimum stopping sight distances for various design speeds on level terrain. Table 3.4 presents adjustment factors for stopping sight distance on grades. Variable situations may require a greater length of stopping sight distance. Lengths in Table 3.3 and 3.4 are a guide and the registered engineer shall ultimately be responsible for the design criteria.

TABLE 3.3
MINIMUM STOPPING SIGHT DISTANCE FOR LEVEL AND WET CONDITIONS

Posted Speed (MPH)	Design Speed (MPH)	Stopping Sight Distance (FT)
20	25	155
25	30	200
30	35	250
35	40	305
40	45	360
45	50	425
50	55	495
55	60	570

Reference: AASHTO 2018 Edition Table 3.1 using the formula (3-2) for Stopping Sight Distance (SSD).

TABLE 3.4 ADJUSTMENT FACTORS FOR STOPPING SIGHT DISTANCE ON GRADES

Posted Speed (MPH)	Design speed (MPH)	Downgrade increases in distance (FT)			Upgrade decreases in distance (FT)		
		3%	6%	9%	3%	6%	9%
20	25	3	10	18	-8	-12	-15
25	30	5	15	27	0	-16	-21
30	35	7	21	37	-13	-21	-28
35	40	10	28	49	-16	-27	-36
40	45	18	40	67	-16	-29	-40
45	50	21	49	82	-20	-37	-50
50	55	25	58	98	-26	-45	-62
55	60	28	68	116	-32	-55	-75

Reference: ASSHTO 2018 Edition, Table 3.2 using the formula (3-3) for braking distance on grade.

3.04 MATERIALS

Portland Cement Concrete for curb and gutter, driveways, and sidewalks shall have a minimum 28-day compressive strength of 3000 psi, a non-vibrated slump between 2.5 and 4 inches, a minimum cement content of 564 pounds per cubic yard, an air entrainment of 5 to 7%, and a maximum water-cement ratio of 0.532.

Joint Filler shall be a non-extruding joint material conforming to ASTM C1751.

Concrete Curing Agents shall be free from any impurities which may be detrimental to the concrete and shall meet Section 926 of NCDOT Standard Specifications for Roads and Structures.

Aggregate for portland cement concrete shall meet the requirements for fine and coarse aggregate of Section 1014 of the NCDOT Standard Specifications for Roads and Structures.

Portland Cement and Admixtures shall meet the requirements of Section 1000 of the NCDOT Standard Specifications for Roads and Structures.

Water for mixing or curing the concrete shall be free from injurious amounts of oil, salt acid, or other products injurious to the finished product.

Aggregate Base Course shall consist of an approved coarse aggregate produced in accordance with the requirements indicated for either Type A, B, or C aggregate as described in Section 910 of the NCDOT Standard Specifications for Roads and Structures.

Bituminous Surface Course, Type S9.5A and S9.5BC, shall consist of a mixture of coarse and fine aggregates, and asphalt cement, and shall meet the requirements of Section 645 of the NCDOT Standard Specifications for Roads and Structures. For NCDOT project the requirements of NCDOT for other types of asphalt (Superpave) shall apply

Bituminous Concrete Base Course, Type HB, shall conform to the general, material, and construction specifications as specified in Section 610 and Section 640 of the NCDOT Standard Specifications for Roads and Structures. For NCDOT project the requirements of NCDOT for other types of asphalt (Superpave) shall apply.

Tack Coat shall be asphalt or asphalt cement and shall meet the general, material, and construction specifications as specified in Section 605 of the NCDOT Standard Specifications for Roads and Structures.

Concrete Pavement shall meet Section 700 of the NCDOT Standard Specifications for Roads and Structures.

Concrete Pavers may be used on privately maintained streets or as approved by the Executive Director of Utilities and Infrastructure for pedestrian crossings in urban areas, in accordance with the applicable Standard Detail. The Town of Holly Springs will not maintain decorative type paved street surfaces such as pavers or imprinted designs within public right-of-way, unless approved by the Executive Director of Utilities and Infrastructure.

Geotextile Fabric may be used to stabilize a roadway, subgrades, slopes, and for other uses as necessary. At least one week prior to using this fabric, a sample and its associated engineering data shall be submitted to the Town of Holly Springs. Executive Director of Utilities and Infrastructure for approval. Areas stabilized with fabric shall be indicated on "as-built" drawings with the manufacturer name and type fabric specified.

3.05 CONSTRUCTION AND INSPECTION

No construction shall commence until the following applicable items have been obtained:

- All required permits and approvals
- Town of Holly Springs development plan approval
- Town of Holly Springs Construction Drawing approval
- Land Disturbance Permit

A. Streets

No base material shall be placed on a roadway until the storm sewer, subgrade, utilities, and all appurtenances have been inspected and meet Town of Holly Springs Engineering Design and Construction Standards.

The Construction Inspector may require field density testing of subgrade soils from a certified soils laboratory. The soils laboratory shall perform sufficient Proctors to evaluate the compaction characteristics of various soils used in the roadbed. The Construction Inspector may also require field density testing of the ABC used and an asphalt mix formula before either is inspected or approved. The final course of surface asphalt shall not be placed until the end of the warranty period.

The subgrade shall be compacted as described in Section 2.05 Earthwork. Proof rolls on subgrade will be conducted with a loaded tandem axle dump truck with 15 tons loaded on truck. A current weight ticket will be required by the Development Inspector. No loose material is allowed on top of compacted subgrade. Subgrade shall be packed and smooth on top with optimum moisture content and shall not have any deflection in surfaces for approval of proof roll. A stone grade proof roll will also be conducted following the same guidelines. All residential streets shall have asphalt placed in 2 lifts with the first being a minimum of 1.5" S9.5C and the second lift be a minimum of 1.5" S9.5C. The final course of surface asphalt shall not be placed until the end of the warranty period. (See details HS302, and HS305D through HS305J).

When thoroughfare widening takes place, the existing edge line of the travel lane shall be sawcut. Achieve an overlap of the final lift of new asphalt by at least 6" onto the existing roadway cross-section. The objective to have the joint between new and old asphalt to be offset from the joint between subgrades (this overlap shall exclude the overlay). In addition, whenever an overlay is required, milling of 1 ½ inch shall occur at both tie-in stations to insure a smooth connection.

Roadway patch shall be at a minimum of 4" I-19 and 2" of 9.5C asphalt. If deemed necessary by Inspector, additional asphalt may be required.

B. <u>Curb and Gutter, Driveways, Sidewalks, and Concrete Sidepaths</u>

No concrete shall be placed until all forms and subgrades have been approved by the Construction Inspector. The surface of sidewalks and sidepaths shall be finished to grade and cross section with a float, troweled smooth, and finished with a broom.

Subgrade shall be excavated to the required depth and shaped to the proper cross-section. Where tree roots are encountered, they shall be removed to a depth of 1 foot for the full width of the excavation. The subgrade shall be stable and thoroughly compacted.

Forms shall be set and maintained true to the required lines, grades, and dimensions. Forms shall be constructed with material of such strength and rigidity to prevent any appreciable deflection between supports. Straight forms shall be within a tolerance of ½ inch in 10 feet from a true line horizontally or vertically. Forms shall be thoroughly cleaned of all dirt, mortar and foreign material before being used. All inside form surfaces shall be thoroughly coated with commercial quality form oil.

Grooved construction joints shall be cut to a depth equal to at least 1/3 of the total slab thickness. The joint shall be no less than 1/8 inch in width and cut at intervals equal to the width of the sidewalk. A 1/2-inch expansion joint filled with joint filler shall be placed between all rigid objects and placed no farther than 50 feet apart for sidewalks and curb and gutter, extending the full depth of the concrete with top of the filler 1/2 inch below the finished surface.

3.06 FIRE LANES

Fire lanes shall be installed and inspected in accordance with the public street requirements of Section 3.05 A and 3.05 B of these standards. The general requirement designates that any building located more than 150 feet from a public road, or which exceeds 30 feet in height and is set back more than 50 feet from a public road, shall have a fire lane.

Fire lanes shall be a minimum width of 20 feet and shall be properly marked and signed to designate the access as a "fire lane" as specified by the Fire Marshal. The surface of the fire lane shall be paved with a minimum of 8 inches of ABC stone and 3 inches of S9.5C asphalt. For projects located within the Triassic Basin, all Fire Lanes will be required to meet the design standards as located within section 3.02 J of these Engineering and Design Construction Standards.

All fire lanes shall be marked in accordance with one of the following requirements:

1. Continuously painted yellow Thermoplastic paint striping with along the fire lane with "No Parking - Fire Lane" printed with minimum 8-inch-high letters at 40-foot intervals or as directed by the Fire Marshal;
2. Continuously painted yellow curb with "No Parking - Fire Lane" along the fire lane, and with "No Parking - Fire Lane" printed with minimum 8-inch-high letters at 40-foot intervals or as directed by the Fire Marshal;
3. The installation of the MUTCD standard sign showing "No Parking - Fire Lane" placed at each end of the fire lane and at 50-foot intervals with arrows on the signs or a continuously painted yellow strip along the designated fire lane.

3.07 TRAFFIC CONTROL, TRAFFIC SIGNALS, AND STREET NAME SIGNS & POSTS

All streets (public or private) require traffic signs and pavement markings. Traffic signs and pavement markings shall be installed in accordance with the latest revisions of the MUTCD, unless otherwise approved by the Executive Director of Utilities and Infrastructure.

Where two public streets cross or where a private street meets a public roadway and signalization is not warranted, a stop sign shall be used on minor street approaches. Minor street is defined by MUTCD as the street normally carrying the lower volume of vehicular traffic. Stop lines must be located a minimum 4 feet behind a crosswalk, if present. Stop signs must be visible from an appropriate stopping distance as defined by Section 3.03.B.

A pavement marking and signing plan showing description and placement of traffic signs, pavement markings, and specialty signs shall be submitted with all roadway and subdivision plans as a requirement of the Developer and shall be done prior to issuance of a Certificate of Occupancy for the development or final acceptance of the roadway by the Town of Holly Springs. Any time prior to 1-year warranty, additional signage may be required by the Executive Director of Utilities and Infrastructure, at the expense of the developer.

Traffic control and street name signs within subdivisions which will be maintained by Town of Holly Springs Public Works shall be consistent with the latest revisions of MUTCD. All specialty traffic control and street name signs and posts must comply with details HS359, HS360, and HS361. Detail HS359 shall be of the standard type as specified in this detail unless otherwise specified or approved. Detail HS360 shall be used for all thoroughfares as designated on the Cross-Section Map as adopted in the Town's Comprehensive Plan. Detail HS361 shall be used for all streets located within the boundaries of the Downtown Area or within upgraded subdivision upon the selection of the developer or subdivider. Requests for specialty signs shall be submitted to and approved by the Town of Holly Springs Public Works Department at the expense of the developer.

At signalized intersection, street name signs should be mounted overhead per detail HS358. In the Downtown Area these overhead signs shall be fitted with a black backplate. The designer should determine the best attachment type. Oversized signs will be used at major intersections.

Street name signs should be mounted on the posts in a "staggered" fashion so each street name will be easily read from all directions. Non-staggered signs are not acceptable. Hardware must pass through post and be secured with a locking washer and nut on the backside of the post. Metallic shim is required between u-channel post and sign. All hardware shall be zinc-coated to prevent corrosion. See NCDOT Standard Drawing Div. 9 Signing for reference.

All signs must comply with the latest revision of the MUTCD including, but not limited to, color, size, placement, and reflectivity. All new signs must use prismatic sheeting and meet the minimum retro-reflectivity levels. All signs must meet MUTCD standards for height of lettering and visibility. In accordance with the MUTCD, all proposed signs should be located so as not to interfere with existing signs.

All temporary stub outs for future interconnectivity shall have proper MUTCD barricade and signage in addition to the proper street extension per detail. Any right-of-way and construction easements that are necessary for future connection shall be dedicated at the time of the construction of the stub out.

All traffic signals shall be decorative monocurve mast arm poles inside the Downtown Area and shall be standard monocurve mast arm poles in all other locations across standard width roadways. Controlled access roadways shall require steel straight arm signal poles.

Preemption system shall be required with all traffic signals and include GPS with a 764 multi-mode phase selector, and a 1500 field length in all directions. In addition, fiber network connection is required to all signals and shall be Ethernet-ready per NCDOT standards.

Street name signs, pavement marking, and traffic control signs must be installed in conformance with the Engineering Design & Construction Standards, Town Policy, and the North Carolina Manual on Uniform Traffic Control Devices at every street intersection within the project or subdivision. In addition, the North Carolina Department of Transportation (NCDOT) has additional traffic control and street name sign and post standards that must be met along NCDOT maintained roadways.

The developer or subdivider shall be responsible for all costs associated with the purchase and installation of such traffic control and street name sign and posts whether the Town Standard or the Town's Upgrade Traffic Control and Street Name Sign & Posts option is selected. Such costs shall include all materials and labor for the purchase and installation of the signs and posts as required by this policy statement. All signage within or associated with a development or project must be consistent by utilizing either the standard or upgrade option throughout.

All required traffic control and street name sign and posts must be installed and inspected prior to recording of the final plat.

If a developer or subdivider selects to have the Upgraded Traffic Control and Street Name Sign & Posts installed and adequate time does not exist so as to allow for the ordering, delivery and installation of the upgraded traffic control and street name sign & posts prior to the desired date of recordation of the final plat, the developer or Subdivider may install temporary Standard Traffic Control and Street Name Sign & Posts.

Upgraded

Developers or Subdividers may select to use upgraded or "decorative" type traffic control and street name sign and posts for the entire development or project. Reference HS361 details. Individual streets or portions of projects shall not be allowed to utilize the upgraded option, upgraded signage and posts shall only be allowed for an entire development or project as specified below:

Maintenance

Any sign not installed by the Town of Holly Springs or NCDOT shall be subject to removal.

Once such Traffic Control and Street Name Sign & Posts have been installed, they shall not be removed without consent of the Town of Holly Springs Director of Public Works or NCDOT. When such sign(s) is removed, the sign must be installed and visible in a temporary manner to ensure proper identification for public safety personnel. If the sign is an Upgraded sign, a temporary sign pole shall be used to reduce any potential damage to the decorative pole during the temporary installation.

Should any upgraded traffic control and street name sign & posts be damaged after the initial installation, the Town of Holly Springs Department of Public Works may replace the damaged traffic control and street name sign & post with a temporary Standard Option traffic control and street name sign & posts. If the developer, subdivider, homeowner association, or property owner association desire the traffic control and street name sign & post to be replaced with the upgraded traffic control and street name sign & post, a request is to be submitted in writing to the Town of Holly Springs Department of Public Works for replacement of the standard traffic control and street name sign & post with an upgraded traffic control and street name sign & post. Upon receipt of the request, the Director of Public Works will prepare an invoice for the materials and labor for the installation of the traffic control and street name sign & posts and mail to the requestor for payment. Upon receipt of full payment for material and labor, the Town of Holly Springs Department of Public Works will order and install such traffic control and street name sign & posts.

3.08 TRAFFIC CALMING DEVICES

The Town shall not allow the obstruction of any public street, private street or fire lane unless otherwise stipulated by the Town Council. This requirement is in accordance with the 1992 edition of the North Carolina State Fire Prevention Code. The reference to an "obstruction" shall include parking, speed bumps or any other device which may obstruct the free passage of emergency vehicles.

All traffic control devices must be shown and approved as a part of a site plan prior to installation and must be in conformance with the Town Standard Specifications. The traffic control devices and all related signs and pavement markings shall be maintained by the Owner as a part of the approval of the plan.

3.09 PEDESTRIAN CROSSINGS

All locations which are designated for pedestrian traffic crossings shall be designated as a crosswalk with pavement marking and signage (including advanced signage) in accordance with MUTCD. Crosswalks in the Downtown Area may require decorative crosswalks.

All locations that require traffic signals are also required to install signalized pedestrian crossings per NCDOT Standards and specifications. Signalized pedestrian crossings shall be included in the NCDOT approved signal plans.

3.10 STREET TREES

See Holly Springs Unified Development Ordinance (UDO) Chapter 5: Landscaping, Section 3.5 Street Trees for installation requirements and approved species.

See Holly Springs Town Code Chapter 14: Public Works, Article IV, Streets, Sidewalks and Other Public Places, Division 6: Street Tree Maintenance for maintenance of street trees.

Street tree root guards shall be installed wherever street trees are required. Please refer to root guard detail HS816. Street trees may not be planted in a location to conflict with sight distance requirements or traffic sign visibility. The Town shall trim or remove any street trees or limbs that conflict with sight distance requirements.

3.11 THOROUGHFARE/MEDIAN PLANTINGS

With the construction of streets in the Thoroughfare classification and above, landscaping of medians and shoulders shall be per the thoroughfare median planting

detail and requirements of Section 3.03 Sight Distance. In addition, all landscaped medians shall be installed with a minimum of 6 inches of topsoil with Tif-tuf 419 Bermuda sod along with any required median plantings. Thoroughfare median plantings shall be maintained by the Town of Holly Springs once the developers' 1-year warranty period has been deemed complete and the road widening has been accepted by the Town of Holly Springs.

An exception may be granted to allow a fee in lieu of median plantings if it is determined that only the first half of the ultimate median is required to be constructed.

3.12 GREENWAY SPECIFICATIONS

Greenway locations and alignments shall be as directed and approved by the Director of Parks and Recreation. Greenways alignment shall be finalized with the Director of Parks and Recreation prior to preliminary plan approval, with full construction plans and all permits provided prior to construction drawings approval for any project on which greenways are required.

Where greenway trails are required, the following guidelines shall be followed.

- Maximum cross slope grade shall be 2%. The maximum cross slope grade shall be across the entire width of the greenway easement.
- Maximum grade shall be 8%, unless approved by the Director of Parks and Recreation.
- Positive drainage shall be established.
- Concentrated flow across a greenway is not allowed. All areas of concentrated flow must be conveyed via approved storm drainage.
- At all drainage crossings, a Professional Engineer shall provide properly sized drainage pipe with supporting calculations.
- Bridge crossings may be required in some locations. If a bridge is required, it must carry a 10,000 lb load and shall be designed by a registered engineer and approved by the Town of Holly Springs and appropriate agencies.
- Greenways shall be 10 feet wide with an easement of 30 feet.
- At greenway and roadway intersections, a pedestrian tunnel may be warranted as determined by the Director of Parks and Recreation and Executive Director of Utilities and Infrastructure.

- At greenway and roadway intersections, a pedestrian tunnel may be warranted as determined by the Director of Parks and Recreation and Executive Director of Utilities and Infrastructure.

- When an at-grade intersection is permitted, a 10' wide, 6" thick concrete pad will be required extending from the back of curb to the right-of-way line, or 18', whichever is less. There shall be a handicap curb cut as shown in Town of Holly Springs details. At the end of the pad, concrete bollards will be required per Town of Holly Springs detail.

- Where the greenway trail intersects a roadway, pedestrian crosswalk striping, and signage will be required. In addition, in cases where the greenway trail intersects a roadway and sidewalk is on opposite sides of road then handicap ramps will be required for accessibility

- Greenways shall be located and constructed so as to prevent damage from floodwaters.

- The minimum material must be 6" of approved Aggregate Base Course and 2" S9.5C Surface Course.

- Documentation of required permits, approvals, etc. shall be provided for greenways prior to construction drawing approval of the project on which the greenway is required.

- Greenways shall be subject to the same construction inspections, performance, and warranty requirements as roadway infrastructures.

- All stormwater shall be captured and conveyed below the greenway trail/bridge.

3.13 SMALL WIRELESS TELECOMMUNICATION FACILITIES (LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY)

Small wireless telecommunication facilities located within the public right-of-way shall be designed in compliance with the development standards of the Unified Development Ordinance. Please refer to HS368.

3.14 BUS STOP AND BUS SHELTER

All bus stops and bus shelters shall comply with the most current GoTriangle specifications and detail sheets. For GoTriangle Provisional Shelter Specification and GoTriangle Provisional Detail Sheets, please contact:

GoTriangle

PO Box 13787
Research Triangle Park, NC 27709
Tel. 919-485-7510
www.gotriangle.org

3.15 STREET LIGHTS

The owner, developer, or subdivider of a site plan or subdivision shall be required at the Developers expense to install street lighting via underground electrical installation, unless specifically approved otherwise by the Town Council, along all proposed streets and along all adjoining existing streets and thoroughfares in accordance with these standards and as specified in the Town ordinances.

All underground electrical distribution systems for street lighting within the corporate limits of the Town of Holly Springs and its Extraterritorial Jurisdiction shall be installed conforming to Duke Energy and Town of Holly Springs standards.

Street light fixtures shall conform to the following:

1. All fixtures along local streets in residential areas shall be LED 50 lamps on Duke Energy standard grey fiberglass poles twenty-five (25) feet in height.

2. All fixtures along thoroughfares shall be LED 150 lamps on Duke Energy standard grey fiberglass poles thirty (30) feet in height or LED 280 lamps on Duke Energy standard grey fiberglass poles thirty-five (35) feet in height. The LED 150 lumen fixtures shall be placed on thoroughfares along residential areas when spill-over from the LED 280 fixtures would be excessive.

3. Along commercial street frontages in the Downtown Area, pedestrian light fixtures shall be provided as detailed in HS 370.

Street lighting placement shall conform to the following:

1. The placement of street lighting fixtures in residential areas shall be at 300’ to 400’ intervals unless:

    a. the roadway length is less than 400 feet but more than 200 feet, in which case a street light will be provided at the end of the street; or

    b. where the roadway length is less than 200 feet and a street light is placed at the intersection and no natural features create a

visibility problem, no street light will be placed at the end of the roadway; or

c. the vertical and horizontal street alignment or natural features necessitate shorter spacing intervals.

2. The placement of street lighting along thoroughfares, marginal access streets and collector streets and in non-residential areas shall be in accordance with the latest Illuminating Engineering Society (IES) Standards for Roadway Lighting.

3. Street lighting shall be provided at all street intersections.

For street lighting placement along an NCDOT right-of-way, the developer must submit to the Town a completed Duke Energy Lighting Request Form. Once completed, this form must be sent to Duke Energy to initiate a lighting design plan for that roadway.

Authorization for street light installations by the Town shall occur at such times as:

1. Final Plat Recordation.

2. A thoroughfare, marginal access street or collector street is constructed or widened as a part of development. Thoroughfares, marginal access streets and collector streets that are constructed or widened by the Town of Holly Springs shall be lighted immediately after construction, depending upon the availability of funds.

Street lighting facilities and street lights shall be installed, by the developer, on any roadway, portion of roadway, or widening prior to the Town of Holly Springs acceptance of that roadway for routine maintenance, unless otherwise approved by the Director of Development Services or designee.

Post-acceptance, the Town of Holly Springs will take over the monthly payments for the operation and maintenance of the street lights along all public rights-of-way within the corporate limits of the Town of Holly Springs and its Extraterritorial Jurisdiction unless decorative lighting is used as outlined below.

A developer may request to use decorative/private street lighting within a development, provided:

1. Decorative lighting shall be placed at intervals of 150 to 200 feet in order to maintain lighting levels for roadways. Adequate vertical/horizontal street alignment or natural features may necessitate shorter spacing intervals. LED Fixtures mounted on non-standard poles are considered decorative; however, shall be spaced as previously described.

2. The developer and/or homeowner's association shall be responsible for all installation costs and monthly operating costs associated with the decorative/private street lights.

3. The developer and/or homeowner's association shall be responsible for any costs associated with deletion of the private street lights and any costs associated with installing the Town's standard street lights prior to the expiration of the ten- (10-) year contract with Duke Energy.

4. The developer shall include all responsibilities of the homeowner's association pertaining to the street lighting in the development covenants. The developer shall inform all purchasers of property in the development of these same responsibilities.

5. Decorative lighting shall not be used on thoroughfares, marginal access streets or collector streets.

6. Developers of private streets shall be required to install private street lighting in accordance with this standard, with the exception that the homeowner's association will not have the option of deleting the private street lighting at any time in the future.

END OF SECTION 3

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 14.

Consent Agenda
Title: Voluntary Annexation 5900 Duncan Cook Road (A25-05)
Strategic Priority Area: Growth Management & Economic Vitality
Staff Resource: Sarah Sularz, Development Services

Action(s):
Adopt Resolution 25-29 directing the Town Clerk to investigate the sufficiency of annexation petition A25-05, and setting the public hearing for August 19, 2025.

Explanation:

- The Town has received a petition for voluntary annexation of 124.69 +/- acres.
- The property is located at 5900 Duncan Cook Road and is owned by Duncan Cook Holdings LLC.
- The parcel is in the Town's ETJ, but is not contiguous with the Town Limits.
- Staff requested feedback from all departments. The Police Department noted distance from the central area of town may cause longer response times. No other department expressed concerns.
- The parcel is being annexed for utility connections prior to development in conjunction with the Major Subdivision Plan for Hazel Ridge Subdivision.

Background:

- Pursuant to NCGS 160A-31(c) Council is required, upon receiving a petition for annexation, "to cause the clerk of the municipality to investigate the sufficiency thereof and to certify the result of the investigation and to fix a date for a public hearing on the question of annexation."

Funding Source(s):
N/A

Attachment(s):
1. A25-05 map
2. A25-05 Resolution of Sufficiency

Annexation Information

Annexation Number

A25-05

Total Acres

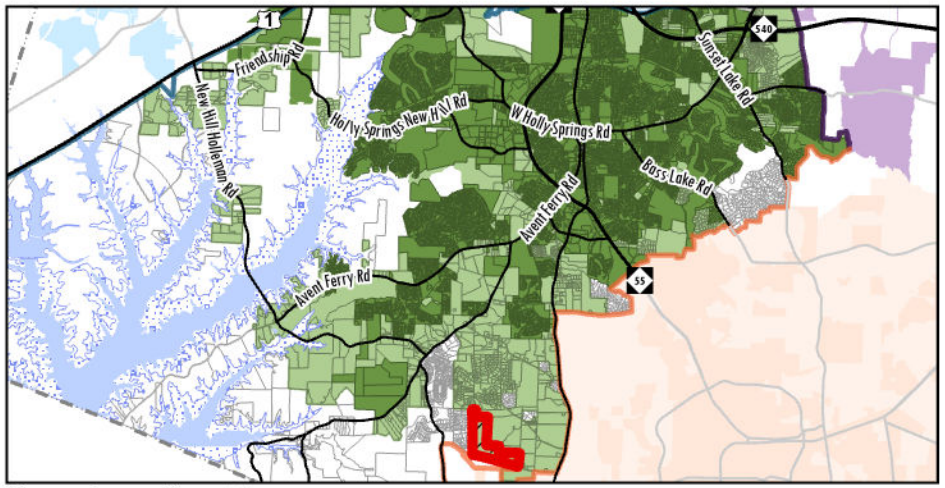
124.688 | Deed Acres

Property Address

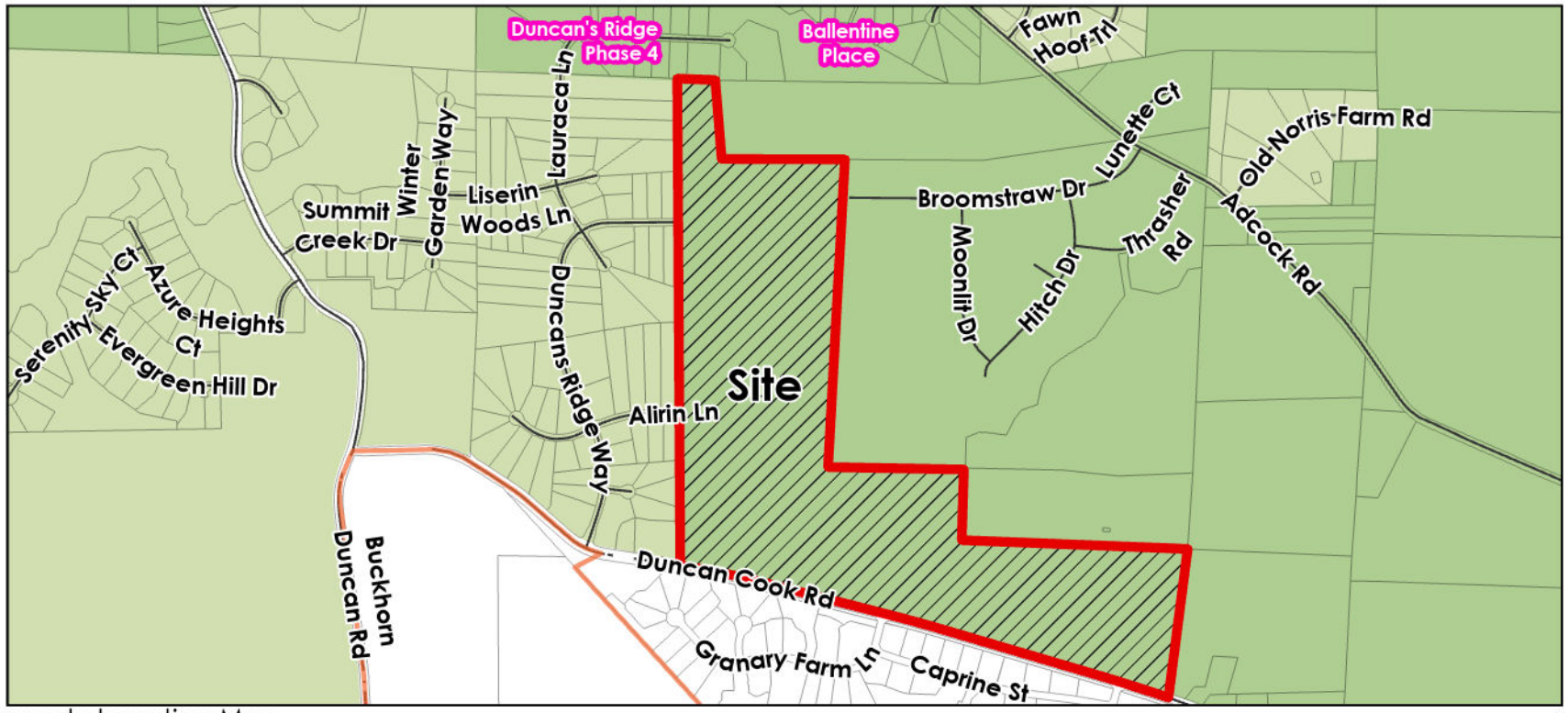
5900 Duncan Cook Rd

Contiguous to Town Limits

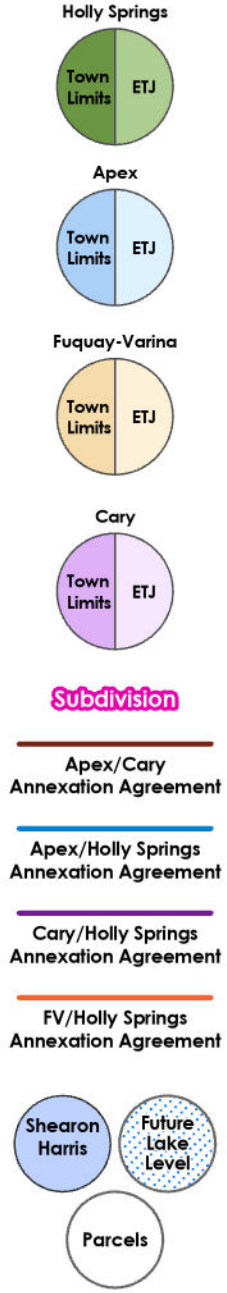
☐ Yes ■ No



Town Location Map



Property Location Map



Resolution No. 25-29
Date Adopted: July 15, 2025
Annexation No.: A25-05

RESOLUTION OF THE HOLLY SPRINGS TOWN COUNCIL DIRECTING THE TOWN CLERK TO INVESTIGATE A PETITION RECEIVED UNDER G.S. 160A-58 AND FIXING THE DATE OF A PUBLIC HEARING ON THE QUESTION OF ANNEXATION

WHEREAS, a petition requesting annexation of an area described in said petition was received by the Town of Holly Springs; and

WHEREAS, G.S. 160A-58.2 provides that the sufficiency of the petition shall be investigated by the Town Clerk before further annexation proceedings may take place; and

WHEREAS, the Town Council of the Town of Holly Springs deems it advisable to proceed in response to this request for annexation, subject to the Clerk's satisfactory investigation of the sufficiency of the petition; and

WHEREAS, the area proposed for annexation is described as follows:

BEGINNING AT AN EXISTING IRON PIPE ON THE NORTHERN RIGHT-OF-WAY OF DUNCAN COOK ROAD (N.C.S.R. 1123), SAID PIPE BEING THE SOUTHWESTERN PROPERTY CORNER OF LANDS NOW OR FORMERLY OWNED BY DANNY W. COOK & VIRGINIA B. COOK AS SHOWN IN BOOK OF MAPS 2017, PAGE 1532, WAKE COUNTY REGISTRY AND HAVING NC GRID (NAD '83/2011) COORDINATES OF N: 668519.24 FEET AND E: 2044573.74 FEET; THENCE LEAVING SAID NORTHERN RIGHT-OF-WAY S 07°22'54" W A DISTANCE OF 30.64 FEET TO A POINT ON THE CENTER LINE OF DUNCAN COOK ROAD (N.C.S.R. 1123); THENCE ALONG AND WITH SAID CENTER LINE AND A CURVE TO THE LEFT AN ARC LENGTH OF 120.64 FEET, SAID CURVE HAVING A RADIUS OF 5,737.28 FEET, A CHORD BEARING OF N 71°31'28" W AND A CHORD DISTANCE OF 120.64 FEET TO A POINT; THENCE N 72°07'42" W A DISTANCE OF 193.61 FEET TO A POINT; THENCE ALONG AND WITH A CURVE TO THE LEFT AN ARC LENGTH OF 146.91 FEET, SAID CURVE HAVING A RADIUS OF 5,729.58 FEET, A CHORD BEARING OF N 72°51'47" W AND A CHORD DISTANCE OF 146.91 FEET TO A POINT; THENCE N 73°35'51" W A DISTANCE OF 716.85 FEET TO A POINT; THENCE N 73°35'51" W A DISTANCE OF 520.06 FEET TO A POINT; THENCE ALONG AND WITH A CURVE TO THE LEFT AN ARC LENGTH OF 200.00 FEET, SAID CURVE HAVING A RADIUS OF 5,729.58 FEET, A CHORD BEARING OF N 74°35'51" W AND A CHORD DISTANCE OF 199.99 FEET TO A POINT; THENCE N 75°35'51" W A DISTANCE OF 1005.47 FEET TO A POINT; THENCE ALONG AND WITH A CURVE TO THE LEFT AN ARC LENGTH OF 572.23 FEET, SAID CURVE HAVING A RADIUS OF 5,729.58 FEET, A CHORD BEARING OF N 78°27'32" W AND A CHORD DISTANCE OF 571.99 FEET TO A POINT; THENCE LEAVING SAID CENTER LINE N 00°21'07" W A DISTANCE OF 30.36 FEET TO AN EXISTING IRON PIPE ON SAID NORTHERN RIGHT-OF-WAY, SAID PIPE; THENCE LEAVING SAID NORTHERN

RIGHT-OF-WAY N 00°21’07” W A DISTANCE OF 663.54 FEET TO A POINT ON THE EASTERN PROPERTY LINE OF LOT 74 OF DUNCANS RIDGE SUBDIVISION, PHASE ONE AS SHOWN IN BOOK OF MAPS 2005, PAGE 32, WAKE COUNTY REGISTRY; THENCE N 00°21’07” W A DISTANCE OF 2,649.49 FEET TO A POINT, SAID POINT BEING THE NORTHEASTERN PROPERTY CORNER OF LOT 38 OF DUNCANS RIDGE SUBDIVISION, PHASE 3 AS SHOWN IN BOOK OF MAPS 2007, PAGE 1112, WAKE COUNTY REGISTRY AND ALSO BEING ON THE SOUTHERN PROPERTY LINE OF LOT 8 OF DUNCANS RIDGE SUBDIVISION, PHASE FOUR AS SHOWN IN BOOK OF MAPS 2011, PAGE 435, WAKE COUNTY REGISTRY; THENCE ALONG AND WITH SAID SHARED SOUTHERN PROPERTY LINE S 87°53’12” E A DISTANCE OF 261.00 FEET TO AN EXISTING IRON PIPE, SAID PIPE BEING THE NORTHWESTERN PROPERTY CORNER OF LANDS NOW OR FORMERLY OWNED BY RUPERT L. VAUGHAN, JR. & ELIZABETH A. VAUGHAN AS SHOWN IN BOOK OF MAPS 2018, PAGE 2526, WAKE COUNTY REGISTRY; THENCE ALONG AND WITH SAID SHARED WESTERN PROPERTY LINE S 04°39’50” E A DISTANCE OF 543.97 FEET TO AN EXISTING IRON PIPE; THENCE S 89°47’42” E A DISTANCE OF 845.94 FEET TO AN EXISTING IRON PIPE HAVING NC GRID (NAD ‘83/2011) COORDINATES OF N: 672185.23 FEET AND E: 2042347.51 FEET, SAID PIPE BEING THE NORTHWESTERN PROPERTY CORNER OF LANDS NOW OR FORMERLY OWNED BY WADE P. TEMPLE & JOYCE A. TEMPLE AS RECORDED IN DEED BOOK 3078, PAGE 939, WAKE COUNTY REGISTRY; THENCE S 03°07’30” W A DISTANCE OF 2,116.00 FEET TO A POINT; THENCE S 88°58’31” E A DISTANCE OF 932.37 FEET TO AN EXISTING BENT AXLE, SAID AXLE BEING THE NORTHWESTERN PROPERTY CORNER OF LANDS NOW OR FORMERLY OWNED BY TEMPLAR INVESTMENTS LLC AS SHOWN IN BOOK OF MAPS 2007, PAGE 2181, WAKE COUNTY REGISTRY; THENCE S 01°39’14” W A DISTANCE OF 485.23 FEET TO AN EXISTING IRON PIPE; THENCE S 87°45’10” E A DISTANCE OF 1,552.70 FEET TO AN EXISTING IRON PIPE, SAID PIPE BEING THE SOUTHWESTERN PROPERTY CORNER OF LANDS NOW OR FORMERLY OWNED BY T M ADCOCK FAMILY LLC AS RECORDED IN DEED BOOK 6377, PAGE 844, WAKE COUNTY REGISTRY; THENCE S 07°22’15” W A DISTANCE OF 998.81 FEET TO THE POINT OF BEGINNING, CONTAINING 124.6888 ACRES.

NOW, THEREFORE BE IT RESOLVED by the Town Council of the Town of Holly Springs, North Carolina, that:

Section 1. The Town Clerk is hereby directed to investigate the sufficiency of the above described petition and to certify as soon as possible to the Holly Springs Town Council the result of her investigation.

Section 2. Subject to the Town Clerk’s satisfactory result of her investigation, a public hearing on the question of annexation of the area described herein will be held at the Town Hall Council Chambers, located at 128 S. Main Street, at 7 p.m. (or as soon thereafter as is practicable) on Tuesday, August 19, 2025.

Section 3. Notice of the public hearing shall be published in the Raleigh News & Observer, newspapers having general circulation in the Town of Holly Springs, at least ten (10) days prior to the date of the public hearing.

Adopted this, the 15th day of July, 2025.



ATTEST:

Sean Mayefskie, Mayor

Kathy White, Deputy Town Clerk

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 15.

Consent Agenda
Title: Extension Request for Wegmans Development Plan Expiration (18-DP-15-A01)
Strategic Priority Area: Growth Management & Economic Vitality
Staff Resource: Sean Ryan, Development Services

Action(s):
Grant the fourth, and final, 6-month extension for 18-DP-15-A01 for Wegmans to extend the expiration date from August 15, 2025 to February 15, 2026, as requested by Wegmans.

Explanation:

- Wegmans has requested to extend the approval of their Development Plan. Wegmans is a supermarket serving communities with 110+ stores and over 53,000 employees. The planned supermarket will be located south of Ralph Stephens Road on Wildwood Farm Way.
- According to the letter submitted with the request, Wegmans anticipates construction in mid-to-late 2026.
- Approval of this extension will set the new expiration date at February 15, 2026.
- This is the fourth of four allowable extensions. If approved, no additional extensions can be requested.
- If approved, Wegmans must submit Civil Construction Drawings before the expiration of the plan on February 15, 2026.
- Staff has maintained consistent contact with Wegmans and understands that they intend to submit Civil Construction Drawings prior to the February 15, 2026 expiration date.
- Once Civil Construction Drawings are submitted, the applicant must remain active in the review process to maintain an active project.
- The first extension was granted on February 20, 2024 the second on July 16, 2024, and the third on January 21, 2025.

Background:

- Wegmans was approved by Development Plan with Lowe's Home Improvement on April 16, 2019.
- At the time of plan approval, the project was subject to the 2002 Unified Development Ordinance (UDO) standards for plan expiration. In accordance with 2002 UDO Section 9.05, D, Development Plans are valid for 18 months and may receive an extension in time to submit construction drawings in 6-month increments, not to exceed a total of two years by the Town Council for good cause shown.
- Lowe's Home Improvement received a Certificate of Occupancy on July 15, 2022, which would normally be the date used to determine the 18 months of plan validity.
- The North Carolina General Assembly extended Development Plan approvals that were

valid as of September 2, 2020, to a date of 150 days following the rescission of the Governors Executive Order 116 (Declares a state of emergency to coordinate response and protective actions to prevent the spread of COVID-19). Executive Order 116 was rescinded on August 15, 2022, and plans were required to remain valid until January 12, 2023.

- The Wegmans approval has remained valid during the 150-day period past August 15, 2022.
- The 18 months of plan validity from August 15, 2022, permitted by the 2002 UDO expired on February 15, 2024.

Funding Source(s):

N/A

Attachment(s):

1. Wegmans Site Plan Approval 4th 6-Month Extension Request w_Signature - 6.25.25

WEGMANS FOOD MARKETS, INC.
DEVELOPMENT DEPARTMENT
1500 BROOKS AVENUE, BOX 844
ROCHESTER, NEW YORK 14603-0844

ARTHUR P. PIRES
PROJECT MANAGER
WEGMANS DEVELOPMENT GROUP

Phone: (585) 720-5791
Email: art.pires@wegmans.com

Town of Holly Springs
128 S. Main Street
Holly Springs, NC 27540

25 June 2025

ATTN: Mr. Chris Hill
Development Service Director

RE: Wegmans Site Plan Approval 4th **6-Month Extension Request**

Dear Director Hill:

Please accept this letter as Wegmans' 4th **6-Month Extension Request** for Wegmans' town approved Site Plan; the request of which is submitted with consideration of both our company's controlled-growth philosophy and current lease obligations.

Regarding the question of the store's construction start date, we are currently targeting a mid to late 2026 project start.

Trusting that the above information satisfies the submission requirements of the town, we respectfully request that this **Extension Request** be heard by the Town Council at its July 15, 2025 meeting.

Thank you.

Sincerely,

Arthur Pires

PS: Please note that the requisite $100.00 Extension Request fee will follow shortly under separate cover.

Cc: File

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 16.

Consent Agenda
Title: Business Park Pump Station and Force Main Improvements
Strategic Priority Area: Growth Management & Economic Vitality
Staff Resource: Rachel Jones, Utilities and Infrastructure, Rachel Ingham, Utilities and Infrastructure

Action(s):

- Authorize the Town Manager to execute the contract for Professional Services for the Business Park Pump Station (PS) & Force Main (FM) Improvements, Construction Administration and Observation (Project 21-001), to Highfill Infrastructure Engineering in the amount of $300,800, plus 10% contingency, for a total of $330,880.
- Approve certified bid tabulation and award the construction contract to the lowest, responsive and responsible bidder, Sanford Contractors, in the amount of $5,908,930, plus 10% contingency, for a total of $6,499,823.
- Authorize the Town Manager to approve change orders as may be required during the project up to the approved project budget amount.

Explanation:

- The Business Park Pump Station (PS) & Force Main (FM) project includes the following key improvements:
  - Replacement of two (2) existing submersible pumps and installation of two (2) additional submersible pumps
  - Bypass pumping and electrical upgrades
  - Generator replacement
  - Installation of site piping, fittings, flow meters, surge relief and general site improvements
  - Installation of approximately 7,400 linear feet of 16-inch PVC force main and associated air release valves, manholes, and fittings
- These upgrades are designed to accommodate the projected sewer demands as the basin continues to develop with expected completion in late 2026.
- Project construction will run concurrently with other projects in the immediate area, i.e. Southern Access Road and Operations Campus.

Background:

- The Utilities & Infrastructure (U&I) department issued a Request for Qualifications (RFQ) for professional engineering services to support Construction Administration (CA) and Observation (CO) Services. Four qualification packages were received, and scored in accordance with the Town's purchasing policy and statutory requirements for

Qualification-Based Sections (QBS). Highfill Infrastructure Engineering was selected as the most qualified firm. Highfill previously worked on the design for the Business Park Pump Station (PS).

- Following selection, Highfill provided a cost proposal for CA/CO and Post-Construction Phase Services. Staff reviewed and found the proposal reasonable and appropriate for the defined scope.
- The construction project was pubically advertised, and a pre-bid meeting was held on June 11, 2025. Three (3) addenda were issued prior to the June 26, 2025, bid opening. Four (4) bids were opened with the lowest, responsive and responsible bid submitted by Sanford Contractors in the amount of $5,908,930 plus 10% contingency for a total of $6,499,823 below the Town's $7,800,000 budget.
- Funding for the project consists of:
    - A $4,000,000 Golden LEAF Foundation grant (awarded April 1, 2021, as part of Project Galaxy - Fujifilm Phase 1)
    - $3,800,000 from the Town's FY23 Approved Budget
- Progress Reports are submitted to Golden LEAF foundation in coordination with the Town's Economic Development and U & I Departments as required throughout the project's duration.

Funding Source(s):

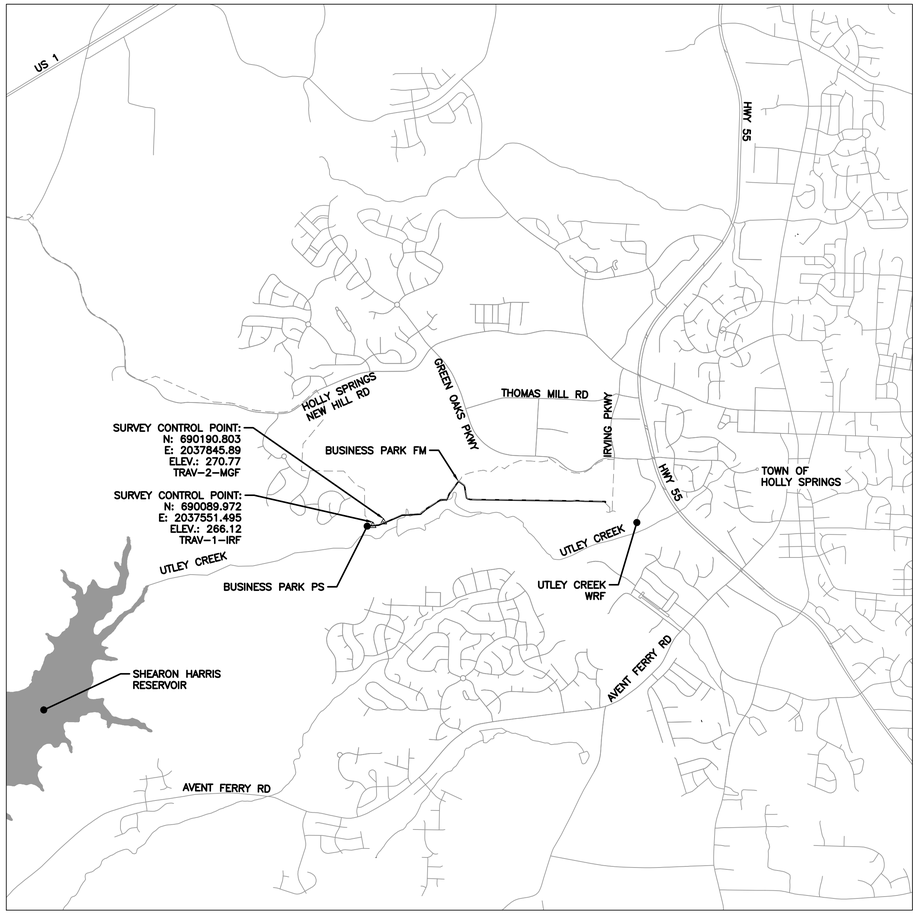
- Community Investment Fund - System Development Fees / Utility Reserves / GoldenLEAF Grant

Attachment(s):

1. 100%_Business Park PS & FM Improvements_2025-05-08_sealed for bid
2. Project Manual_2025-05-09_sealed for bid
3. L_Recommendation of Award_2025-07-02
4. Exhibit A for HS Contract_Business Park PS FM Construction_2025-07-01

BUSINESS PARK PS & FM IMPROVEMENTS

HOLLY SPRINGS, NC
TOWN OF HOLLY SPRINGS PROJECT NO. 21-011



1 VICINITY MAP
SCALE: 1"=2000'

SCHEDULE OF DRAWINGS

SHEET	TITLE
COVER	VICINITY MAP AND SCHEDULE OF DRAWINGS
C-0.1	SHEET LAYOUT & ACCESS LOCATIONS
C-0.0	GENERAL NOTES, LEGEND, ABBREVIATIONS
C-1.0	PS SITE DEMOLITION PLAN
C-1.1	PS IMPROVEMENTS
C-1.2	PS IMPROVEMENTS AND GRADING
C-1.3	PS DETAILS
FM-1.0	PLAN AND PROFILE STA. 10+00 TO STA. 21+50
FM-1.1	PLAN AND PROFILE STA. 21+50 TO STA. 32+50
FM-1.2	PLAN AND PROFILE STA. 32+50 TO STA. 44+00
FM-1.3	PLAN AND PROFILE STA. 44+00 TO STA. 56+00
FM-1.4	PLAN AND PROFILE STA. 56+00 TO STA. 67+00
FM-1.5	PLAN AND PROFILE STA. 67+00 TO STA. 78+00
FM-1.6	PLAN AND PROFILE STA. 78+00 TO STA. 84+07
E-0.0	PUMP STATION SITE PLAN, LEGEND, ABBREVIATIONS
E-1.0	ELECTRICAL DEMOLITION PLANS
E-1.1	ELECTRICAL NEW WORK PLANS
E-2.0	ELECTRICAL DETAILS
ED-1.0	EROSION CONTROL DETAILS
ED-2.0	EROSION CONTROL DETAILS
ED-3.0	EROSION CONTROL DETAILS
MD-1.0	MISCELLANEOUS DETAILS
MD-2.0	MISCELLANEOUS DETAILS
SD-1.0	STANDARD DETAILS
SD-2.0	STANDARD DETAILS
SD-3.0	STANDARD DETAILS

PIPELINE SUMMARY	
16" PVC FORCE MAIN	7405 LF
16" DI FORCE MAIN (SITE PIPE)	55 LF
12" DI FORCE MAIN (SITE PIPE)	95 LF

TOWN'S APPROVAL STAMP AND CONDITIONS

TOWN OF HOLLY SPRINGS
CERTIFICATION STATEMENT

I CERTIFY THAT THESE PLANS WERE PREPARED AND THAT THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING PLANS, THE LATEST EDITION OF THE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS OF THE TOWN OF HOLLY SPRINGS AND OTHER APPLICABLE TOWN ORDINANCES AND POLICIES. THE ENGINEER WHOSE SEAL AND SIGNATURE APPEAR BELOW CERTIFIES THAT THE TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS HAVE BEEN THOROUGHLY REVIEWED FOR APPLICABILITY TO THIS PARTICULAR PROJECT.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026481 EDWARD O. SASSER
SEAL NOT VALID UNLESS SIGNED AND DATED

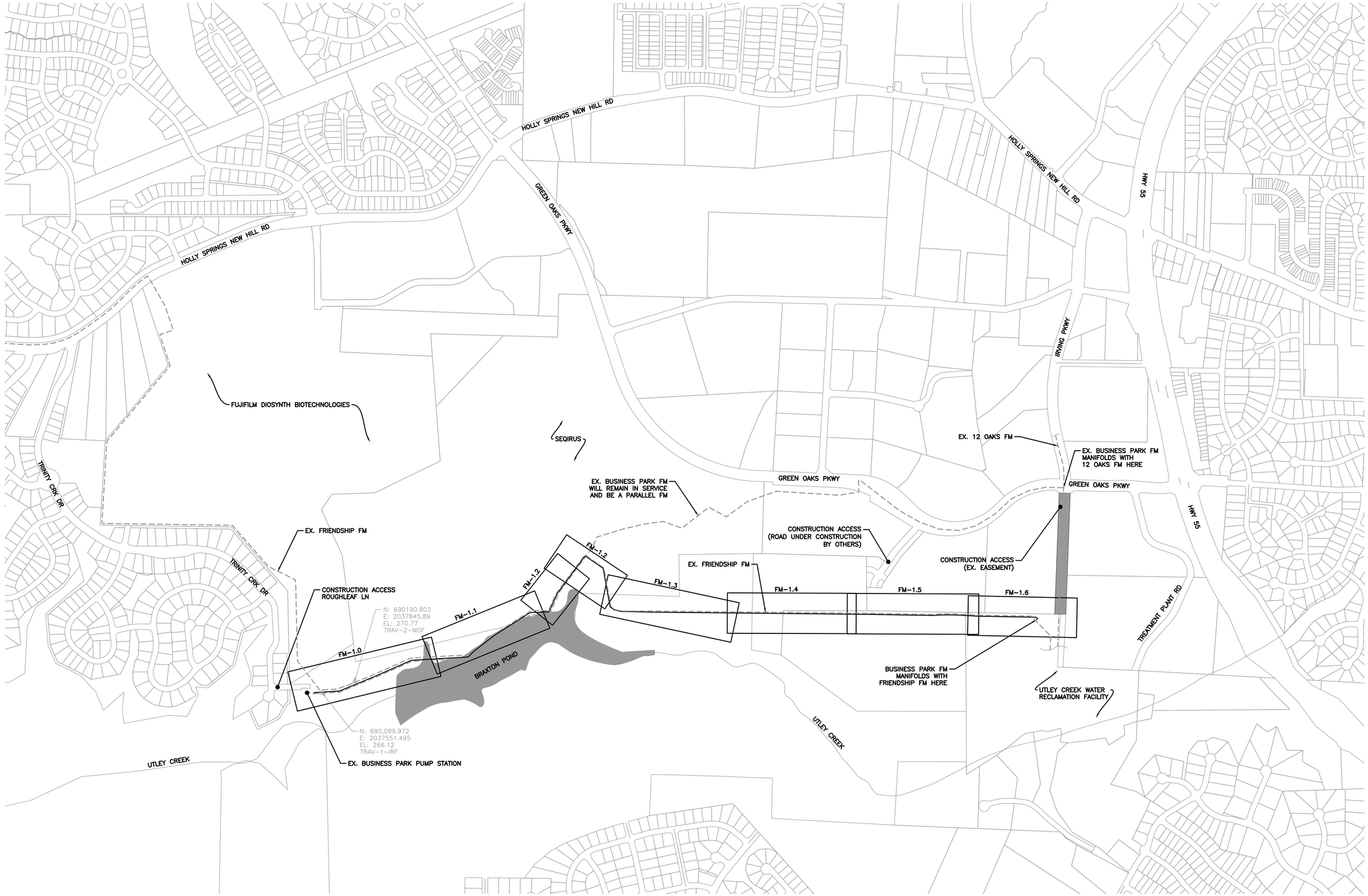
HOLLY SPRINGS North Carolina

ENGINEERING DEPARTMENT
128 SOUTH MAIN STREET
HOLLY SPRINGS, NC 27540

HIGHFILL
Highfill Infrastructure Engineering, P.C.
2703 Jones Franklin Road, Suite 201
Cary, NC 27518
Tel 919-481-4342
NC Firm License No. C-2586

Engineering is our profession. Service is our passion.

HIGHFILL PROJ. NO. HSP2101
MAY 2025



1 SHEET LAYOUT
SCALE: 1" = 400'

N

GRAPHIC SCALE
400 0 200 400 800 1600
(IN FEET)
1 inch = 400 ft.

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
CDD	09/11/24	90% DESIGN
CDD	03/07/24	60% DESIGN

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026481 EDWARD O. SASSER, JR.
2025.05.08 16:09:59-04'00'
SEAL NOT VALID UNLESS SIGNED AND DATED

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
2703 Jones Franklin Rd. Ste 201
Cary, NC 27518
Tel 919-481-4342
www.hiepc.com
Firm License No. C-2586

Engineering is our profession. Service is our passion.

BUSINESS PARK PS & FM IMPROVEMENTS
TOWN OF HOLLY SPRINGS
HOLLY SPRINGS, NC

SHEET LAYOUT & ACCESS LOCATIONS

PROJECT NO.
HSP2101

C-0.1

GENERAL NOTES:

1. EXISTING SURVEY DATA PROVIDED BY TIMMONS GROUP INC, AND STEWART INC. FOR ENGINEERING PURPOSES ONLY, NOT FOR RECORDATION. ELEVATIONS SHOWN ARE BASED ON NAVD88, HORIZONTAL DATUM IN NAD83.

2. BUILDING LOCATIONS ARE APPROXIMATE AND ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. NOT ALL BUILDINGS ARE SHOWN.

3. ALL CONSTRUCTION MUST CONFORM TO TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS.

4. WORK SHALL COMPLY WITH APPLICABLE STATE, FEDERAL, AND LOCAL CODES. NECESSARY LICENSES AND PERMITS SHALL BE OBTAINED BY CONTRACTOR AT ITS EXPENSE, UNLESS PREVIOUSLY OBTAINED BY THE OWNER AND PROVIDED IN THE CONTRACT DOCUMENTS.

5. THE CONTRACTOR SHALL HAVE A COMPLETE SET OF CONTRACT DOCUMENTS AS WELL AS ALL PERMIT APPROVALS AND EASEMENTS ON THE JOB SITE AT ALL TIMES.

6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY FIELD CONDITIONS BE ENCOUNTERED THAT VARY FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS.

7. DEVIATION FROM THE CONTRACT DOCUMENTS WITHOUT THE PRIOR WRITTEN CONSENT OF THE OWNER OR THE ENGINEER MAY BE CAUSE FOR THE WORK TO BE DEEMED UNACCEPTABLE.

8. AT LEAST FIVE BUSINESS DAYS PRIOR TO COMMENCING CONSTRUCTION, CONTRACTOR SHALL NOTIFY ENGINEER AND APPLICABLE REGULATORY AGENCIES THAT THEY ARE PREPARED TO COMMENCE.

9. CONTRACTOR SHALL CALL NC ONE CALL FOR UTILITY LOCATIONS PRIOR TO DIGGING.

10. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WORK WITH DUKE ENERGY. SUPPORT EXISTING UTILITY POLES AS REQUIRED FOR EXCAVATION AND INSTALLATION OF THE WORK. COSTS OF SUCH WORK SHALL BE PAID BY CONTRACTOR.

11. REASONABLE CARE HAS BEEN EXERCISED IN SHOWING THE LOCATION OF EXISTING UTILITIES ON THE PLANS. THE EXACT LOCATION OF ALL EXISTING UTILITIES IS NOT KNOWN IN ALL CASES. THE CONTRACTOR SHALL EXPLORE THE AREA AHEAD OF TRENCHING OPERATIONS BY OBSERVATION, ELECTRONIC DEVICES, HAND DIGGING, AND BY PERSONAL CONTACT WITH THE UTILITY COMPANIES TO DETERMINE THE ACTUAL LOCATION OF ALL EXISTING UTILITIES IN AN EFFORT TO AVOID INFLICTING DAMAGE TO THOSE UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR UTILITY RELOCATION COSTS IF REQUIRED FOR CONTRACTOR'S METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS RESULTING FROM DAMAGE TO THE EXISTING UTILITIES ARISING FROM CONSTRUCTION OF THIS PROJECT. SUCH COSTS INCLUDE LOSS OF UTILITY REVENUES. IF NECESSARY, CONTRACTOR SHALL ARRANGE FOR RELOCATION OR TEMPORARY SUPPORT OF EXISTING UTILITIES SUCH AS POLES, CONDUITS, CABLES, WATER AND SEWER MAINS, ETC.

12. CONTRACTOR SHALL MAKE EVERY EFFORT TO PRESERVE PROPERTY IRONS, MONUMENTS, OTHER PERMANENT POINTS AND LINES OF REFERENCE AND CONSTRUCTION STAKES. PROPERTY IRONS, MONUMENTS, AND OTHER PERMANENT POINTS OF REFERENCE DISTURBED BY THE CONTRACTOR SHALL BE REPLACED BY A PROFESSIONAL LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.

13. CONTRACTOR SHALL CLEAR AND GRUB THE CONSTRUCTION CORRIDOR AND ALL UTILITY EASEMENT ONLY TO THE EXTENT REQUIRED FOR SANITARY SEWER FORCE MAIN INSTALLATION. CONTRACTOR SHALL MAKE EVERY EFFORT TO PROTECT TREES THAT WILL NOT BE REMOVED DURING CONSTRUCTION.

14. CONTRACTOR ACTIVITY SHALL BE LIMITED TO STREET RIGHTS-OF-WAY AND CITY/COUNTY/TOWN EASEMENTS.

15. IMMEDIATELY PRIOR TO DISTURBANCE, CONTRACTOR SHALL VIDEOTAPE FORCEMAIN ALIGNMENT INCLUDING EACH DRIVEWAY, SIDEWALK, STRUCTURE, ETC., TO BE DISTURBED. EACH SHALL BE RESTORED TO ITS PRECONSTRUCTION CONDITION OR BETTER. VIDEO SHALL BE SUBMITTED TO ENGINEER PRIOR TO WORK.

16. CONTRACTOR SHALL RESTORE/REPLACE ALL DISTURBED SIGNS, MAILBOXES, STORM DRAINS, ETC. TO ORIGINAL CONDITION AND LOCATION AS SOON AS THE CONSTRUCTION PROGRESSES BEYOND THAT LOCATION. IN NO CIRCUMSTANCES SHALL POSTAL SERVICE BE INTERRUPTED TO PROPERTIES ALONG THE CONSTRUCTION CORRIDOR.

17. ALL ROADSIDE DITCHES DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITION OR BETTER AND STABILIZED WITH STRAW AND NET MATTING UNLESS OTHERWISE INDICATED.

18. ALL MATERIAL CLEARED OR DEMOLISHED BY THE CONTRACTOR IN ORDER TO PERFORM THE WORK SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF OFF SITE. NO BURNING WILL BE ALLOWED.

19. RELATIONSHIP OF SANITARY SEWER TO EXISTING UTILITIES (15A NCAC 02T .0305)

    A) SANITARY SEWER SHALL MAINTAIN MINIMUM VERTICAL SEPARATION OF 18" FROM SANITARY AND STORM SEWERS.
    B) SANITARY SEWER SHALL MAINTAIN MINIMUM VERTICAL SEPARATION OF 18" FROM WATER MAINS, OR A HORIZONTAL MINIMUM SEPARATION OF 10'.

20. AT LOCATIONS WHERE SANITARY SEWER MUST BE INSTALLED WITH LESS THAN 24" SEPARATION FROM STORM DRAINS DUE TO SURROUNDING CONDITIONS, THE TRENCH SHALL BE BACKFILLED WITH CLASS M (FLOWABLE FILL) CONCRETE UP TO THE OUTSIDE DIAMETER OF EACH PIPE.

21. CONTRACTOR SHALL CONFINE WORK HOURS FROM 7:00 AM TO 6:00 PM MONDAY THROUGH FRIDAY UNLESS APPROVED BY OWNER.

22. CONTRACTOR SHALL NOTIFY HOME AND BUSINESS OWNERS IN WRITING AT LEAST 7 DAYS PRIOR TO CONSTRUCTION THAT CONSTRUCTION ACTIVITY WILL TAKE PLACE IN THE VICINITY OF THEIR PROPERTY.

23. TRENCH WIDTHS SHALL BE IN STRICT ACCORDANCE WITH THE "TRENCH EXCAVATION LIMITS" AS SHOWN ON THE DRAWINGS.

24. CONTRACTOR SHALL REMOVE AND REINSTALL EXISTING FENCE AS REQUIRED FOR CONSTRUCTION. ADDITIONAL FENCE MATERIALS REQUIRED SHALL BE PROVIDED BY CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

25. RIP-RAP SHALL HAVE A MINIMUM DEPTH OF 1.5 TIMES THE MAXIMUM STONE DIAMETER AND SHALL HAVE A LAYER OF TYPE II GEOTEXTILE SEPARATOR PLACED BETWEEN THE SOIL AND STONE.

26. ACCESS TO BUSINESSES AND RESIDENCES SHALL BE MAINTAINED AT ALL TIMES.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL DEVICES SHALL CONFORM WITH THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL AND GENERAL PERMIT NCG01.

2. PER NPDES REQUIREMENTS, A RAIN GAUGE, SELF-INSPECTIONS RECORDS, PERMIT, AND S&E PLAN ARE REQUIRED TO BE MAINTAINED ON SITE AND ACCESSIBLE DURING INSPECTION. IT IS RECOMMENDED THAT THESE ITEMS BE PLACED IN A PERMITS BOX AT THE BEGINNING OR ENTRANCE OF PROJECT.

3. THE ESCAPE OF SEDIMENT FROM THE LIMITS OF DISTURBANCE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION CONTROL MEASURES AND PRACTICES PRIOR TO CONSTRUCTION.

4. CONTRACTOR SHALL UTILIZE A SILT BAG TO DE-WATER TRENCHES AND PITS DURING CONSTRUCTION.

4. CONTRACTOR SHALL USE EROSION CONTROL DEVICES SHOWN AND ANY ADDITIONAL DEVICES NECESSARY TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION.

5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED.

6. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSPECTED EVERY SEVEN DAYS OR AFTER EACH RAINFALL EVENT THAT EXCEEDS ONE-HALF INCH. DAMAGED OR INEFFECTIVE DEVICES SHALL BE REPAIRED OR REPLACED, AS NECESSARY. COMBINED SELF-INSPECTION FORM CAN BE FOUND AT THIS LINK: http://deq.nc.gov/about/divisions/energy-mineral-land-resources/erosion-sediment-control/forms

7. UPON STABILIZATION OF THE CONSTRUCTION CORRIDOR AND APPROVAL BY ENGINEER, CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF EROSION CONTROL DEVICES.

8. CONTRACTOR SHALL SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS WITHIN 14 CALENDAR DAYS, OR SOONER AS OUTLINED BY NPDES GROUND STABILIZATION TABLE LOCATED ON ED-2.0. FOR ANY CRITICAL AREA OR AREAS WITH A SLOPE GREATER THAN 2:1, ROLLED EROSION CONTROL PRODUCTS SHALL BE UTILIZED TO AID IN SURFACE STABILIZATION. CRITICAL AREAS SUCH AS STEEP SLOPED, WETLANDS OR FLOOD AREAS SHALL BE STABILIZED IMMEDIATELY UPON COMPLETION OF PIPE INSTALLATION.

9. INSTALL EROSION CONTROL MATTING AS INDICATED ON PLANS. UTILIZE STRAW WITH NETTING. EROSION CONTROL MATTING SHALL BE FURNISHED FOR ALL DITCHES WITH SLOPES GREATER THAN 2%. EVEN IF NOT INDICATED ON PLANS. SEE 31-06/ED-2.0.

10. CONTRACTOR SHALL SEED, FERTILIZE, AND MULCH (I.E. STABILIZE) ALL DISTURBED AREAS WITHIN 14 CALENDAR DAYS OF LAND DISTURBING ACTIVITIES EXCEPT AS FOLLOWS:

    A. PERIMETER DIKES, SWALES, DITCHES, SLOPES AND HIGH QUALITY WATER (HQW) ZONES SHALL BE STABILIZED WITHIN 7 DAYS.
    B. SLOPES STEEPER THAN 3:1 (H:W) SHALL BE STABILIZED WITHIN 7 DAYS UNLESS THEY ARE 10' OR LESS IN LENGTH AND NOT STEEPER THAN 2:1 IN WHICH CASE SHALL BE STABILIZED WITHIN 14 DAYS.
    C. SLOPES BETWEEN 3:1 AND 4:1 AND GREATER THAN 50' IN LENGTH SHALL BE STABILIZED WITHIN 7 DAYS.

11. CONTRACTOR SHALL PROVIDE A CONSTRUCTION ENTRANCE AND ADDITIONAL EROSION CONTROL DEVICES AS NEEDED, TO BE IMMEDIATELY INSTALLED, FOR ANY MATERIAL LAY DOWN, STAGING AREA, EXCAVATED MATERIAL STORAGE OR ANY OTHER AREAS DISTURBED BY CONSTRUCTION.

    A. DEMOLITION MATERIALS AND STOCKPILES SHALL BE NO CLOSER THAN 50' FROM STORM DRAINS AND STREAMS.

12. PERMANENT GROUNDCOVER WILL BE PROVIDED FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION.

13. CONCRETE MATERIALS SHALL BE CONTROLLED TO AVOID CONTACT WITH SURFACE WATERS, WETLANDS, OR BUFFERS.

14. PROVIDE WATTLES AS INLET PROTECTION FOR ALL DRIVEWAY CULVERTS.

15. STRAW WATTLES AND/OR ROCK CHECK DAMS SHALL BE PROVIDED AT OUTLETS OF EACH SECTION OF DISTURBED DITCH LINE THROUGHOUT SITE.

EROSION CONTROL MAINTENANCE PLAN:

1. ALL EROSION CONTROL SHALL BE INSPECTED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. ALL NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO PREVENT FURTHER DAMAGE AND EROSION. STRUCTURES AND MEASURES THAT SHALL BE INSPECTED INCLUDE SEEDING, FERTILIZING, AND MULCHING. SEEDED AREAS SHALL BE INSPECTED FOR FAILURE AND NECESSARY REPAIRS SHALL BE MADE WITHIN THE SAME SEASON.

2. CONSTRUCTION ENTRANCE: MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH 2-INCH STONE AFTER EACH RAINFALL INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIAL SPILLED, WASHED OR TRACKED ONTO PUBLIC ROADWAYS.

3. SILT FENCE: ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE WILL BE REPLACED IMMEDIATELY. REMOVE SEDIMENT DEPOSITS BEHIND FENCE WHEN SEDIMENT ACCUMULATES TO 6".

4. SILT FENCE OUTLET REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED. REPLACE STONE AS NEEDED TO ENSURE DEWATERING.

5. TREE PROTECTION: ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE WILL BE REPLACED IMMEDIATELY.

6. ROCK CHECK DAMS AND ROCK PIPE INLET PROTECTION: INSPECT FOR SIGNIFICANT EROSION AROUND THE EDGES AND BETWEEN DAMS. INSTALL PROTECTIVE RIP RAP LINERS IN PORTIONS OF THE CHANNEL WHERE EROSION OCCURS. REMOVE SEDIMENT ACCUMULATED BEHIND THE DAMS AS REQUIRED TO PREVENT DAMAGE TO CHANNEL VEGETATION. ADD STONES TO DAMS AS REQUIRED TO MAINTAIN DESIGN HEIGHT AND CROSS SECTION.

7. STOCKPILES: STOCKPILES SHALL BE CHECKED FOR SEDIMENTATION AND STABILIZATION.

8. CURB INLET PROTECTION: ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOME INEFFECTIVE WILL BE REPLACED IMMEDIATELY. REMOVE SEDIMENT DEPOSITS FROM SACK WHEN HALF OF THE CAPACITY IS USED.

9. WATTLE: THE CONTRACTOR SHALL MAINTAIN THE WATTLES UNTIL THE PROJECT IS ACCEPTED OR UNTIL THE WATTLES ARE REMOVED, AND SHALL REMOVE AND DISPOSE OD SILT ACCUMULATIONS AT THE WATTLES WHEN SO DIRECTED IN ACCORDANCE WITH THE REQUIREMENTS OS SECION1630 OS THE NCDOT STANDARD SPECIFICATIONS.

10. EROSION CONTROL MATTING: GOOD CONTACT WITH THE GROUND MUST BE MAINTAINED, AND EROSION MUST NOT OCCUR BENEATH THE RECP. NAT AREAS OF THE RECP THAT ARE DAMAGED OR NOT IN CLOSE CONTACT WITH THE GROUND SHALL BE REPAIRED AND STAPLED. IF EROSION OCCURS DUE TO POORLY CONTROLLED DRAINAGE, THE PROBLEM SHALL BE FIXED AND THE ERODED AREA PROTECTED.

11. DIVERSION DITCH: INSPECT FOR ANY EROSION ON THE RIDGE AND IN THE FLOW AREAS. REMOVE SEDIMENT WHEN SEDIMENT ACCUMULATES TO 4".

12. FABRIC INLET PROTECTION: ANY FABRIC WHICH COLLAPSES, TEARS, DECOMPOSES, OR BECOME INEFFECTIVE WILL BE REPLACES IMMEDIATELY. REMOVE SEDIMENT DEPOSITS BEHIND FENCE WHEN SEDIMENT ACCUMULATES TO 6".

PROJECT NOTES:

1. ACCESS SHALL BE ALONG THE EXISTING SEWER EASEMENTS OR WITHIN EXISTING ROAD RIGHTS-OF-WAY AND WORK SHALL BE MAINTAINED WITHIN THE EASEMENTS AND RIGHTS-OF-WAY UNLESS OTHERWISE APPROVED BY THE INDIVIDUAL PROPERTY OWNERS AND/OR THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NEGOTIATING WITH PROPERTY OWNERS FOR SUCH ALTERNATE ACCESS AND SHALL PAY ANY AND ALL COSTS ASSOCIATED WITH SUCH ALTERNATE ACCESS AS SPECIFIED ABOVE. ALL SUCH NEGOTIATIONS WITH PROPERTY OWNERS SHALL BE IN WRITING, AND COPIES OF THE AGREEMENTS SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO USING THE ACCESS.

2. THE CONTRACTOR IS RESPONSIBLE FOR HANDLING AND ACCOMMODATING ALL EXISTING WASTEWATER FLOWS DURING THE WORK. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT FOR APPROVAL BY THE ENGINEER, A DETAILED PLAN OF THE METHOD THE CONTRACTOR PROPOSES TO MAINTAIN THE EXISTING FLOW DURING CONSTRUCTION. WHEN BYPASS PUMPING IS USED, AN IDENTICAL STANDBY PUMP(S) SHALL BE ON SITE IN THE EVENT OF FAILURE OF THE PRIMARY PUMP(S).

3. IF, AT ANY TIME DURING CONSTRUCTION, EFFLUENT FROM THE EXISTING SEWER IS NOT FULLY CONTAINED BY THE BYPASS SYSTEM, SERVICE WILL BE RESTORED AND WORK SHALL BE SUSPENDED UNTIL THE PROBLEM IS RESOLVED TO THE SATISFACTION OF THE ENGINEER. THIS INCLUDES WASTEWATER FLOWING INTO TRENCHES DURING EXCAVATION WORK. SEWER SYSTEM OVERFLOWS WILL NOT BE TOLERATED. ALL FINES IMPOSED ON THE OWNER AND ASSOCIATED WITH OVERFLOWS CAUSED BY THE CONTRACTOR'S WORK SHALL BE PAID BY THE CONTRACTOR.

4. ALL PIPE MATERIAL SHALL BE DESIGNATED CONTINUOUSLY ON EACH JOINT OF PIPE AS "SEWER".

ABBREVIATIONS:

AWWA – AMERICAN WATER WORKS ASSOCIATION
CL – CENTERLINE
CB – CATCH BASIN
CMP – CORRUGATED METAL PIPE
CONC – CONCRETE
CPP – CORRUGATED PLASTIC PIPE
CT – COURT
DI – DUCTILE IRON
DIP – DUCTILE IRON PIPE
DR – DRIVE
EX – EXISTING
EOP – EDGE OF PAVEMENT
FM – FORCE MAIN
GV – GATE VALVE
HDPE – HIGH DENSITY POLYETHYLENE
INV – INVERT
IP – IRON PIPE
IRF – IRON ROD FOUND
LSE – LANDSCAPE EASEMENT
LF – LINEAR FEET
MIN – MINIMUM
MH – MANHOLE
MJ – MECHANICAL JOINT
NIC – NOT IN CONTRACT
OC – ON CENTER
NTS – NOT TO SCALE
PE – PLAIN END
PJ – PUSH-ON JOINT
PL – PROPERTY LINE
PP – POWER POLE
PSI – POUNDS PER SQUARE INCH
PV – PLUG VALVE
PVC – POLYVINYL CHLORIDE
PVMT – PAVEMENT
R/W or ROW – RIGHT-OF-WAY
R or RAD – RADIUS
RCP – REINFORCED CONCRETE PIPE
REQ'D – REQUIRED
RD – ROAD
RJ – RESTRAINED JOINT
STA – STATION
SR – SECONDARY ROAD (STATE)
THK – THICK
TOS – TOP OF SLAB
TS&V – TAPPING SLEEVE AND VALVE
TYP. – TYPICAL
U/G – UNDERGROUND
U.N.O. – UNLESS NOTED OTHERWISE
UT – UNDERGROUND TELEPHONE
W/ – WITH
WL – WATER LINE
WWF – WELDED WIRE FABRIC OR FENCE
or LB – POUNDS
5/SD-1 – DETAIL CROSS-REFERENCE (DETAIL 5 ON SHEET SD-1 IN THIS EXAMPLE)

FORCE MAIN LOCATOR NOTES:

1. UTILITY LOCATOR DEVICES MANUFACTURED BY 3M CORPORATION SHALL BE INSTALLED AT 100 FOOT INTERVALS AND TURN/BENDS. LOCATER TAPE, AS MANUFACTURED BY ALLEN OR APPROVED EQUAL, SHALL ALSO BE REQUIRED TO BE INSTALLED 2 FEET ABOVE THE PIPE.

2. MARKER BALL.

    A) PRESSURE PIPING SYSTEMS (WATER MAINS, FORCE MAINS, AND RECLAIMED WATER MAINS)
        1. A MINIMUM OF ONE MARKER BALL SHALL BE LOCATED ALONG THE ALIGNMENT EVERY 100 FEET SPACED EQUIDISTANT.
        2. MARKER BALLS SHALL BE LOCATED AT ALL FITTINGS.
        3. MARKER BALLS TO BE PRE-PROGRAMMED.
        4. MAXIMUM DEPTH OF THE MARKER BALL SHALL BE 2-FEET.

    B) PIPING WITH A STRAIGHT ALIGNMENT BETWEEN STRUCTURES (GRAVITY SEWER).
        1. A MINIMUM OF ONE MARKER BALL SHALL BE LOCATED ALONG THE ALIGNMENT AT THE START AND STOP OF THE ENCASEMENT, IF APPLICABLE.
        2. MARKER BALL TO BE PRE-PROGRAMMED.
        3. MAXIMUM DEPTH OF THE MARKER BALL SHALL BE 2-FEET.

3. TRACER WIRE.

    A) ALL UNDERGROUND MAINS AND PIPING SHALL BE ELECTRONICALLY LOCATABLE. A TRACER WIRE SHALL BE INSTALLED WITH ALL UNDERGROUND PIPES WITH THE FOLLOWING EXCLUSIONS:
        1. METALLIC PIPING CAN BE LOCATED ELECTRONICALLY WITH A METAL DETECTOR.

    B) TRACER WIRE SHALL HAVE TERMINAL ENDS ACCESSIBLE IN TRACER WIRE TEST STATIONS LOCATED WITHIN A 3-FOOT RADIUS OF EVERY FIRE HYDRANT FOR WATER LINES, AND WITHIN A 3-FOOT RADIUS OF AIR RELEASE VALVES AND/OR EVERY FIVE HUNDRED FEET IN A CONCRETE DONUT OR MINI-MANHOLE FOR FORCE MAINS. OTHER LOCATING TECHNOLOGIES MAY BE APPROVED BY THE EXECUTIVE DIRECTOR OF UTILITIES AND INFRASTRUCTURE SERVICES.

4. TRACER WIRE TESTING STATION.

    A) TRACER WIRE TESTING STATIONS SHALL BE INSTALLED AT A 500' MAXIMUM SPACING.
        1. THE BOX SHALL BE CONSTRUCTED OF A RIGID PLASTIC MATERIAL CONFORMING TO ASTM B-253.
        2. THE LID SHALL BE CONSTRUCTED OF CAST IRON OR DUCTILE IRON.

LEGEND

SYMBOL (NEW)	SYMBOL (EX.)	DESCRIPTION
Ⓐ	Ⓐ	AIR RELEASE VALVE ASSEMBLY
	▣	UTILITY PEDESTAL (SIZE/SHAPE VARIES)
		TREE/SHRUB (DIA & TYPE SOMETIMES NOTED)
◎	◎	SEWER CLEAN-OUT
——100——	—100—	CONTOUR
+ 100	+ 100	SPOT ELEVATION
—CL—		WOODS LINE, CLEARING LIMIT
Ⓢ	Ⓢ SD	SEWER & STORMWATER MANHOLE
		CATCH BASIN / GRILL BASIN
	W	WELL
		POWER OR TELEPHONE POLE
		FIRE HYDRANT ASSEMBLY
	WV	GATE VALVE
		BALL VALVE
		BUTTERFLY VALVE
		PLUG VALVE
	OHE OHE	OVERHEAD POWER
	UT UT	UNDERGROUND TELEPHONE
	TEL TEL	OVERHEAD TELEPHONE
	G	GAS LINE
W	W	WATER LINE
SS	SS	SEWER LINE
FM	FM	SEWER FORCE MAIN
		STORMWATER PIPE
	FO FO	UNDERGROUND FIBER OPTIC LINE
SF SF		SILT FENCE
		CENTERLINE OF DITCH OR CREEK
x x	x x	FENCE
		PROPERTY LINE
		PERMANENT EASEMENT OR R/W
		PIPE INLET PROTECTION
		CHECK DAM
		INLET PROTECTION
		WATTLE
		STRUCTURE OUTLINE
		TEMPORARY BENCH MARK
		WATER METER
		BORE AND JACK OR PIPE INSERTION OR RECEIVING PIT
		LIGHT POLE
		PROPERTY OR R/W MONUMENT
	E E	UNDERGROUND POWER
		SIGN
		BORE & JACK
		MAILBOX
		TEMPORARY CONSTRUCTION EASEMENT
		WETLANDS BOUNDARY
		SUBSURFACE TEST BORE
		ITEM TO BE REMOVED
		ASPHALT/CONCRETE REMOVAL AND RESTORATION
		EROSION CONTROL MATTING
		HORIZONTAL DIRECTIONAL DRILL

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
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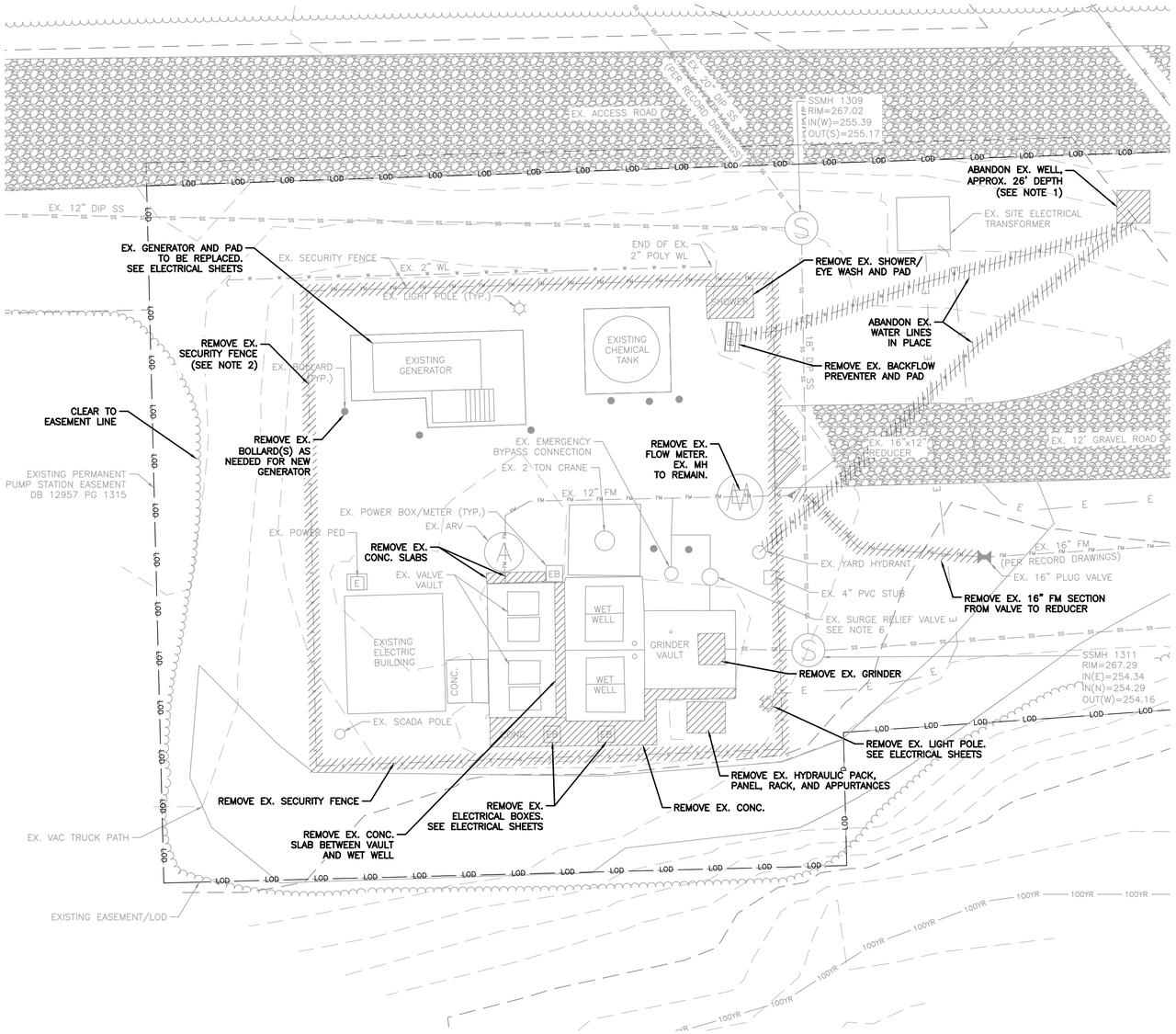
GENERAL NOTES, LEGEND, ABBREVIATIONS

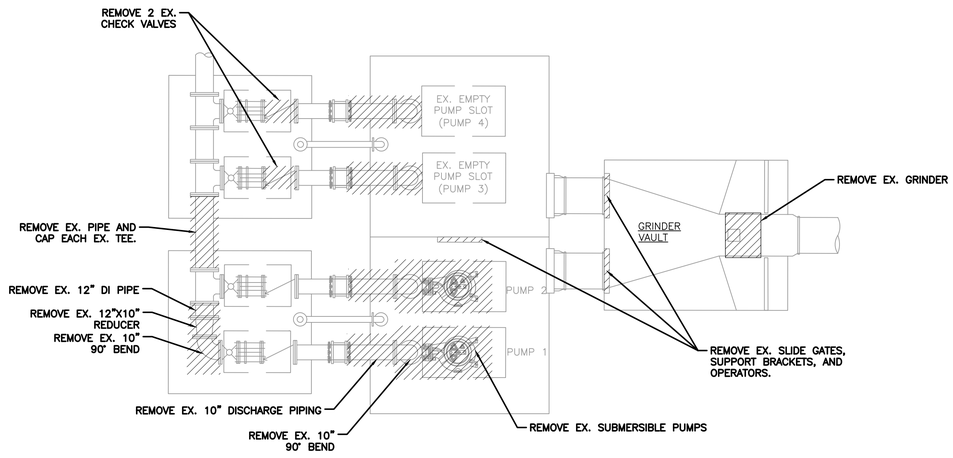
PROJECT NO.
HSP2101

C-0.0

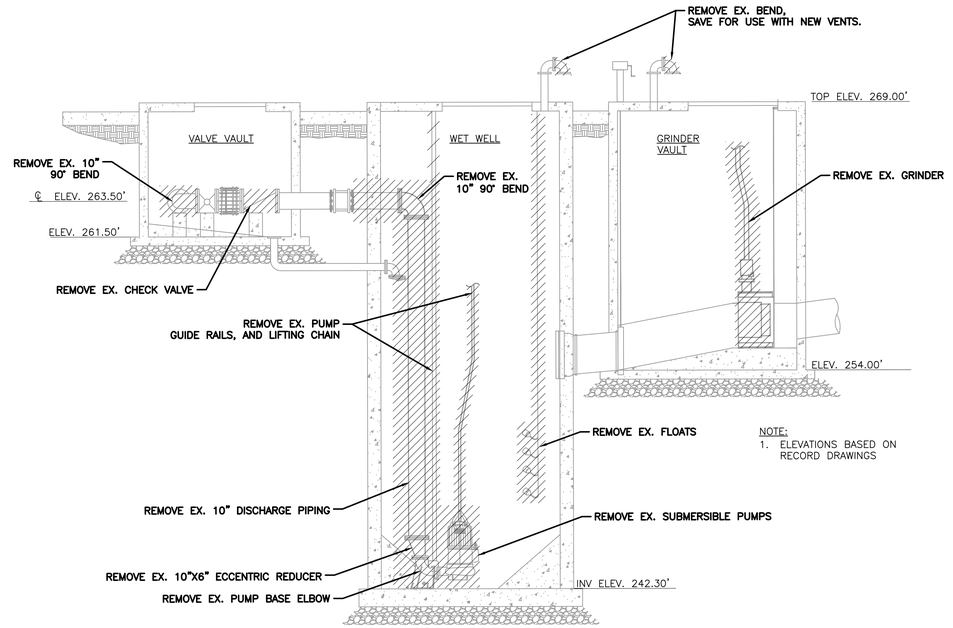


1 PS SITE – DEMO
SCALE 1:10

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.



2 WET WELL & VALVE VAULT PLAN – DEMO
SCALE: 1/4"=1'



3 WET WELL & VALVE VAULT SECTION – DEMO
SCALE: 1/4"=1'

NOTES:
1. ABANDONMENT OF EX. WELL SHALL MEET 15A NCAC 02C.0113 REQUIREMENTS. THE CONTRACTOR SHALL SUBMIT A GW-30 (WELL ABANDONMENT RECORD) FORM TO THE NORTH CAROLINA DIVISION OF WATER SERVICES AND ADDITIONAL AGENCIES AS OUTLINED ON THE FORM.
2. REMOVAL OF THE EXISTING FENCE SHALL BE COORDINATED WITH THE INSTALLATION OF NEW FENCING AS REQUIRED TO MAINTAIN SITE SECURITY AT ALL TIMES DURING CONSTRUCTION. TEMPORARY FENCING MEASURES SHALL BE USED AS NEEDED.

DATE	REVISION	BY
05/08/25	REVISED PER OWNER COMMENT	CDD
01/31/25	PERMITTING	CDD
01/17/25	TOWN REVIEW	CDD
09/11/24	90% DESIGN	CDD
03/07/24	60% DESIGN	CDD

PLOT DATE: 5/8/2025

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PS SITE DEMOLITION PLAN

PROJECT NO.
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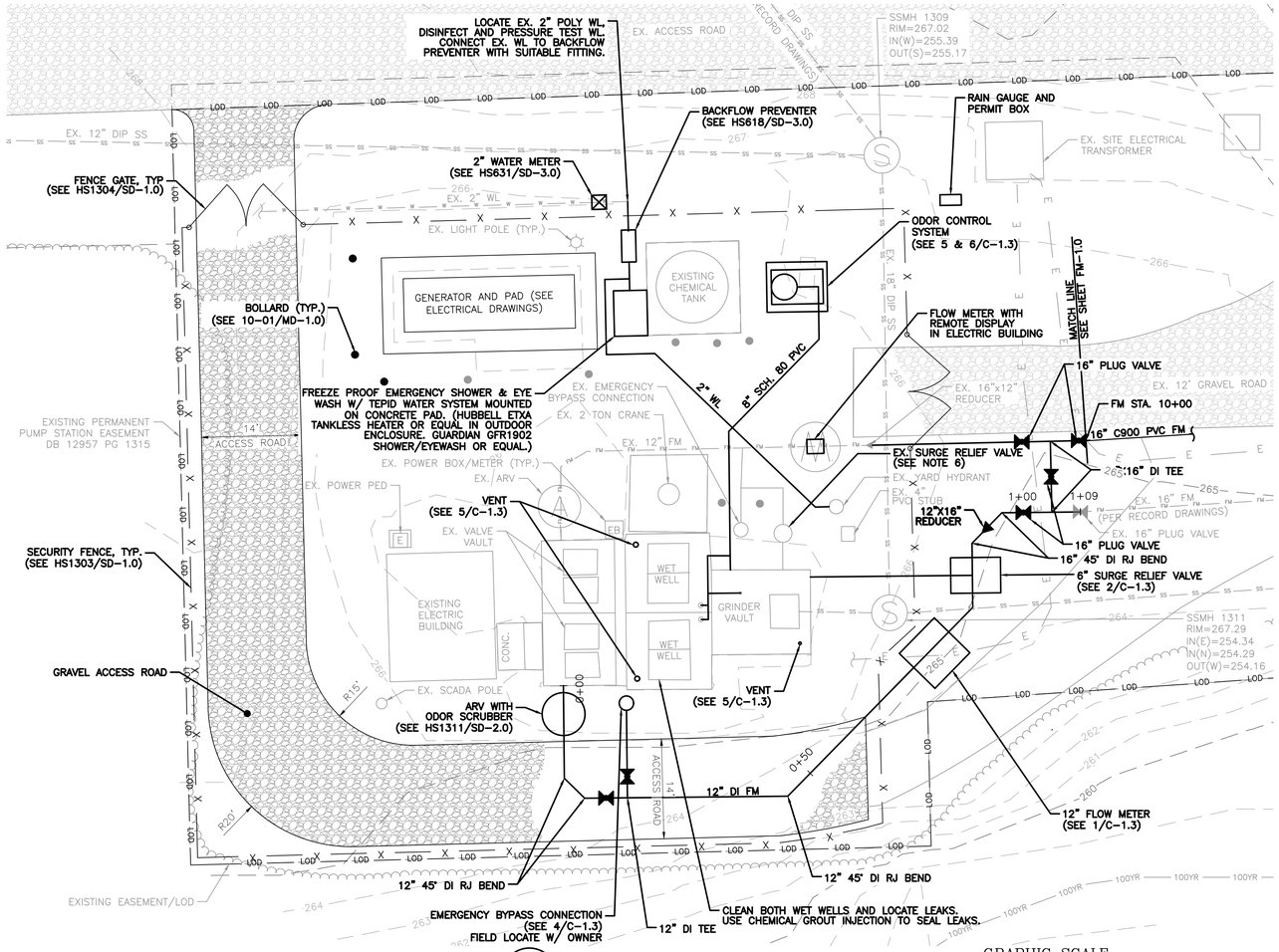
C-1.0



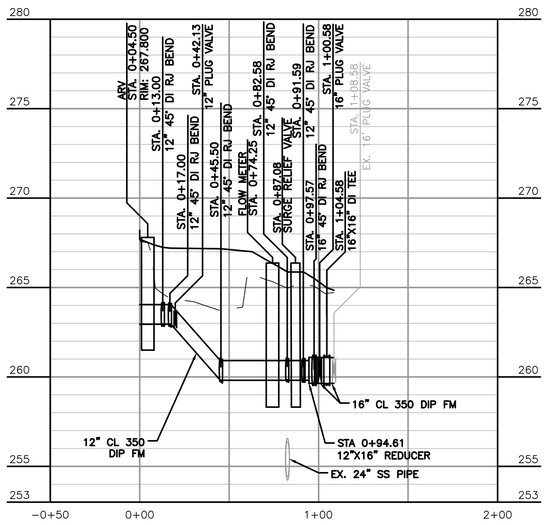
1 PS IMPROVEMENTS

SCALE: 1" = 10'

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.



2 PS FM PROFILE

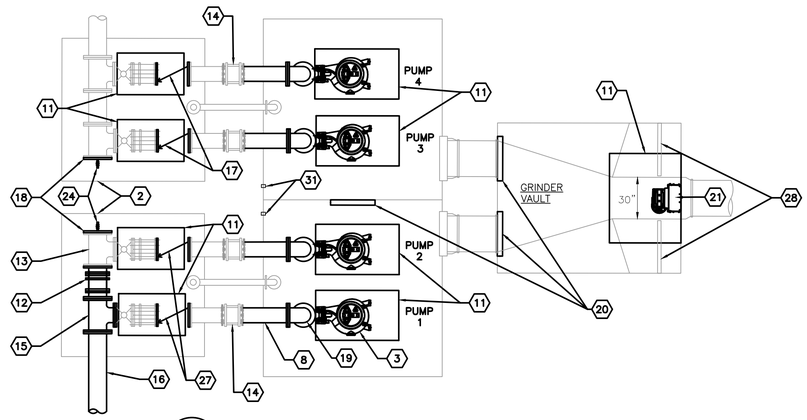
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

NOTES:
1. ALL HARDWARE, BRACKETS, AND FLANGE BOLTS SHALL BE 316 S.S. IN WET WELL AND 304 S.S. IN VALVE VAULT UNLESS OTHERWISE NOTED.
2. PROVIDE ADDITIONAL PIPE SUPPORTS IN VALVE VAULT AS NEEDED.
3. PROVIDE CLEARANCE AS REQUIRED BY THE PUMP MANUFACTURER.
4. ALL BURIED FITTINGS AND VALVES SHALL BE RESTRAINED W/ FRICTION-TYPE RESTRAINT GLANDS U.N.O.
5. INSTALL RISER PIPING AND FITTINGS IN ALL 4 PUMP SLOTS.
6. EX. SURGE RELIEF MH. CLEAN MH INTERIOR. PLUG HOLES IN MH AND SEAL AROUND PIPE PENETRATIONS WITH NON-SHRINK GROUT. TEST EX. SURGE RELIEF VALVE FOR PROPER OPERATION.
7. ALL SITE PIPING UP TO 16" PLUG VALVE AT FM-1.0 MATCHLINE SHALL BE DIP.
8. PAINT ALL PIPING, VALVES, AND FITTINGS ABOVE GRADE OR LOCATED IN EXISTING AND NEW VAULTS. EXISTING AND NEW PIPES, VALVES, AND FITTINGS SHALL BE CLEANED AND SURFACES PREPARED FOR PAINTING PER SPECIFICATIONS. COLOR TO BE SELECTED BY OWNER.

PUMP PARAMETERS		
PARAMETER	EX. FM	NEW, PARALLEL FM
FLOW	1,600 GPM	1,850 GPM
TDH	162 FT	147 FT
STATIC HEAD	134 FT	109 FT
DISCHARGE CONNECTION	6 IN	6 IN
MOTOR SPEED	1,800 RPM	1,800 RPM
MOTOR POWER	125 HP	125 HP
ELECTRICAL SYSTEM	480/277 V	480/277 V
	3 PHASE	3 PHASE
	4 WIRE	4 WIRE

NOTES:
1. ALL 4 PUMPS ARE THE SAME.
2. PS FIRM CAPACITY:
   PS CAPACITY WHEN LARGEST CAPACITY PUMP IS OUT OF SERVICE.
   THE LARGEST CAPACITY PUMP IS EITHER PUMP ON NEW FM.

   2 PUMPS IN PARALLEL (EX. FM): 2,450 GPM
   1 PUMP (NEW PARALLEL FM): 1,850 GPM
   4,300 GPM



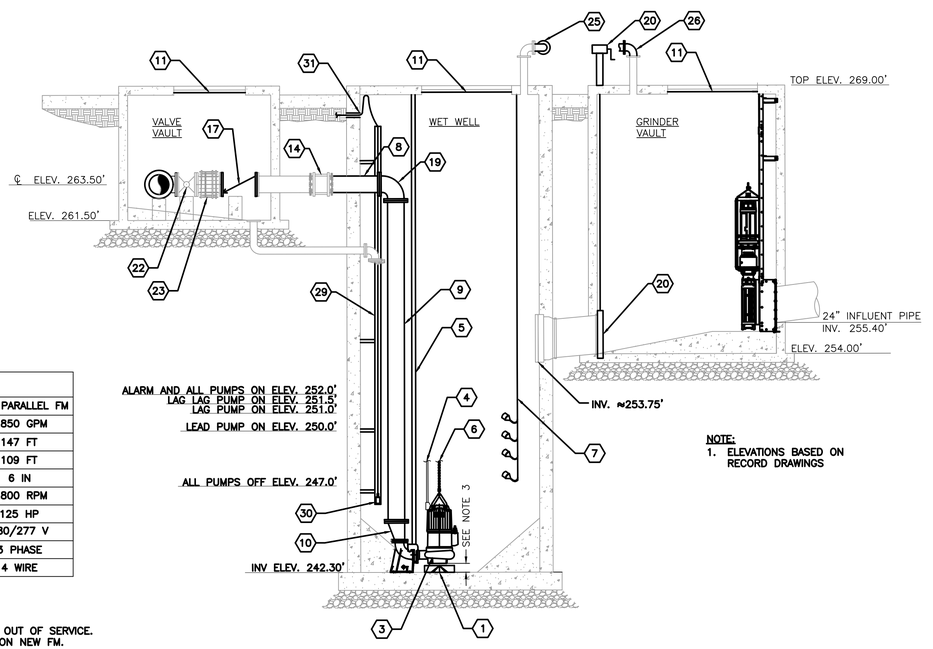
4 WET WELL & VALVE VAULT PLAN

SCALE: 1/4"=1'

N

NOTE: OWNER HAS TWO CHECK VALVES STORED ON SITE. CONTRACTOR SHALL INSTALL THE TWO OWNER SUPPLIED CHECK VALVES.

KEYNOTES:
1. FLOOR CONE (SEE 3/C-1.3)
2. SEAL VAULT PIPE PENETRATION FLUSH TO VAULT WALL W/ NON-SHRINK VAULT
3. SUBMERSIBLE PUMPS W/ BASE ELBOW
4. PUMP POWER CABLE
5. STAINLESS STEEL GUIDE RAILS
6. STAINLESS STEEL LIFTING CHAIN
7. TRANSDUCER AND FLOATS (EACH WET WELL)
8. 10" DI FM (FLXPE)
9. 10" DI FM (FLXFL)
10. 10"X6" DI ECCENTRIC REDUCER (FL)
11. EX. ALUMINUM HATCH. ADD RETRO GRATE STYLE FALL THRU PROTECTION GRATE TO EACH HATCH (SERIES X RETRO-GRATE BY HALLIDAY OR EQUAL). THE CONTRACTOR SHALL VERIFY HATCH DIMENSIONS AND PROVIDE FIELD MEASUREMENTS OF EX. HATCHES TO THE FALL PROTECTION SUPPLIER.
    4 - 30"X45.5" HATCH (VALVE VAULTS)
    4 - 51"X72" HATCH (WET WELLS)
    1 - 51"X60" HATCH (GRINDER VAULT)
12. 12" RJ DISMANTLING JOINT OR EQUAL). THE
13. EX. 12"X10" DI TEE (FL)
14. EX. 10" SLEEVE, ADD NEW RESTRAINT GLAND FOR NEW PIPE
15. 12"X10" DI TEE (FL)
16. 12" DI FM (FLXPE), CORE VAULT WALL AND SEAL PIPE PENETRATION
17. 10" CHECK VALVE
18. 12" BLIND FLANGE W/ THREADED TAP
19. 10" 90° BEND (FL)
20. 36"X36" STAINLESS STEEL SLIDE GATE WITH OPERATOR
21. INSTALL 6.2 MGD ELECTRIC MOTOR DRIVEN CHANNEL GRINDER, BAR SCREEN, RAILS, AND ALL ASSOCIATED MOUNTING HARDWARE. MODIFY EX. TROUGH FOR NEW GRINDER. (SEE HS1308/SD-2.0)
22. EX. 10" FLG PLUG VALVE
23. EX. 10" HARNESSED FLANGE ADAPTER
24. 1/2" S.S. QUARTER-TURN BALL VALVE
25. 8" ODOR CONTROL AIR DUCT CONNECTION
26. 4" ODOR CONTROL AIR DUCT CONNECTION
27. INSTALL 10" CHECK VALVE (2 CHECK VALVES SUPPLIED BY OWNER)
28. EX. OVERFLOW BAR SCREENS ON BENCH TO REMAIN
29. MIN. 4" SCH. 40 PVC PIPE SECURED TO WET WELL WALL W/ SS STRAPS AND HARDWARE AT TOP AND BOTTOM OF PIPE AND MIN. 5' INTERVALS. SECURE PIPE TO PREVENT VERTICAL MOVEMENT. VERIFY LOCATION W/ TOWN STAFF WHEN WET WELL IS EMPTY.
30. PRESSURE TRANSDUCER. HANG 12" BELOW ALL PUMPS OFF ELEVATION.
31. CORE DRILL WET WELL FOR PRESSURE TRANSDUCER CABLE.



NOTE:
1. ELEVATIONS BASED ON RECORD DRAWINGS

5 WET WELL & VALVE VAULT SECTION

SCALE: 1/4"=1'

BY	DATE	REVISION
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PS IMPROVEMENTS

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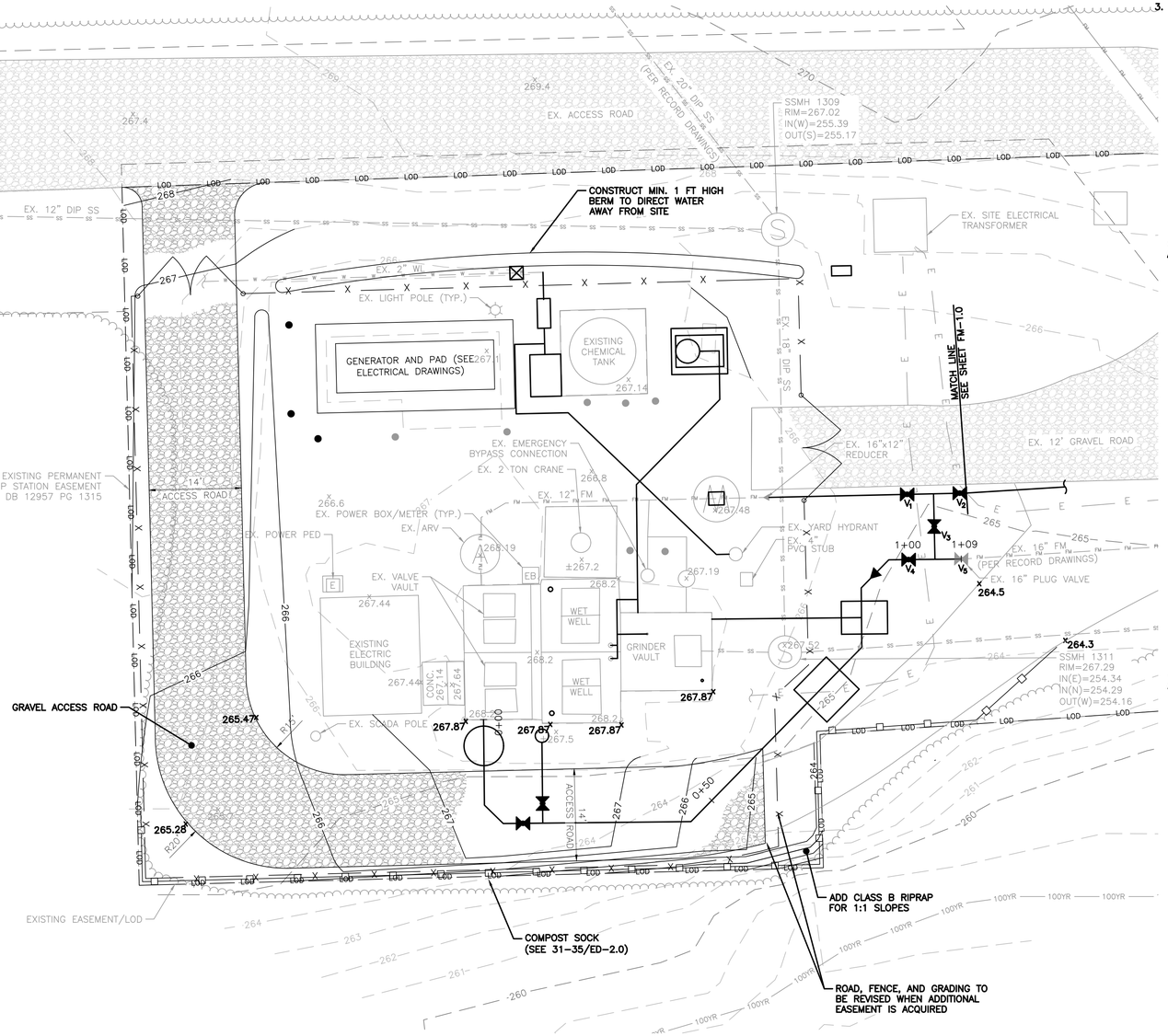
C-1.1



1 PS SITE GRADING PLAN
SCALE 1:10

GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 inch = 10 ft.

CRANE:
1. INSPECT ROTATIONAL ROLLERS. REPAIR ROLLER SYSTEM TO PROVIDE FREE ROTATION OF CRANE ARM.
2. REPLACE HOIST. SEE BOTTOM IMAGE BELOW.
3. CLEAN, SAND, BLAST, PRIME, AND PAINT ALL OF CRANE ASSEMBLY.





GRADING NOTE:
1. RAISE GRADE USING ABC STONE.



2 MISC. GRADING
SCALE: NTS

CONSTRUCTION SEQUENCE:

NOTE: CONTRACTOR SHALL MAINTAIN PS SITE SECURITY DURING ALL CONSTRUCTION. USE TEMPORARY FENCING, IF NEEDED.

1. CONTRACTOR MAY SUBMIT AN ALTERNATIVE CONSTRUCTION SEQUENCE FOR REVIEW THAT MAINTAINS CONTINUOUS, RELIABLE, AND AUTOMATIC PUMP STATION OPERATION.
2. INSTALL FM AND INTERCONNECT VALVES (UP TO V_1 AND V_3) AND TEST.
3. CLOSE VALVE V_1.
4. CONNECT BYPASS PUMPS TO VALVE V_3.
5. CONNECT NEW FM FROM VALVE V_1 TO EX. FM AT EX. FENCE LINE.
6. OPEN VALVE V_1, CLOSE VALVE V_3, AND RESUME EX. PS OPERATION.
7. INSTALL REMAINING SITE PIPING UP TO ARV AND TEST.
8. CONNECT BYPASS PUMPS TO EITHER FM BYPASS CONNECTION.
9. INSTALL REMAINING PS WORK.

DATE	REVISED PER OWNER COMMENT	BY
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03/07/24	REVISION	CDD

PLOT DATE: 5/8/2025

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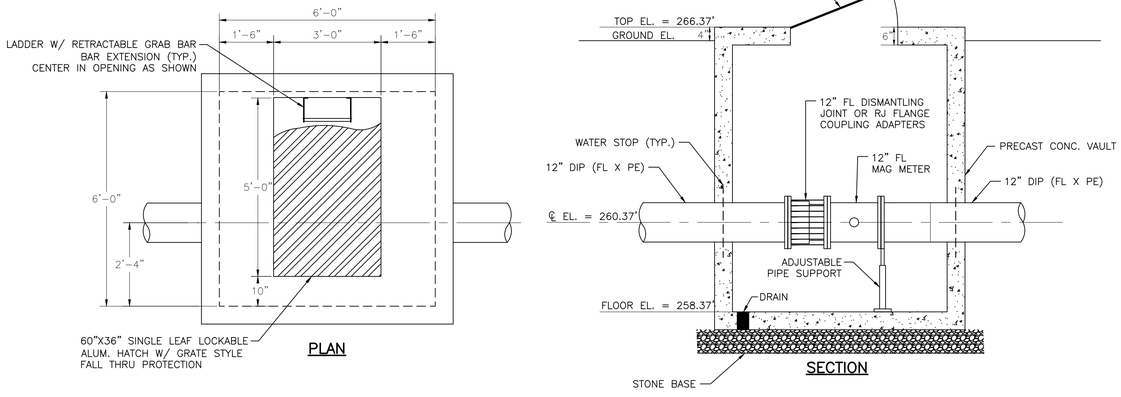
PS IMPROVEMENTS AND GRADING

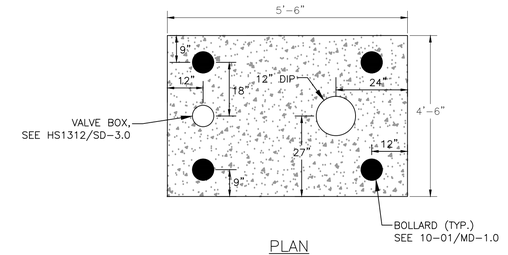
PROJECT NO.
HSP2101

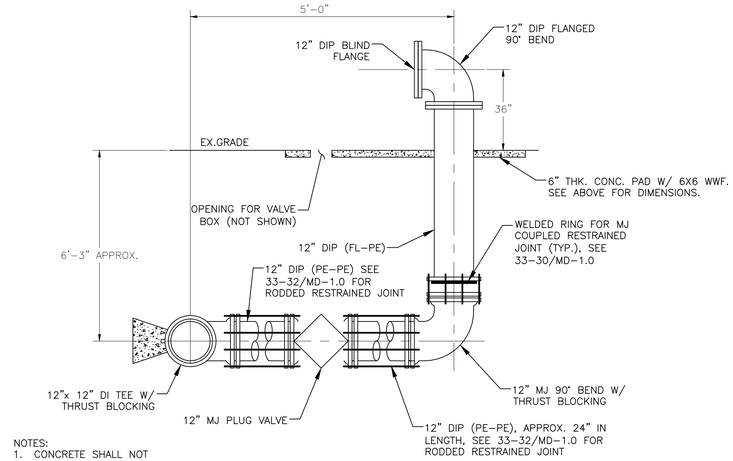
C-1.2



1 DETAIL – FLOW METER

SCALE: NTS

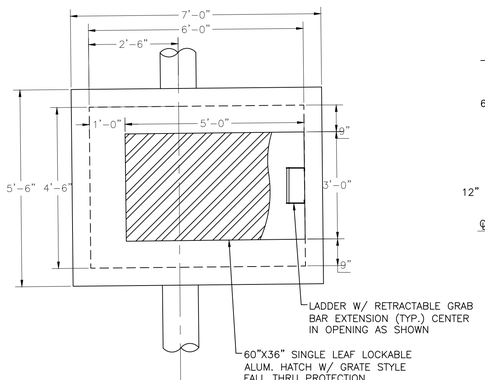


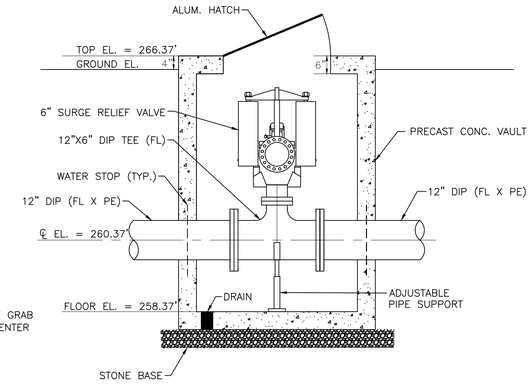


NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF FITTINGS.
2. SEE 33-33/MD-2.0 FOR THRUST BLOCKING.

4 DETAIL – PERMANENT BYPASS PUMP CONNECTION

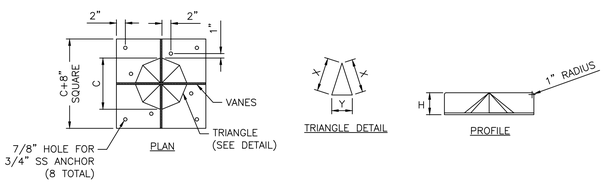
SCALE: NTS





2 DETAIL – SURGE RELIEF VALVE

SCALE: NTS



NOTES:
1. ALL MATERIALS SHALL BE GRADE 316 SS, 3/8" THICK.
2. ALL SEAMS SHALL BE WELDED.
3. USE HILTI HIT RE 500 INJECTION ADHESIVE ANCHORS W/ 6-3/4" EMBEDMENT.
4. ANCHORS SHALL BE GRADE 316 SS.
5. DETAIL APPLICABLE TO PUMPING RATES BETWEEN 1400 GPM AND 2800 GPM PER PUMP. CONSULT ENGINEER IF OUTSIDE THIS RANGE PRIOR TO FABRICATION.
6. THE PUMP MANUFACTURER SHALL PROVIDE APPROVAL FOR THE USE OF FLOOR CONES WITH THE SUPPLIED PUMP AND CONFIRM CONE DIMENSIONS WORK WITH PUMP.

DIMENSIONS TABLE:

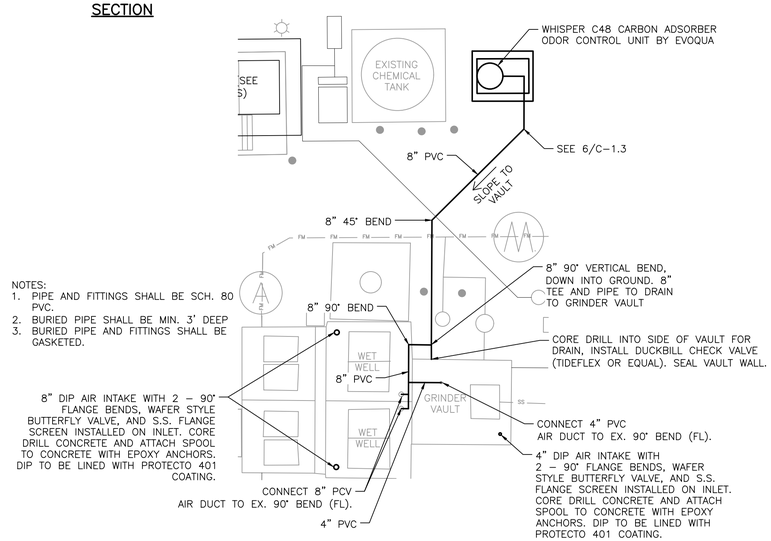
FOR SUBMERSIBLE PUMPS:

PUMP SUCTION DIA.	C	H
4"	6"	2/3 OF THE DISTANCE BETWEEN PUMP INLET AND FLOOR, ROUNDED TO THE NEAREST INCH.
6"	9"	
8"	12"	

NOTE: DIMENSIONS X AND Y SHALL BE CALCULATED BY METALS SHOP.

3 DETAIL – FLOOR CONE

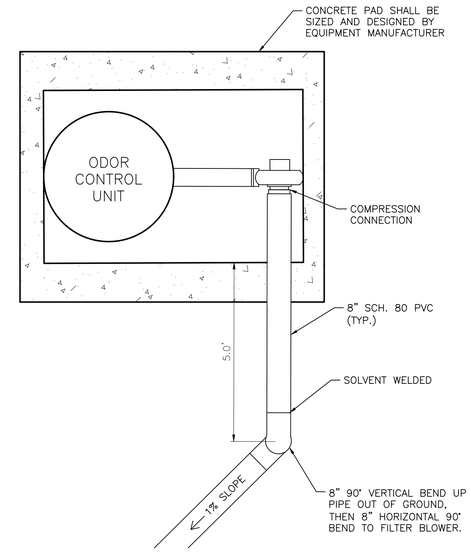
SCALE: NTS



NOTES:
1. PIPE AND FITTINGS SHALL BE SCH. 80 PVC.
2. BURIED PIPE SHALL BE MIN. 3' DEEP
3. BURIED PIPE AND FITTINGS SHALL BE GASKETED.

5 DETAIL – ODOR CONTROL LAYOUT

SCALE: NTS



6 DETAIL – ODOR CONTROL SYSTEM

SCALE: NTS

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CDD	01/17/25	TOWN REVIEW
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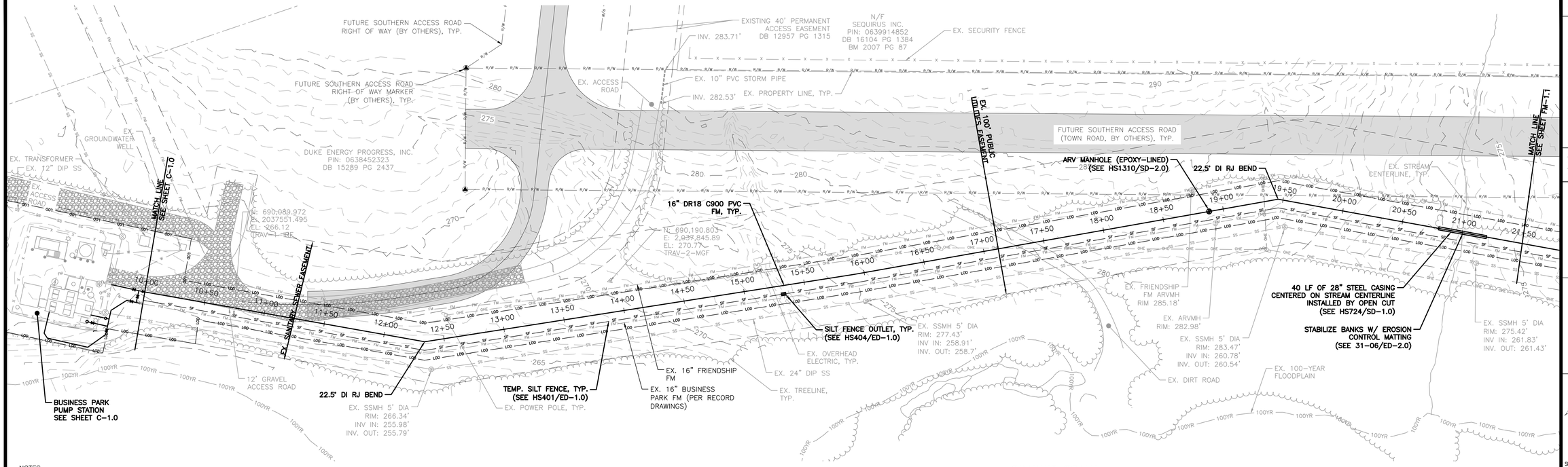
HOLLY SPRINGS, NC

PS DETAILS

PROJECT NO.
HSP2101

C-1.3



NOTES:
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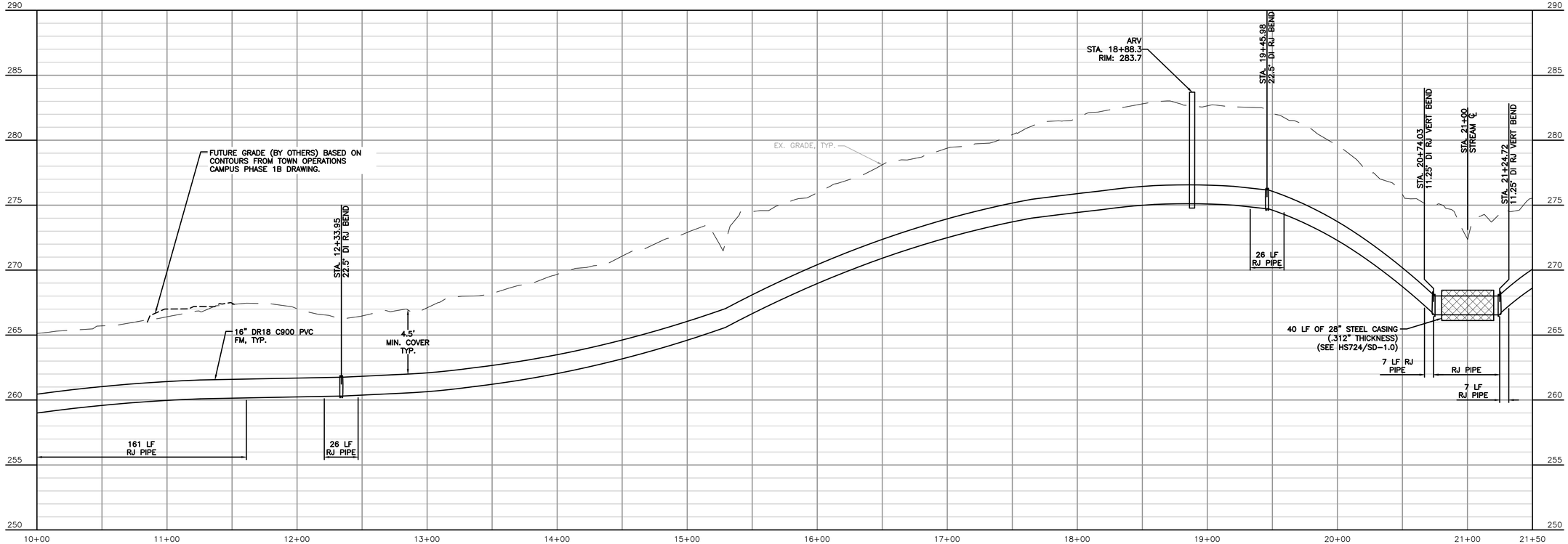
4. FORCE MAIN SHALL BE INSTALLED AT ELEVATION SHOWN. FORCE MAIN ELEVATION IS BASED ON THE MORE RESTRICTIVE EXISTING OR FUTURE GRADE.

1 PLAN – STA. 10+00 TO 21+50
SCALE: 1" = 40'

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



2 PROFILE – STA. 10+00 TO 21+50
SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
CDD	09/11/24	90% DESIGN
CDD	03/07/24	60% DESIGN

PLOT DATE: 5/8/2025

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026481 EDWARD O. SASSER, JR. ENGINEER
2025.05.08 16:10:00-04'00'
SEAL NOT VALID UNLESS SIGNED AND DATED

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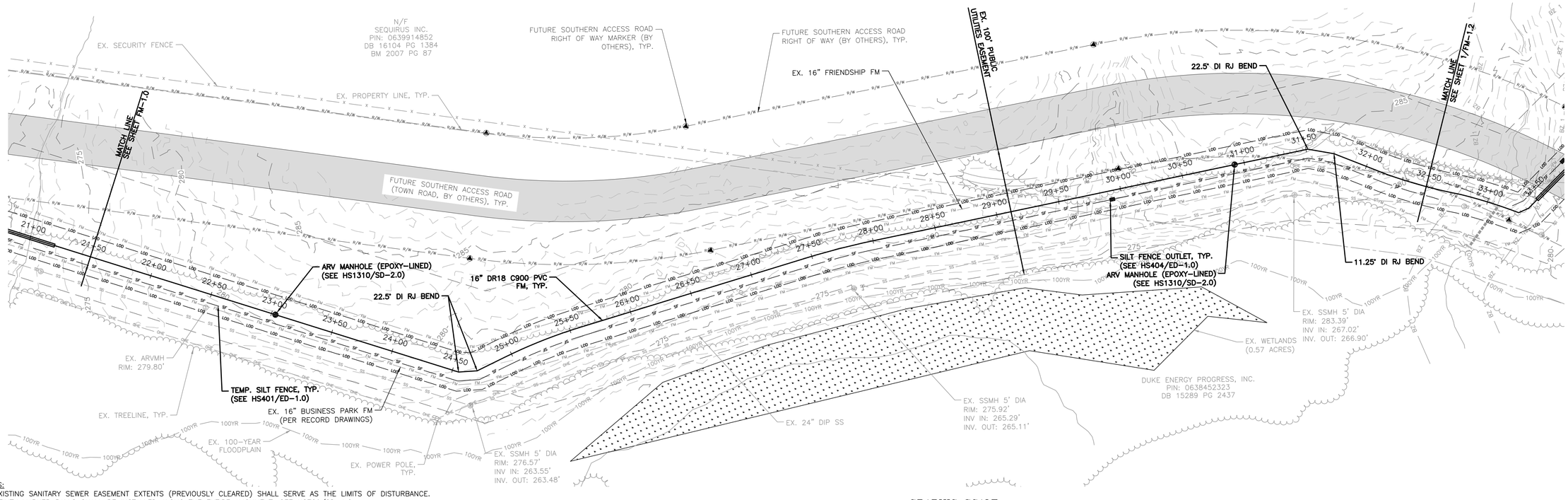
PLAN AND PROFILE STA. 10+00 TO STA. 21+50

PROJECT NO.
HSP2101

FM-1.0



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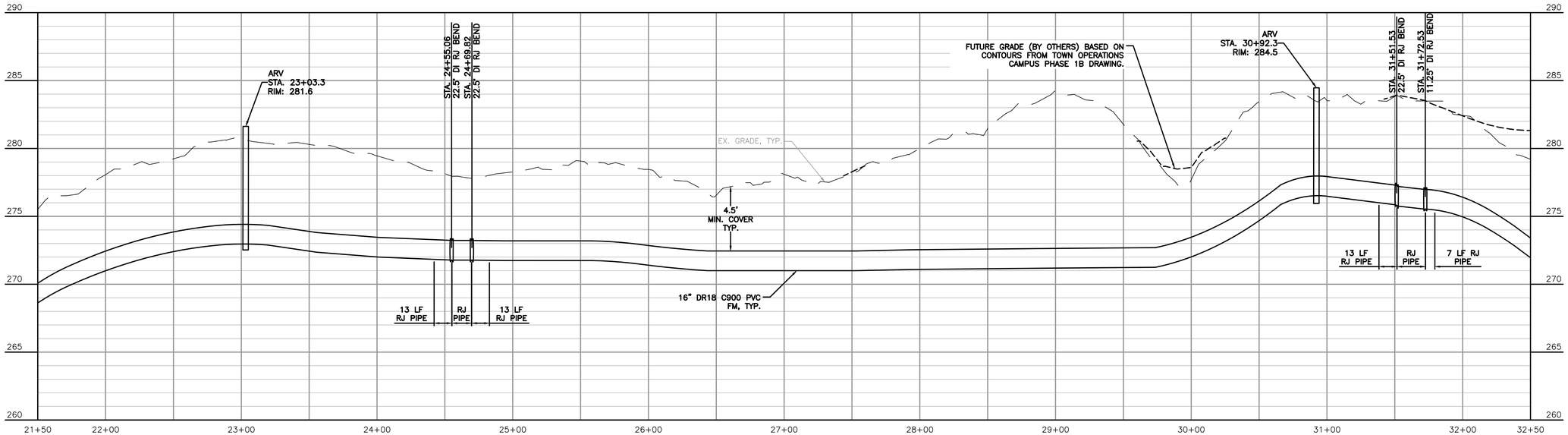
1 PLAN – STA. 21+50 TO 32+50
SCALE: 1" = 40'

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



2 PROFILE – STA. 21+50 TO 32+50
SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
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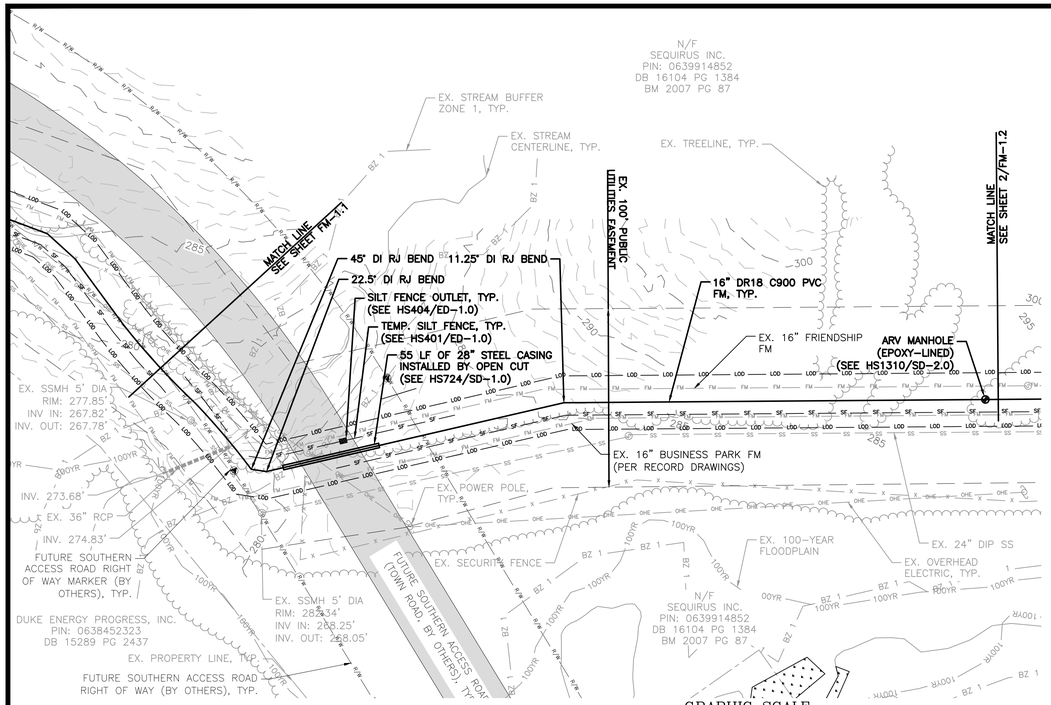
PLAN AND PROFILE STA. 21+50 TO STA. 32+50

PROJECT NO.
HSP2101

FM-1.1



1 PLAN – STA. 32+50 TO 37+50

SCALE: 1" = 40'

GRAPHIC SCALE

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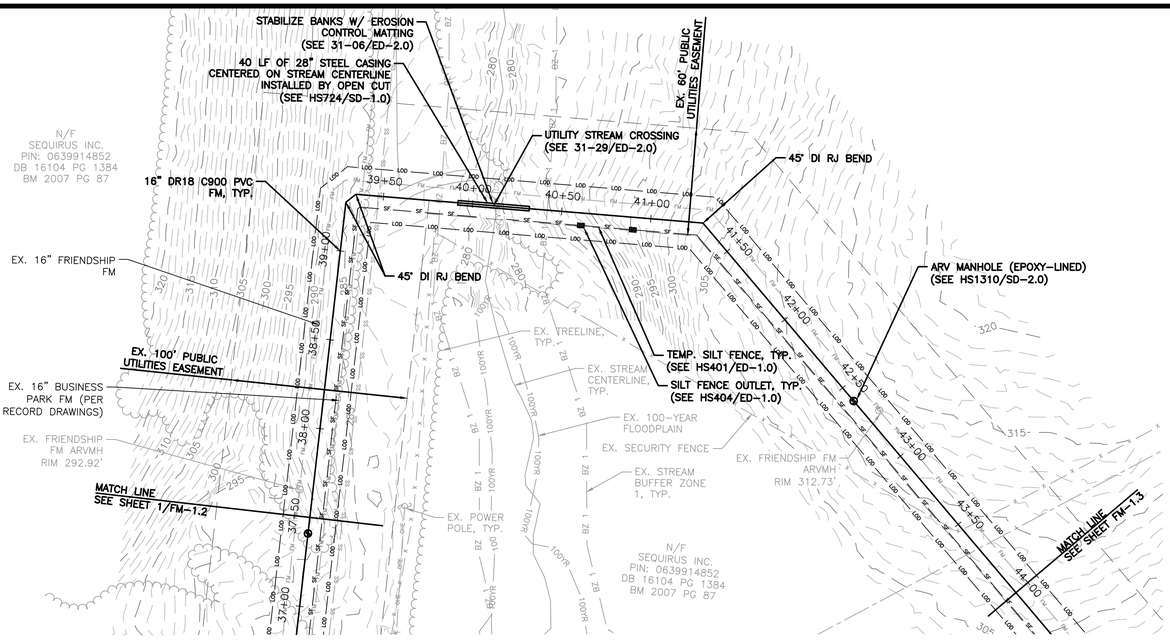
(IN FEET)
1 inch = 40 ft.



2 PLAN – STA. 37+50 TO 44+00

SCALE: 1" = 40'

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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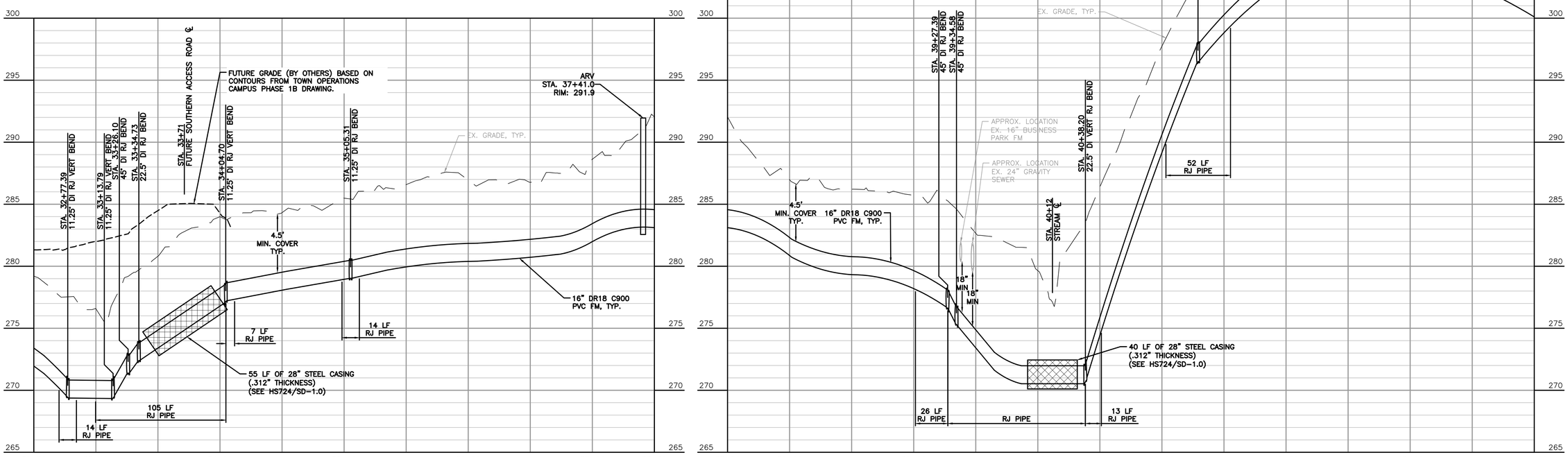

3 PROFILE – STA. 32+50 TO 44+00

SCALE: 1" = 40'

VERTICAL SCALE: 1" = 4'

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
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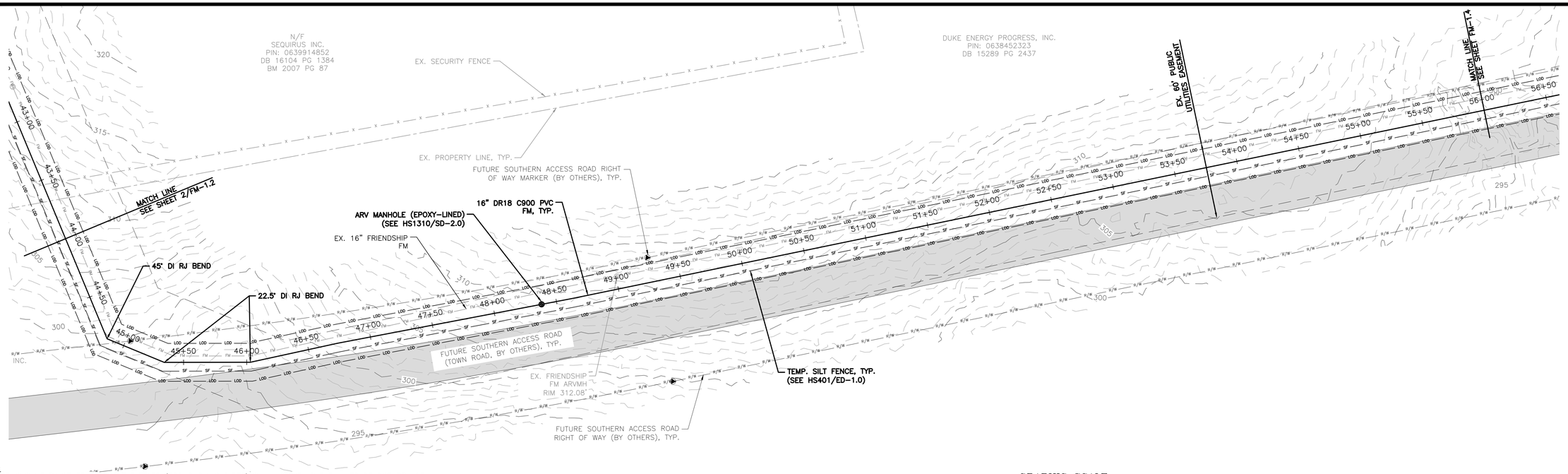
PLAN AND PROFILE STA. 32+50 TO STA. 44+00

PROJECT NO.
HSP2101

FM-1.2



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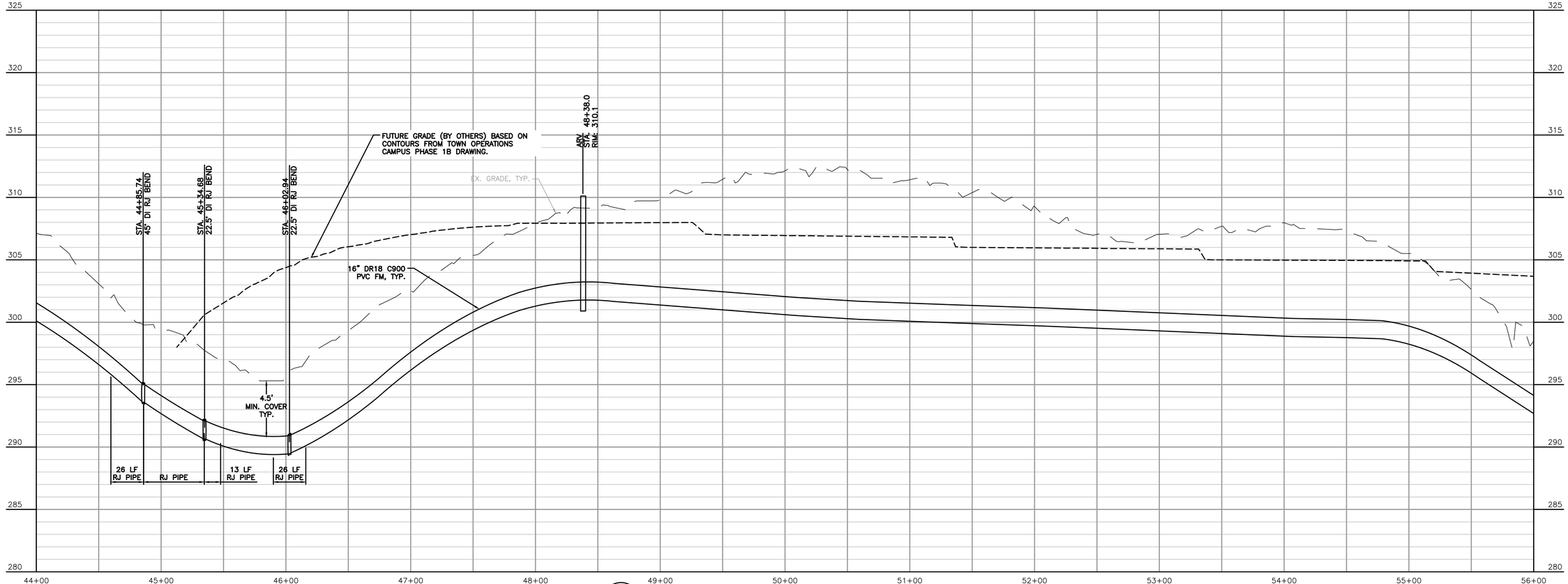
1 PLAN – STA. 44+00 TO 56+00
SCALE: 1" = 40'

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



2 PROFILE – STA. 44+00 TO 56+00
SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
CDD	09/11/24	90% DESIGN
CDD	03/07/24	60% DESIGN

PLOT DATE: 5/8/2025

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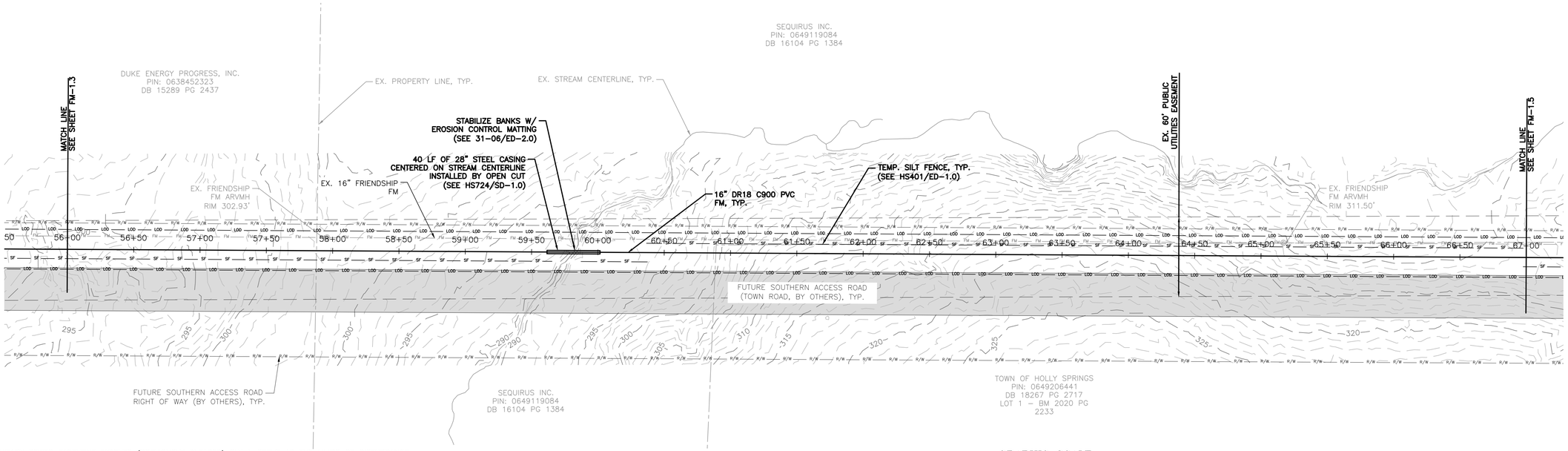
PLAN AND PROFILE STA. 44+00 TO STA. 56+00

PROJECT NO.
HSP2101

FM-1.3



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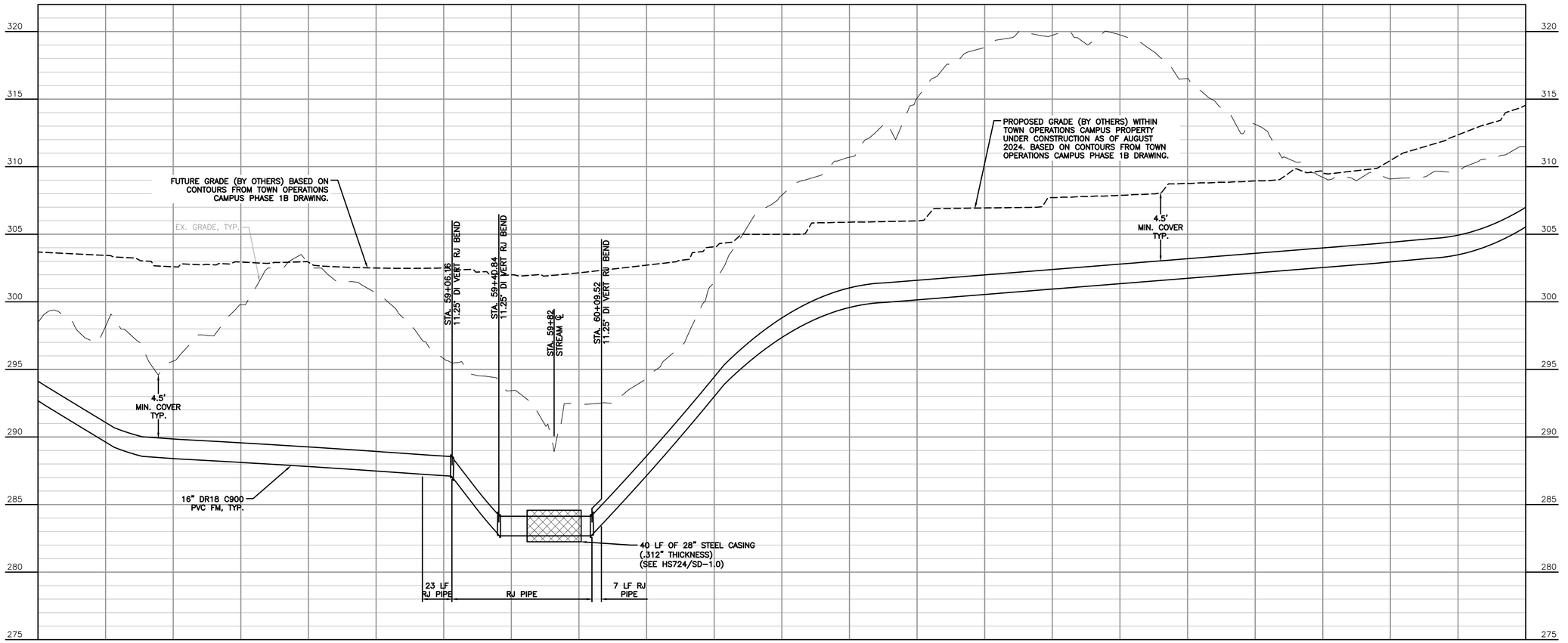
1 PLAN – STA. 56+00 TO 67+00
SCALE: 1" = 40'

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.



2 PROFILE – STA. 56+00 TO 67+00
SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

BY	DATE	REVISION
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CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
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PLOT DATE: 5/8/2025

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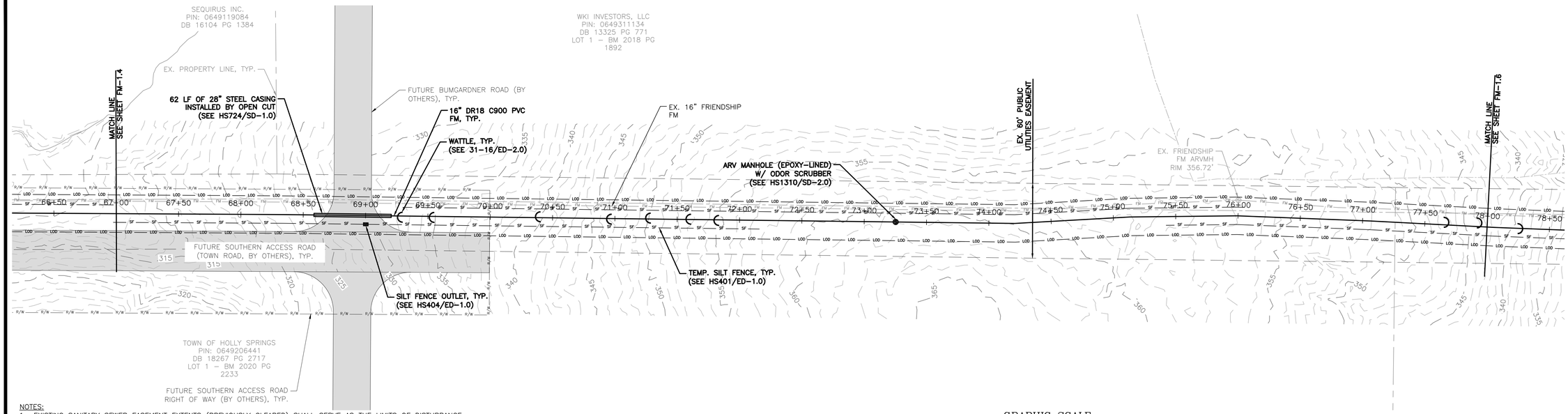
PLAN AND PROFILE STA. 56+00 TO STA. 67+00

PROJECT NO.
HSP2101

FM-1.4



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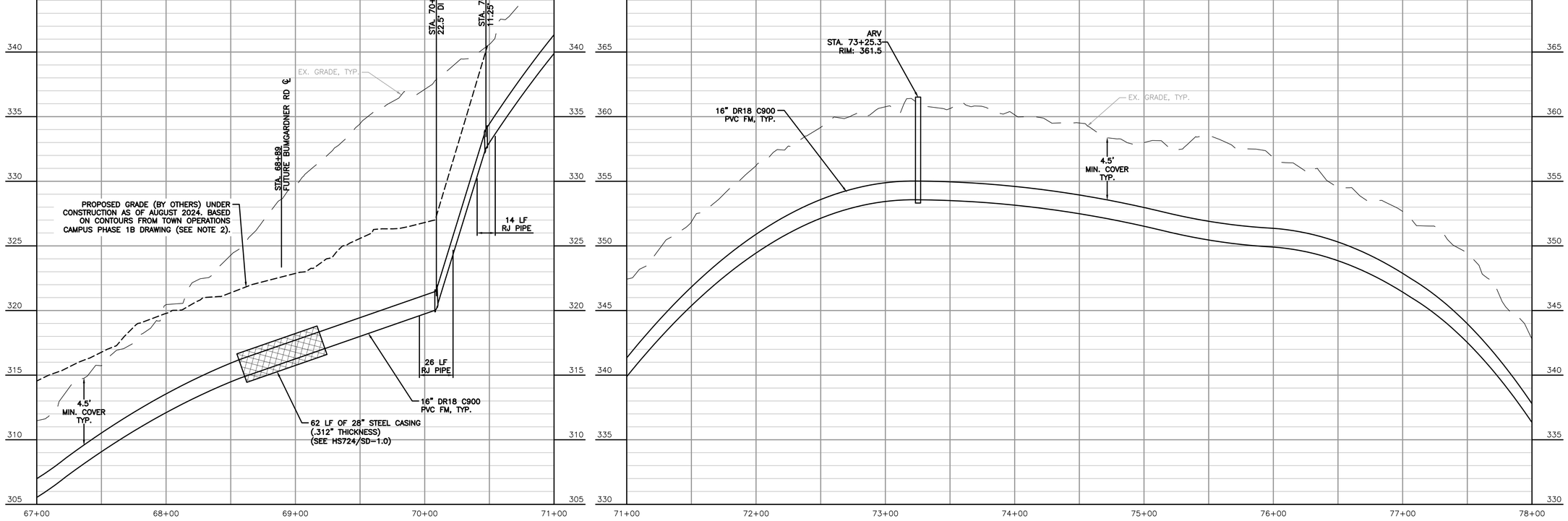
1 PLAN – STA. 67+00 TO 78+00

SCALE: 1" = 40'

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.



2 PROFILE – STA. 67+00 TO 78+00

SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
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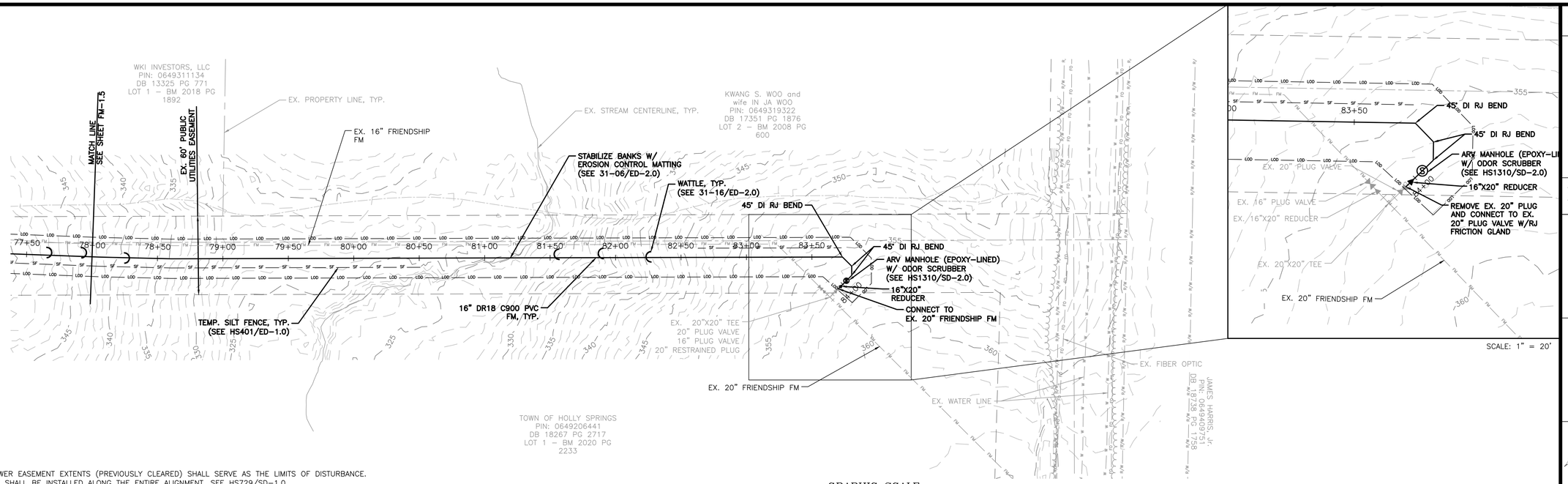
PLAN AND PROFILE STA. 67+00 TO STA. 78+00

PROJECT NO.
HSP2101

FM-1.5



SCALE: 1" = 20'

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1 PLAN – STA. 78+00 TO 84+07

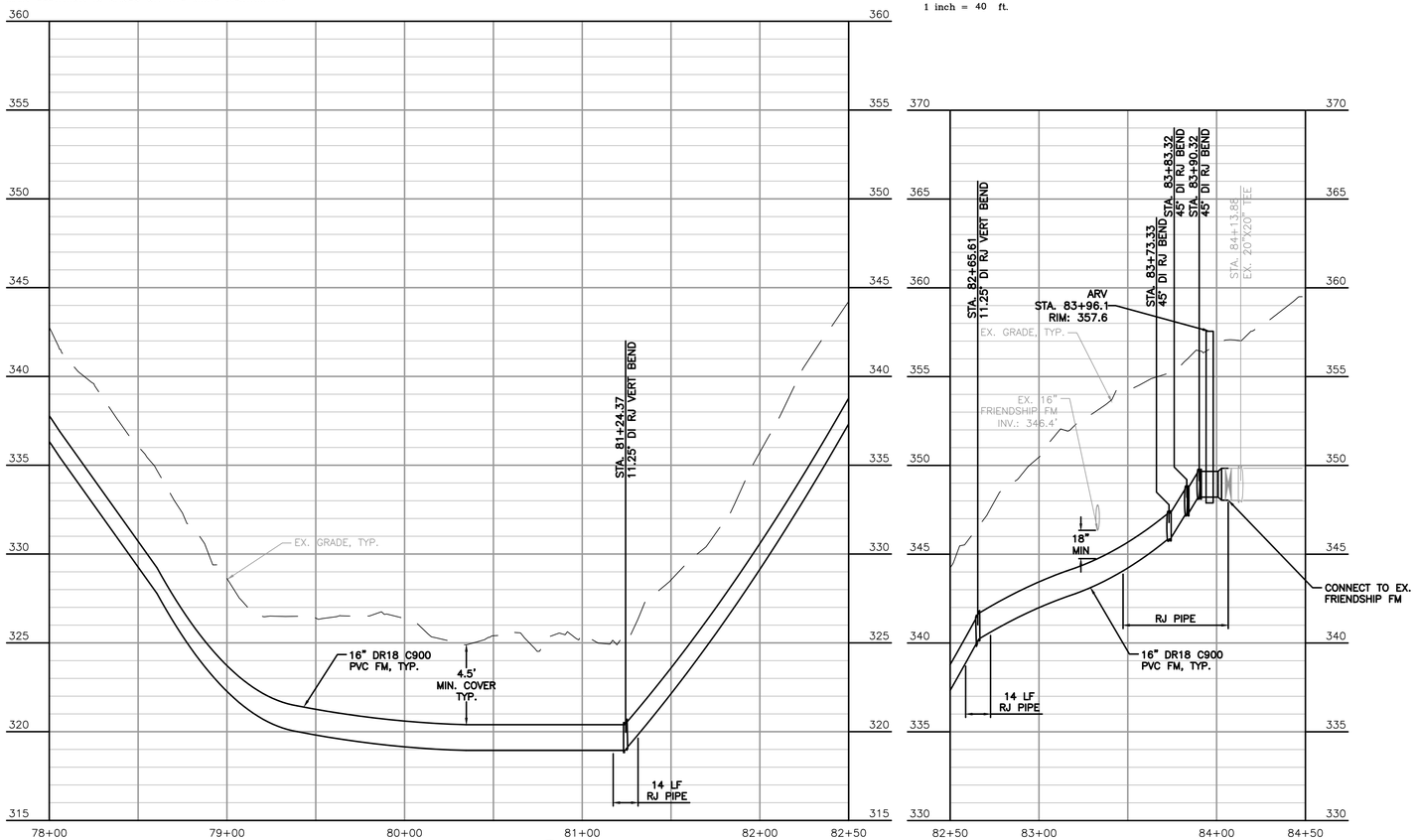
SCALE: 1" = 40'

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

1 inch = 40 ft.



3 PROFILE – STA. 78+00 TO 84+07

SCALE: 1" = 40'

VERTICAL SCALE: 1" = 4'

BY	DATE	COMMENT
CDD	05/08/25	REVISED PER OWNER COMMENT
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PLAN AND PROFILE STA. 78+00 TO STA. 84+07

PROJECT NO.
HSP2101

FM-1.6

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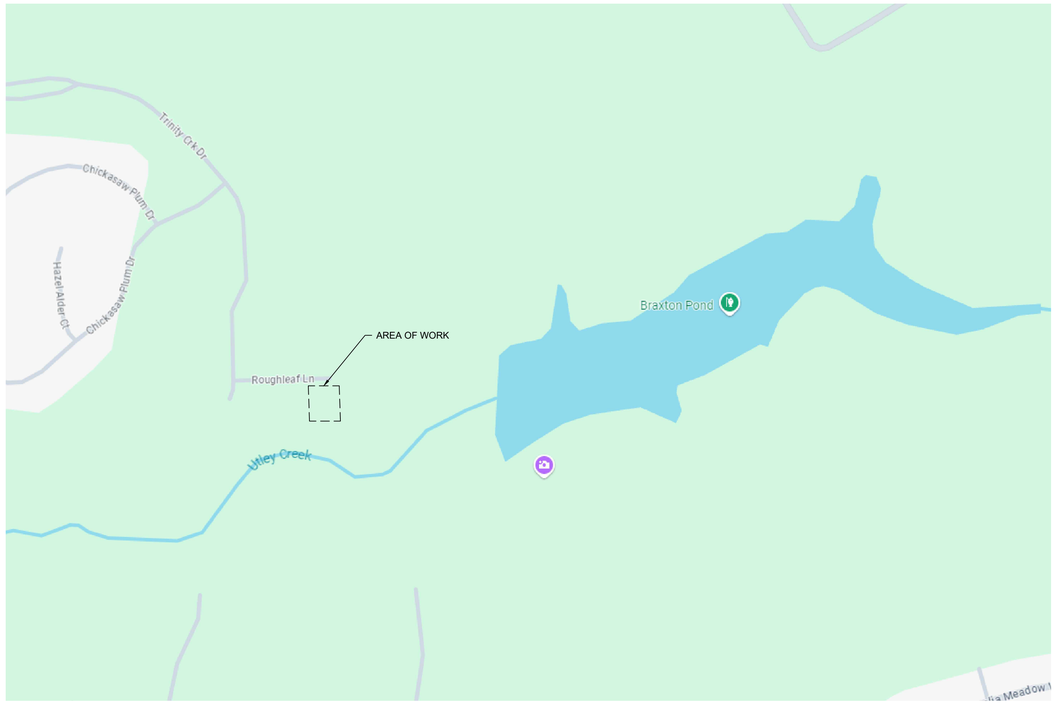

1
E-1.0

VICINITY MAP

SCALE: N.T.S.

ABBREVIATIONS:

A , AMP	AMPERE
AF	AMP FRAME
AFG	ABOVE FINISHED GRADE
AFF	ABOVE FINISHED FLOOR
AIC	AMPS INTERRUPTING CAPACITY
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BFG	BELOW FINISHED GRADE
C	CONDUIT
CKT	CIRCUIT
CU	COPPER
D	DEEP
DED	DEDICATED CIRCUIT
ECB	ENCLOSED CIRCUIT BREAKER
EG	EQUIPMENT GROUND
ETM	ELAPSED TIME METER
EX	EXISTING
FLA	FULL LOAD AMPS
FMC	FLEXIBLE METAL CONDUIT
GEC	GROUNDING ELECTRODE CONDUCTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
H	HIGH
HOA	HAND-OFF-AUTO
HMI, HIM	HUMAN-MACHINE INTERFACE
HP	HORSEPOWER
IG	ISOLATED GROUND
I/O	INPUT/OUTPUT
JB	JUNCTION BOX
KW	KILOWATT
KVA	KILOVOLT-AMPERES
LFNC	LIQUID-TIGHT NON-METALLIC CONDUIT
MANF	MANUFACTURER
MBJ	MAIN BONDING JUMPER
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUGS ONLY
N	NEUTRAL
NCSBC	NORTH CAROLINA STATE BUILDING CODE
NCDEQ	NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (ALSO KNOWN AS NCDENR)
NEC	NATIONAL ELECTRICAL CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
OC	ON CENTER
PC	PHOTOCELL
PCP	PUMP CONTROL PANEL
PM, PQM	POWER MONITOR, POWER QUALITY MONITOR
RGS	RIGID GALVANIZED STEEL (CONDUIT)
RMC	RIGID METAL CONDUIT
RTU	REMOTE (OR RADIO) TELEMETRY UNIT
RVSS	REDUCED VOLTAGE SOFT STARTER (CONTROLLER)
SCADA	SUPERVISORY CONTROL AND DATA AQUISITION
SE	SERVICE ENTRANCE
sKVA	STARTING KILOVOLT-AMPERES
SPD	SURGE PROTECTION DEVICE
SSBJ	SUPPLY-SIDE BONDING JUMPER
SST	STAINLESS STEEL
STP	SHIELDED TWISTED PAIR
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WP	WEATHERPROOF
WPIU	WEATHERPROOF IN USE
WWJB	WET WELL JUNCTION BOX
XFMR	TRANSFORMER

Electrical and Instrumentation/Control
Wiring Color Standard (UL508A, NFPA 70 and NFPA 79 standards)

Description	Standard	System
Phase A	*Brown*	**480Y/277 VAC; 3-Φ Power**
Phase B	*Orange*	
Phase C	*Yellow*	
Neutral	*Gray*	
Ground	*Green*	
Description	**Standard**	**System**
Phase A	*Black*	**208Y/120 VAC; 3-Φ Power**
Phase B	*Red*	
Phase C	*Blue*	
Neutral	*White*	
Ground	*Green*	
Description	**Standard**	**System**
Phase A	*Black*	**240Δ/120 VAC; 3-Φ Power**
Phase B (High Leg)	*Orange*	**4-Wire Delta Connected**
Phase C	*Blue*	
Neutral	*White*	
Ground	*Green*	
Description	**Standard**	**System**
Phase A	*Black*	**220 VAC; 1-Φ Power**
Phase B	*Red*	
Neutral	*White*	
Ground	*Green*	
Description	**Standard**	**System**
Hot	*Black*	**110 VAC; 1-Φ Power**
Neutral	*White*	
Ground	*Green*	
Description	**Standard**	**System**
Hot	*Yellow*	**110 VAC; Switch Leg**
Hot	*Blue*	**110 VAC; Traveler in 3-way or 4-way switch**
Hot	*Green with Yellow stripes*	**Isolated Ground**

Control Circuits

Description	Standard	System
Ungrounded Control	Black	Supply voltage
Ungrounded AC Control	Red	Less than Supply Voltage
Grounded AC Control	White with Yellow Stripe	
Ungrounded DC Control	Blue	DC+
Grounded DC current	White with Blue Stripe	DC-
Grounded AC current	White or Natural Grey	Less than Supply Voltage
Description	**Standard**	**System**
Signal, 2 conductors	Clear	+ Signal Output
	Black	- Signal Common
Signal, 3 conductors	Red	Power; 24VDC
	Clear	+ Signal Output
	Black	- Signal Common

SYMBOL LEGEND:

- >> REMOVABLE ELEMENT
- | | CONTACT (NORMALLY OPEN)
- CONTACT (NORMALLY CLOSED)
- THERMAL OVERLOAD RELAY
- GROUND
- MOTOR WITH HORSEPOWER
- (GEN) GENERATOR WITH KW
- INDICATOR LIGHT (G=GREEN, R=RED)
- S SINGLE POLE SWITCH
- (M) METER
- CT CURRENT TRANSFORMER
- FUSE
- CIRCUIT BREAKER
- DUPLEX RECEPTACLE SUBSCRIPT DENOTES TYPE GFCI DENOTES GROUND FAULT INTERRUPT WP DENOTES WEATHER PROOF
- HOMERUN CONDUIT
- DISCONNECT SWITCH
- (J) JUNCTION BOX
- (T) THERMOSTAT
- 3/4" X 10' COPPER CLAD STEEL DRIVEN GROUND ROD
- 2 AWG BARE TINNED CU UNLESS NOTED
- UNDERGROUND CONDUIT

ELECTRICAL NOTES AND SPECIFICATIONS:

A. SERVICE IS 277/480V, 3-PHASE, 4-WIRE.

B. CONTRACTOR TO APPLY FOR UTILITY SERVICES, FOR THE OWNER. CONTRACTOR TO COORDINATE WITH THE ELECTRIC UTILITY FOR EXACT TRANSFORMER LOCATION, METERING REQUIREMENTS, AND SERVICE ROUTING.

C. ELECTRICAL CONTRACTOR TO FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED TO INSTALL AND TEST, COMPLETE AND READY FOR OPERATION ALL ELECTRICAL WORK AS SPECIFIED AND AS SHOWN ON THE CONTRACT DRAWINGS, UNLESS OTHERWISE INDICATED.

D. ALL ELECTRICAL DEVICES, MATERIALS, FIXTURES, EQUIPMENT AND FEEDERS TO BE NEW, U.L. LISTED AND INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, THE MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES, ALL APPLICABLE LOCAL AND STATE CODES, AMERICAN DISABILITIES ACT, AND THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE.

E. ALL EQUIPMENT IS NEMA RATED, IEC IS NOT ACCEPTED.

F. THE CONTRACTOR IS TO CONTACT THE LOCAL ELECTRICAL UTILITY AND OBTAINED, IN WRITING, THE MAXIMUM AVAILABLE FAULT CURRENT AT THE UTILITY SERVICE POINT. THE CONTRACTOR IS TO ENSURE ALL ELECTRICAL EQUIPMENT, CIRCUIT BREAKERS, DISCONNECTS, FUSES, AND PANEL BOARDS HAVE A FAULT CURRENT INTERRUPTING RATING GREATER THAN THE AVAILABLE FAULT CURRENT. IN NO CASE IS THE FAULT CURRENT INTERRUPTING RATING TO BE LESS THAN 10,000 AMPS.

G. THE CONTRACTOR IS TO PROTECT EXISTING UNDERGROUND UTILITIES DURING CONSTRUCTION.

H. THE CONTRACTOR IS TO COORDINATE ANY AND ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION SO AS TO AVOID CONFLICT DURING CONSTRUCTION.

I. UNLESS NOTED OTHERWISE, COPPER CONDUCTORS WITH 600V "THHN/THWN" INSULATION RATED FOR 75 DEGREES C. IS TO BE USED.

J. NEUTRAL CONDUCTORS TO HAVE WHITE INSULATION OR IDENTIFIED AS PER NEC 200.6.

K. EQUIPMENT GROUND CONDUCTORS ARE BARE, HAVE GREEN INSULATION OR IDENTIFIED AS PER NEC 250.119.

L. CIRCUIT CONDUCTORS SHALL BE IDENTIFIED AS PER NEC 210.5. CONDUCTORS LARGER THAN 6 AWG MAY BE BLACK IF IDENTIFIED BY COLORED TAPE AT ALL TERMINATION, CONNECTION, AND SPLICE POINTS.

M. ALL DEVICE TERMINATIONS ARE RATED AT 75 DEGREES C.

N. NO MORE THAN 360 DEGREES OF BENDS TO BE MADE IN ANY CONDUIT WITHOUT A JUNCTION BOX OR PULL POINT.

O. ALL EXTERIOR PANELS ARE TO BE LOCKABLE AND NEMA 4X RATED. INTERIOR PANELS ARE TO BE NEMA 1 OR NEMA 12 RATED. PANELS TO HAVE STAINLESS STEEL IDENTIFYING LABELS ATTACHED WITH STAINLESS STEEL SCREWS.

P. ENCLOSURES ARE TO BE MOUNTED TO ALUMINUM BACKING PLATE WITH NYLON SPACERS & STAINLESS STEEL NUTS, BOLTS & WASHERS.

Q. MEYERS HUBS ARE TO BE USED AT ALL PANEL CONNECTIONS.

R. NO EQUIPMENT IS TO BE MOUNTED LESS THAN 36" AFG.

S. MIN. CLEARANCE FROM PANEL LIGHT TO STANDING PAD IS 6'-6", WITH MIN. 6" CLEARANCE ABOVE PANELS.

T. ADDITIONAL SUPPORT TO BE PROVIDED FOR DEVICES, FIXTURES, EQUIPMENT AND FEEDERS WHERE THE SURFACE CONSTRUCTION IS NOT SUITABLE FOR DIRECT MOUNTING.

U. CIRCUITRY TO SWITCHES, RECEPTACLES, AND ALL OTHER DEVICES TO BE TERMINATED ON THE DEVICE'S SCREW TERMINALS.

V. GROUND RODS ARE TO BE COPPER CLAD, 10'-0" x 3/4"ø.

W. NON-HARDENING DUCT SEAL COMPOUND IS TO BE USED TO SEAL THE CONDUIT ENTERING MOTOR DISCONNECTS, CONTROL PANELS, AND JUNCTION BOXES FROM VAULTS TO PREVENT MIGRATION OF MOISTURE OR WET WELL GASES INTO THE EQUIPMENT.

X. ALL PANELS TO HAVE TYPED, COMPLETED DIRECTORIES INDICATING EQUIPMENT SERVED, OR SPARE, OR SPACE AND ID TAGS INDICATING VOLTAGE AND USE.

Y. ALL FEEDERS AND CIRCUITRY TO BE TORQUED PER THE PANEL, BREAKER, AND/OR PARTICULAR EQUIPMENT MANUFACTURER'S SPECIFICATIONS.

Z. MANUFACTURER'S NAME AND MODEL NUMBER LISTED IS FOR DESCRIPTIVE PURPOSES TO INDICATE A QUALITY STANDARD AND ARE NOT INTENDED TO LIMIT PRODUCTS TO A PARTICULAR MANUFACTURER. PRODUCTS DEEMED EQUAL AND APPROVED BY THE DESIGNER WILL BE ACCEPTED.

AA. LED AREA LIGHT, LITHONIA BGR LED P1 401K MVOLT PER DNA WITH MOUNTING ARM (OMA), FED FROM PANEL 'LA'.

AB. GENERATOR SET, CONTROLS, AND ATS SHALL BE FURNISHED BY A SINGLE SUPPLIER. GENERATOR SHALL HAVE A (304 STAINLESS STEEL) CRITICAL GRADE EXHAUST SILENCER EQUIPPED WITH A RAIN CAP AND ALL CONNECTIONS, PIPES, BOLTS, ETC. SHALL BE 316 STAINLESS STEEL. FUEL TANK SHALL BE UL LISTED DOUBLE WALL BELLY STYLE WITH LEAK PROTECTION.

AC. ALL ABOVE GRADE CONDUITS ARE TO BE PVC COATED GALVANIZED RIGID STEEL. BELOW GRADE CONDUITS ARE TO BE SCHEDULE 80 PVC. UNDERGROUND MARKING TAPE FOR UNDERGROUND RACEWAYS SHALL BE METALLIC DETECTABLE WARNING TAPE.

AD. ALL WIRING, BUSSES AND WINDINGS ARE COPPER.

AE. ALL NON-UTILITY TRANSFORMERS ARE DRY TYPE.

AF. CONTRACTOR TO PROVIDE SEPERATE BID LINE ITEM FOR ATS TO SERVE AS A BID DEDUCT ALTERNATE.

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Consulting Group, PA
www.acg-pa.com
(919) 858-7420
Raleigh, NC
Indianapolis, IN
Fort Collins, CO
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BY	REVISION	DATE
JDM	FOR PERMITTING	4/3/25
JDM	REVISED PER OWNER COMMENTS	5/6/25

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 52505 JOSHUA D. MEIER
5/6/2025

HIGHFILL
INFRASTRUCTURE ENGINEERING, P.C.
2703 Jones Franklin Rd, Suite 201
Cary, NC 27518
Tel 919-481-4342
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PUMP STATION SITE PLAN, LEGEND, ABBREVIATIONS

PROJECT NO.
HSP2101

E-0.0

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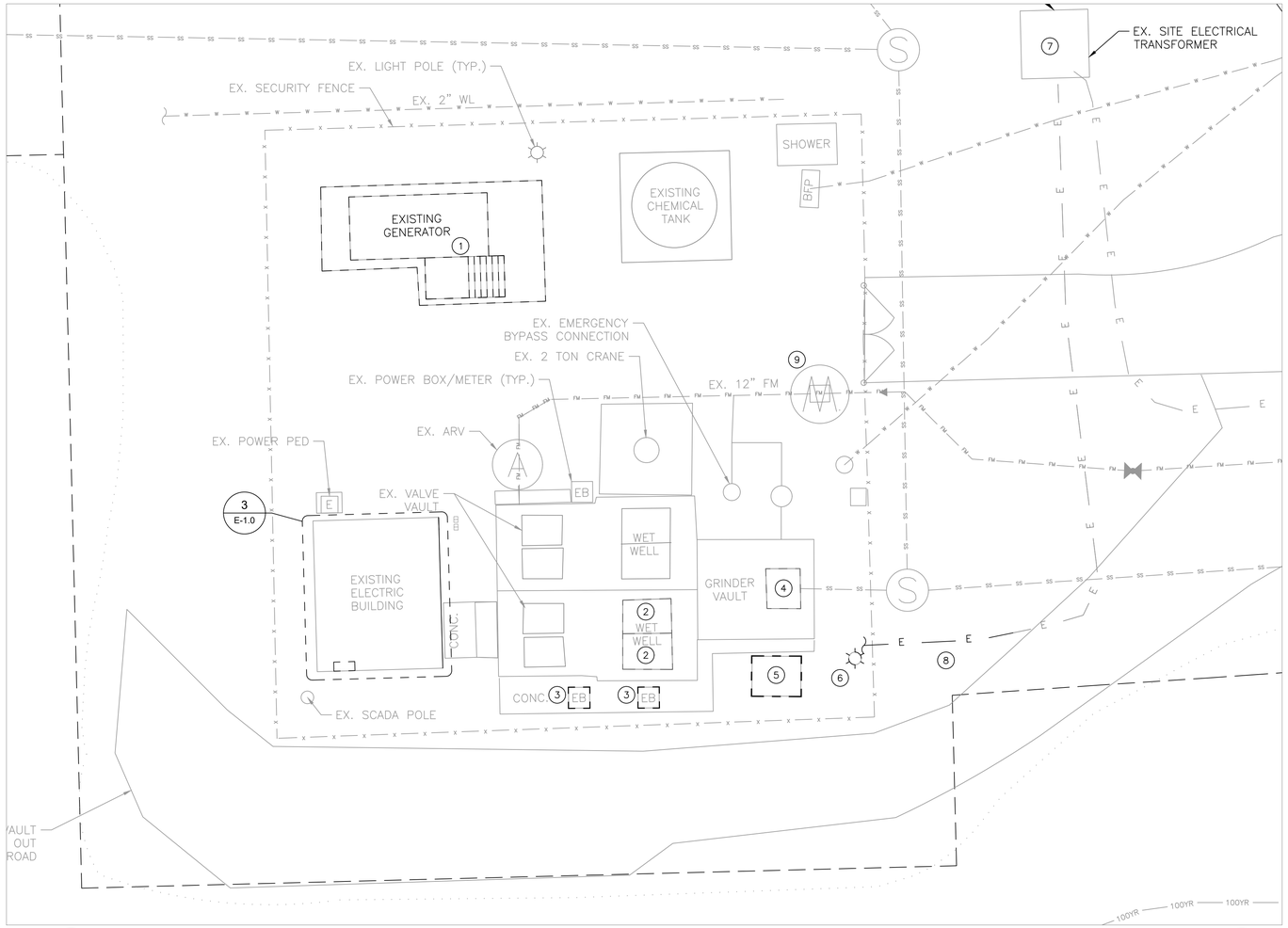


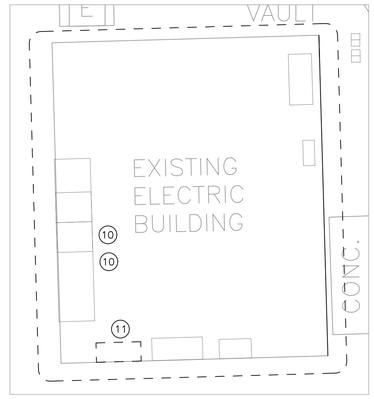
1 E-1.0 ELECTRICAL SITE PLAN – DEMOLITION

SCALE: 1/8" = 1'-0"

(#) DEMOLITION KEYNOTES:

1. REMOVE EXISTING STANDBY DIESEL GENERATOR AND DISPOSE OF PROPERLY. DEMOLISH EXISTING CONDUIT AND FEEDERS BACK TO ATS. DEMOLISH EXISTING GENERATOR PAD. SEE DEMOLITION SINGLE LINE DIAGRAM. SALVAGE GENERATOR STAIRS AND SET ASIDE FOR OWNER.
2. REMOVE 2 (TWO) EXISTING 150HP PUMPS AND ASSOCIATED EXISTING FEEDERS AND CABLE TERMINAL BOXES. SEE DEMOLITION SINGLE LINE.
3. DEMOLISH EXISTING ELECTRICAL BOXES.
4. DEMOLISH EXISTING CHANNEL GRINDER MOTOR. COORDINATE WITH MECHANICAL CONTRACTOR FOR DISCONNECT. RETAIN EXISTING FEEDERS AND CONDUIT FOR REUSE.
5. GRINDER HYDRAULIC POWER PACK TO BE DEMOLISHED. COORDINATE WITH MECHANICAL CONTRACTOR FOR DISCONNECT. RETAIN EXISTING FEEDERS AND CONDUIT FOR REUSE.
6. EXISTING POLE MOUNTED LUMINAIRE AND POLE TO BE REMOVED.
7. COORDINATE REPLACEMENT OF EXISTING UTILITY TRANSFORMER WITH LOCAL UTILITY. FEEDERS ARE TO BE REPLACED. CONDUIT MAY BE RETAINED FOR REUSE.
8. EXISTING ELECTRICAL FEED TO BE REROUTED. SEE NEW WORK SHEET E-1.1.
9. EXISTING FLOW METER TO BE REMOVED. RETAIN EXISTING FEEDS AND CONDUITS.
10. DISCONNECT AND REMOVE EXISTING RVAT.
11. REMOVE EXISTING CONTROLS PANEL.

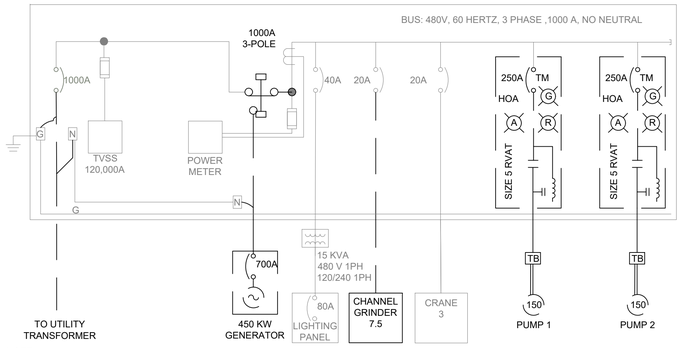
NOTE:
OBJECTS DRAWN IN LIGHTER LINEWEIGHT ARE EXISTING TO REMAIN. OBJECTS DRAWN WITH HEAVIER LINEWEIGHT RELATE TO THE SCOPE OF WORK.



3 E-1.0 ENLARGED PLAN – EXISITING ELECTRICAL BUILDING

SCALE: 1/4" = 1'-0"

BID ALTERNATE NOTE:
RETAIN EXISTING 1000A 3-POLE ATS IN LIEU OF REPLACING THE EXISTING 1000A WITH NEW 1000A 3-POLE ATS. CONTRACTOR SHALL STILL PERFORM ALL WORK ASSOCIATED WITH REPLACEMENT OF THE EXISTING GENERATOR AND INTERFACING OF CONTROLS BETWEEN THE GENERATOR AND ATS.



NOTE:
OBJECTS DRAWN IN LIGHTER LINEWEIGHT ARE EXISTING TO REMAIN. OBJECTS DRAWN WITH HEAVIER LINEWEIGHT RELATE TO THE SCOPE OF WORK.

2 E-1.0 ELECTRICAL SINGLE LINE DIAGRAM – DEMOLITION

SCALE: N.T.S.

BY	REVISION	DATE
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JDM	REVISED PER OWNER COMMENTS	5/6/25
JDM	FOR PERMITTING	4/3/25

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2703 Jones Franklin Rd, Suite 201
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ELECTRICAL DEMOLITION PLANS

PROJECT NO.
HSP2101

E-1.0

APOGEE Consulting Group, PA
www.acg-pa.com
(919) 858-7420
Raleigh, NC
Indianapolis, IN
Fort Collins, CO
Las Vegas, NV
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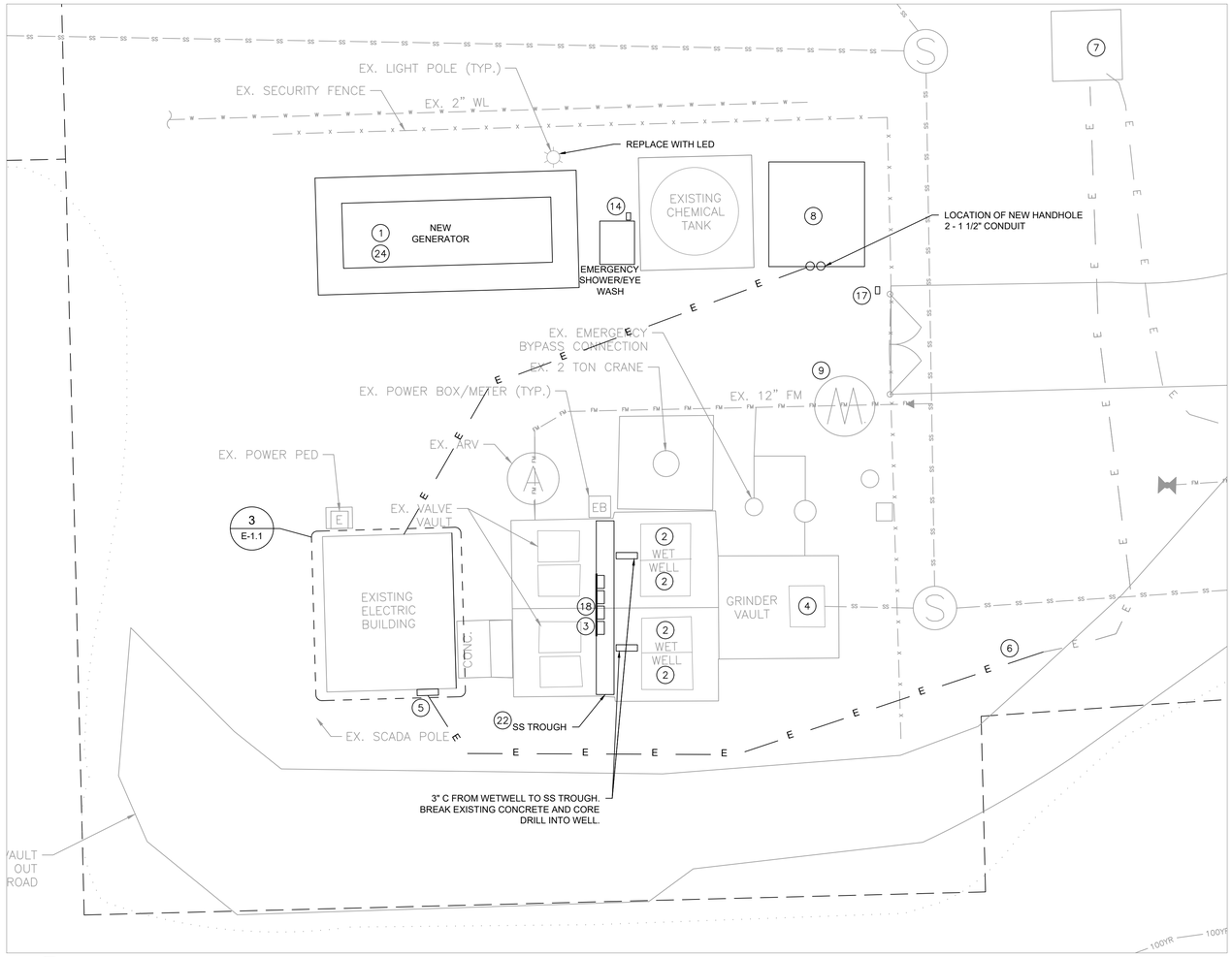


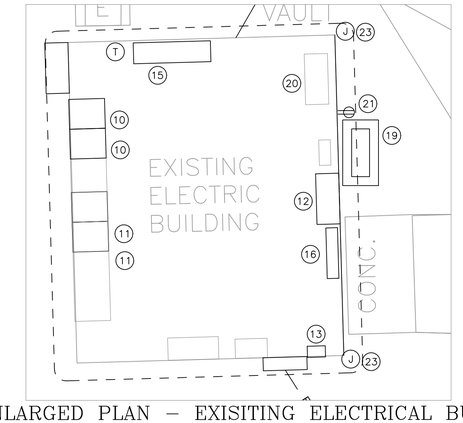
1 E-1.1 ELECTRICAL SITE PLAN – NEW WORK

SCALE: 1/8" = 1'-0"

NEW WORK KEYNOTES:

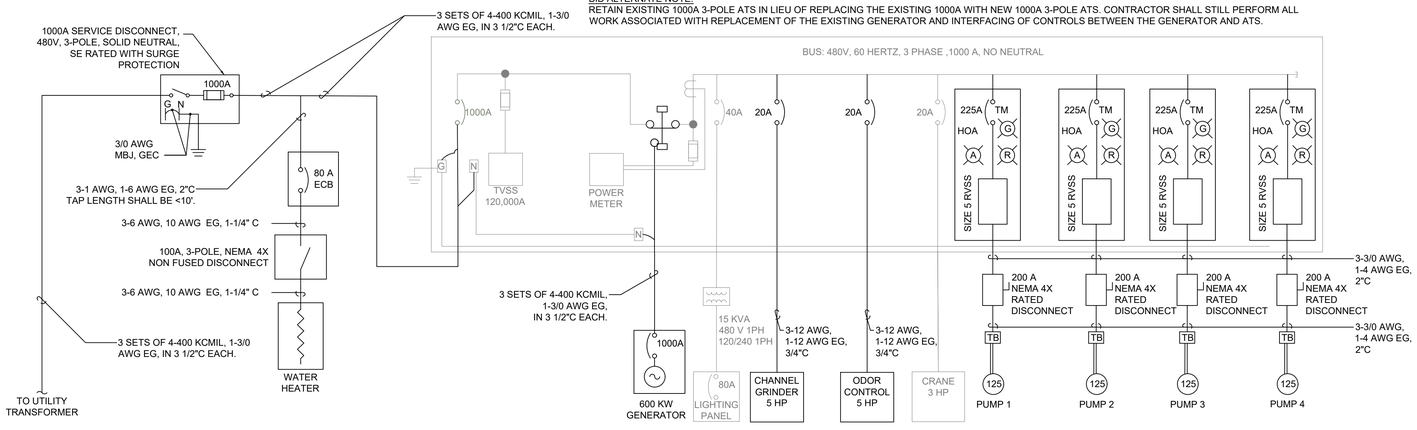
1. INSTALL NEW STANDBY DIESEL GENERATOR. REFERENCE NEW WORK SINGLE LINE DIAGRAM. PROVIDE NEW GENERATOR PAD PER DETAIL 4 SHEET 2.0.
2. INSTALL FEEDERS TO 4 (FOUR) NEW 125HP SUBMERSIBLE PUMPS IN WET WELLS. COORDINATE CONNECTION WITH MECHANICAL CONTRACTOR. SEE NEW WORK SINGLE LINE.
3. MOUNT DISCONNECTS FOR NEW SUBMERSIBLE PUMPS ON H-FRAME LOCATED NEAR WELL ABOVE NEW STAINLESS STEEL TROUGH. REFERENCE NEW WORK SINGLE LINE. PROVIDE 120V 20A CONVENIENCE RECEPTACLE ON RACK FED FROM LIGHTING PANEL UTILIZING 2-12AWG,1-12AWG EG IN 3/4" C.
4. INSTALL FEEDERS TO NEW GRINDER PUMP. COORDINATE CONNECTION WITH MECHANICAL CONTRACTOR. RETAIN EXISTING FEEDERS AND CONDUIT FOR REUSE.
5. LOCATION OF NEW SERVICE DISCONNECT. REFERENCE NEW WORK SINGLE LINE.
6. SPLICE AND EXTEND EXISTING SERVICE CONDUCTORS TO BUILDING. PROVIDE HAND HOLE OR SPLICE BOX AS REQUIRED. REFERENCE NEW WORK SINGLE LINE.
7. COORDINATE REPLACEMENT OF EXISTING UTILITY TRANSFORMER WITH LOCAL UTILITY. FEEDERS ARE TO BE REPLACED. CONDUIT MAY BE RETAINED FOR REUSE.
8. PROVIDE 1-1 1/2" CONDUITS WITH 3-12 AWG, 1-12 AWG EG AND 1-1 1/2" SPARE CONDUIT FROM ELECTRICAL BUILDING TO ODOR CONTROL SYSTEM.
9. REUSE EXISTING FEEDS AND CONDUITS TO FEED NEW FLOW METER.
10. EXTEND EXISTING MOTOR CONTROL CENTER AND INSTALL NEW RVSS. REFERENCE SINGLE LINE THIS SHEET.
11. INSTALL NEW RVSS IN EXISTING MOTOR CONTROL CENTER.
12. LOCATION OF EXISTING MICROCOMM PANEL.
13. LOCATION OF NEW ENCLOSED CIRCUIT BREAKER. REFERENCE NEW WORK SINGLE LINE.
14. LOCATION OF NEW DISCONNECT FOR WATER HEATER. MOUNT ON H-FRAME NEXT TO EMERGENCY SHOWER/EYE WASH STATION.
15. PROVIDE NEW INDOOR SPLIT SYSTEM, MOUNT INDOOR UNIT 'SS-1' ABOVE DOOR AT LEAST 7' 4" AFF TO BOTTOM OF UNIT. PROVIDE MANUFACTURER'S THERMOSTAT. ROUTE 3/4" CONDENSATE DRAIN TO EXTERIOR, DISCHARGE ON SPLASH BLOCK ON GRADE. PROVIDE NEW 240V 20A 2P BREAKER IN LIGHTING PANEL.
16. NEW CONTROLS PANEL.
17. PROVIDE OUTDOOR WEATHER RATED SWITCH BY GATE TO CONTROL SITE LIGHTING. PROVIDE UNDERGROUND 3/4" C AND EXTEND LIGHTING CONDUCTORS FROM EACH EXISTING SITE LIGHTING LOCATION TO THIS LOCATION.
18. PROVIDE 2 LIGHTS MOUNTED TO RACK AT 10'. COORDINATE CLEARANCE FROM CRANE.
19. PROVIDE OUTDOOR CONDENSING UNIT 'CU-1' ON 4" CONCRETE EQUIPMENT PAD. ROUTE REFRIGERANT LIQUID/SUCTION PIPING TO ASSOCIATED INDOOR SPLIT UNIT, ROUTE REFRIGERANT PIPING ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
20. EXISTING LIGHTING PANEL.
21. PROVIDE NEW 120V 20A CONVENIENCE RECEPTACLE WITH IN-USE WEATHERPROOF COVER. FEED FROM LIGHTING PANEL. PROVIDE NEW 120V 20A BREAKER & 2-12 AWG, 1-12 AWG EG IN 3/4" C.
22. PROVIDE NEW STAINLESS STEEL WIREWAY TROUGH BELOW RACK.
23. PROVIDE JUNCTION BOX WITH COVER FOR FUTURE SECURITY CAMERAS ON OUTSIDE OF BUILDING. PROVIDE EMPTY 3/4" CONDUIT WITH PULL CORD FROM JUNCTION BOX TO INSIDE OF BUILDING.
24. PROVIDE GENERATOR WITH UL124 SUB BASE TANK WITH MINIMUM 72 HOURS FUEL STORAGE FOR GENERATOR OPERATING AT 100%. GENERATOR FUEL TANK SHALL BE CAPABLE OF STORING EITHER 3100 GALLONS OR SIZED PER MANUFACTURER INSTRUCTIONS, WHICHEVER IS GREATER.

NOTE:
OBJECTS DRAWN IN LIGHTER LINEWEIGHT ARE EXISTING TO REMAIN. OBJECTS DRAWN WITH HEAVIER LINEWEIGHT RELATE TO THE SCOPE OF WORK.



3 E-1.1 ENLARGED PLAN – EXISITING ELECTRICAL BUILDING

SCALE: 1/4" = 1'-0"



BID ALTERNATE NOTE:
RETAIN EXISTING 1000A 3-POLE ATS IN LIEU OF REPLACING THE EXISTING 1000A WITH NEW 1000A 3-POLE ATS. CONTRACTOR SHALL STILL PERFORM ALL WORK ASSOCIATED WITH REPLACEMENT OF THE EXISTING GENERATOR AND INTERFACING OF CONTROLS BETWEEN THE GENERATOR AND ATS.

NOTE:
OBJECTS DRAWN IN LIGHTER LINEWEIGHT ARE EXISTING TO REMAIN. OBJECTS DRAWN WITH HEAVIER LINEWEIGHT RELATE TO THE SCOPE OF WORK.

2 E-1.1 ELECTRICAL SINGLE LINE DIAGRAM – NEW WORK

SCALE: N.T.S.

BY	REVISION	DATE
JDM	REVISED PER OWNER COMMENTS	5/6/25
JDM	FOR PERMITTING	4/3/25

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5/6/2025

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
2703 Jones Franklin Rd, Suite 201
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ELECTRICAL NEW WORK PLANS

PROJECT NO.
HSP2101

E-1.1

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www.acg-pa.com
(919) 858-7420
Raleigh, NC
Indianapolis, IN
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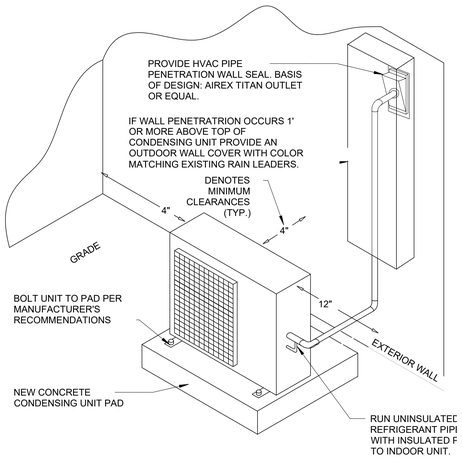
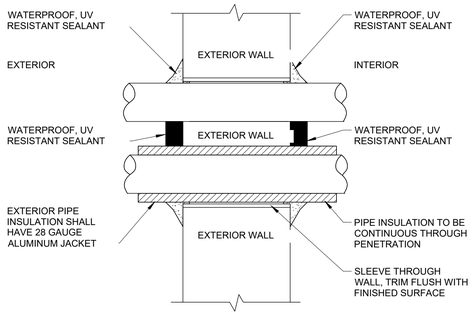


NOTE:
CLEARANCES INDICATED IN THIS ARE MINIMUM REQUIRED. USE THESE MINIMUM DIMENSIONS, MANUFACTURES RECOMMENDATIONS, OR LARGER IF INDICATED ON PLANS.

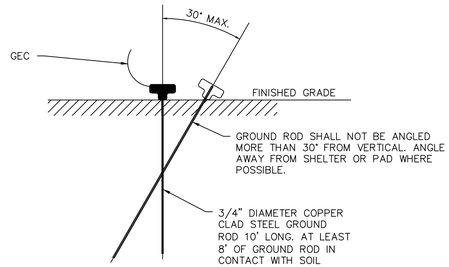
6 E-2.0 CONDENSING UNIT INSTALLATION DETAIL–ON GRADE

SCALE: N.T.S.



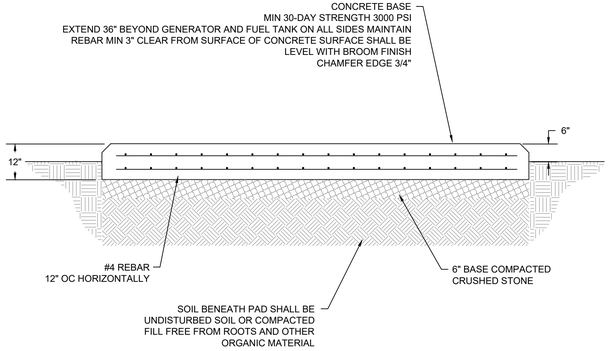
7 E-2.0 PIPE WALL PENETRATION

SCALE: N.T.S.



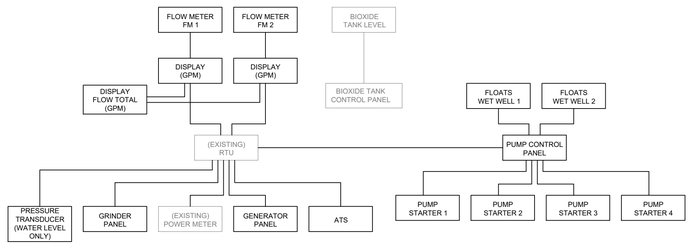
3 E-2.0 GROUND ROD DETAIL

SCALE: N.T.S.



4 E-2.0 GENERATOR PAD DETAIL

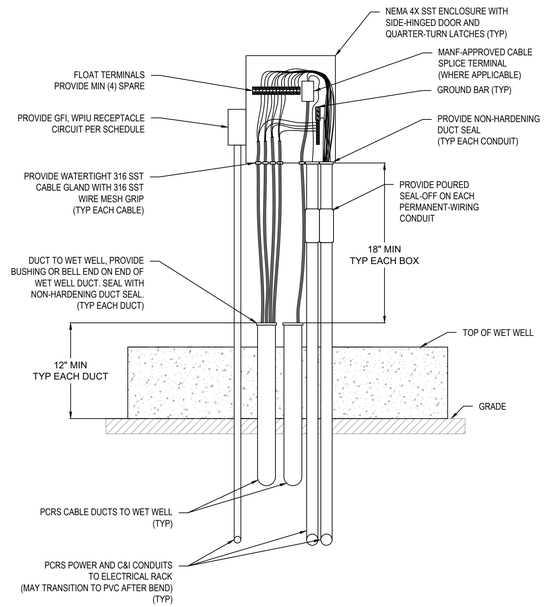
SCALE: N.T.S.



RTU & CONTROLS DIAGRAM NOTE:
CONTRACTOR SHALL COORDINATE EXISTING AND NEW SIGNALS WITH OWNER AND OWNER'S SCADA INTEGRATOR. VERIFY SIGNALS PRIOR TO ORDERING SCADA OR ELECTRICAL EQUIPMENT.

5 E-2.0 RTU AND CONTROLS DIAGRAM

SCALE: N.T.S.

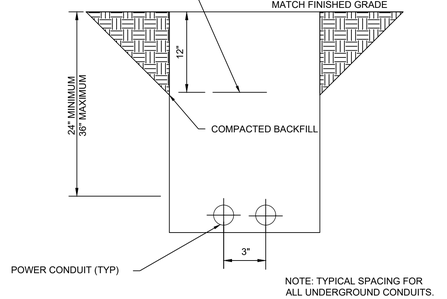


1 E-2.0 WET WELL JUNCTION BOX DETAIL

SCALE: N.T.S.

WET WELL TERMINAL BOX(ES) NOTES

1. DETAIL SHOWN IS CONCEPTUAL. PROVIDE CONDUIT, CABLE, WIRE, AND TERMINATION QUANTITY, TYPE, SIZES, AND POSITION AS REQUIRED FOR THE PARTICULAR INSTALLATION AND AS DETAILED IN CONSTRUCTION DOCUMENTS.
2. SIZE BOX AS REQUIRED FOR TERMINALS AND WIRE BENDING.
3. TERMINALS SHALL BE FINGER-SAFE AND SHALL BE IDENTIFIED AS CORROSION RESISTANT.
4. C&I CONDUIT AND DUCT SIZES, QUANTITY, AND FILL PER C&I DIAGRAM (E-5).
5. NEATLY TRAIN AND SECURELY TIE ALL PERMANENT CONDUCTORS TO BACK OF BOX.
6. PROVIDE AND MOUNT BOXES ON EQUIPMENT RACK PER DETAIL 1/E-2.0. IF WET WELL STRUCTURE AND CONDUIT BEND RADII ALLOW, RACK MAY BE ANCHORED TO SIDE OF WET WELL WITH 316 SST EXPANSION BOLTS IN LIEU OF CONCRETE FOOTERS.
7. DUCTS FOR SENSOR CABLES SHALL ENTER WET WELL AT A LOCATION MOST EASILY ACCESSIBLE FROM THE HATCH. PROVIDE 316 SST CABLE SUPPORTS TO TRAIN CONDUCTORS AROUND THE WELL AS NECESSARY. ROUTE TO AVOID TANGLING.



2 E-2.0 UTILITY TRENCHING DETAIL

SCALE: N.T.S.

DUCTLESS SPLIT SYSTEM SCHEDULE

INDOOR UNIT					OUTDOOR UNIT							
								ELECTRICAL				
MARK	TYPE	AIRFLOW	CAPACITY (BTU)	EAT DB	MARK	COMPRESSOR TYPE	CAPACITY (BTU)	MCA	MOCP	VOLTAGE	PHASE	REMARKS
SS-1	WALL MOUNTED UNIT	320-355-390	12000	80° F	CU-1	DC INVERTER-DRIVEN TWIN ROTARY	12000	13	20	208/230	1	1,2,3,4

UNIT NOTES:
1. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. MAINTAIN RECOMMENDED SERVICE CLEARANCES.
2. INDOOR UNT POWERED THROUGH CONDENSING UNIT.
3. CAPACITY BASED ON 95°F OUTDOOR TEMPERATURE.
4. BASIS OF DESIGN: MITSUBISHI PKA

BY	REVISION	DATE	COMMENTS
JDM	FOR PERMITTING	4/3/25	
JDM	REVISED PER OWNER	5/6/25	

NORTH CAROLINA PROFESSIONAL SEAL 52505 ENGINEER JOSHUA D. MEIER
5/6/2025

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
2703 Jones Franklin Rd, Suite 201
Cary, NC 27518
Tel 919-481-4342
Fax 919-882-9762
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HIGHLAND CREEK #2 PS IMPROVEMENTS
TOWN OF HOLLY SPRINGS
HOLLY SPRINGS, NC

ELECTRICAL DETAILS

PROJECT NO.
HSP2101

E-2.0

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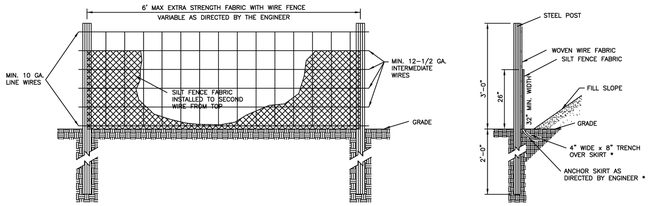


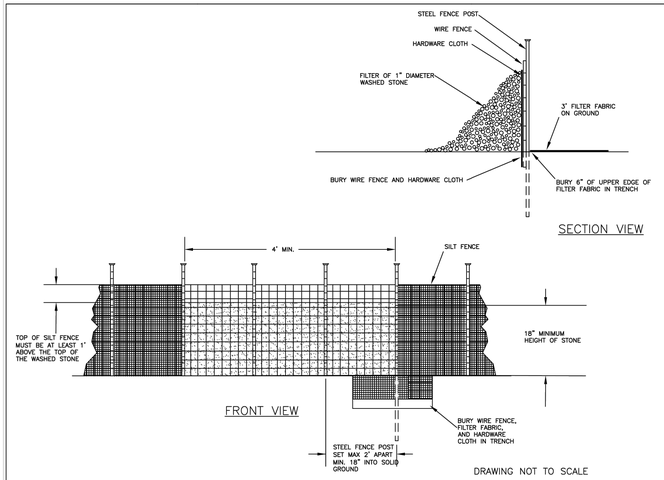
NOTE:

1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
2. UV RESISTANT SILT FENCE FABRIC MUST BE USED NO ORANGE SILT FENCE PERMITTED.

* FOR REPAIR OF SILT FENCE FAILURES, USE No. 57 WASHED STONE. SILT FENCE SHOULD NOT BE USED AS INLET PROTECTION AROUND CATCH BASINS.

DRAWING NOT TO SCALE

STANDARD TEMPORARY SILT FENCE	STANDARD DETAIL NUMBER: HS401	
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE	REVISIONS
	7/24/09	



DRAWING NOT TO SCALE

SILT FENCE OUTLET	STANDARD DETAIL NUMBER: HS404	
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE	REVISIONS
	4/8/07	

TABLE 4.1
SEEDING EROSION CONTROL SCHEDULE
(MAXIMUM SLOPE 3:1)

DATE**	TYPE	PLANTING RATE
AUGUST 15 – NOVEMBER 1	TALL FESCUE OR HARD FESCUE	300 LBS/ACRE
NOVEMBER 1 – MARCH 1	TALL FESCUE AND ABRUZZI RYE OR ANNUAL RYE	300 LBS/ACRE
MARCH 1 – APRIL 15	TALL FESCUE OR HARD FESCUE	300 LBS/ACRE
MARCH 1 – JULY 15	HULLED COMMON BERMUDA GRASS OR HYBRID BERMUDA GRASS OR CENTIPEDE GRASS OR ZOYSIA GRASS OR ST. AUGUSTINE GRASS	200 LBS/ACRE
APRIL 15 – JUNE 30	WEEPING LOVE GRASS OR BAHIA GRASS	25 LBS/ACRE
JULY 15 – AUGUST 15	TALL FESCUE, AND BROWNTOP MILLET OR SORGHUM-SUDAN HYBRID*	35 LBS/ACRE

*Temporary – Reseed according to optimum season for desired vegetation. Do not allow temporary cover to grow over 12 inches in height before mowing to keep fescue from being shaded out.

**Seeding dates will vary depending on weather conditions (e.g. temperature, rainfall, etc.)

Note on maintenance: refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

RIPARIAN AREAS TO BE RESEEDED WITH NATIVE GRASS MIX/ VEGETATION

SEEDING EROSION CONTROL SCHEDULE – TABLE 4.1	STANDARD DETAIL NUMBER: HS429	
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE	REVISIONS
	9/21/16	

TABLE 4.2
SEEDING EROSION CONTROL SCHEDULE
SLOPES (3:1 AND 2:1 – NOT MOWED)

DATE	TYPE	PLANTING RATE
MARCH 1 – JUNE 1 MARCH 1 – APRIL 15	SERICEA LESPEDEZA (SCARIFIED), AND ADD TALL FESCUE, OR	50 LBS/ACRE 120 LBS/ACRE
MARCH 1 – JUNE 30 MARCH 1 – JUNE 30	ADD WEEPING LOVEGRASS, OR ADD HULLED COMMON BERMUDAGRASS	10 LBS/ACRE 25 LBS/ACRE
JUNE 1 – SEPTEMBER 1	TALL FESCUE, AND ADD BROWNTOP MILLET,* OR ADD SORGHUM-SUDAN HYBRIDS*	120 LBS/ACRE 25 LBS/ACRE 30 LBS/ACRE
SEPTEMBER 1 – MARCH 1	SERICEA LESPEDEZA (UNHULLED-UNSCARIFIED), AND ADD TALL FESCUE, AND ADD ABRUZZI RYE AND ANNUAL RYE	70 LBS/ACRE 120 LBS/ACRE 25 LBS/ACRE

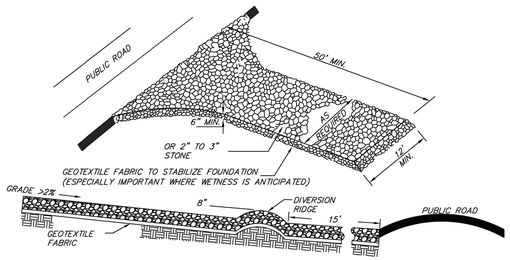
*For temporary seeding purposes.

Note on maintenance: refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

RIPARIAN AREAS TO BE RESEEDED WITH NATIVE SEED MIX.

DRAWING NOT TO SCALE

SEEDING EROSION CONTROL SCHEDULE – TABLE 4.2	STANDARD DETAIL NUMBER: HS430	
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE	REVISIONS
	9/21/16	



APPLICABLE AT ALL POINTS OF INGRESS & EGRESS UNTIL SITE IS STABILIZED.
FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE MUST BE PROVIDED.

NOTES:
A. TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGER TRUCKS IS TO BE PROVIDED.
B. ENTRANCE(S) SHOULD BE LOCATED TO PROVIDE FOR MAXIMUM UTILIZATION BY ALL CONSTRUCTION TRUCKS.
C. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF TRAFFIC ONTO STREETS. PERIODIC TOP DRESSING WITH STONE WILL BE NECESSARY. KEEP SOME ON HAND.
D. ANY MATERIAL WHICH STILL MAKES IT ONTO THE ROAD MUST BE CLEANED IMMEDIATELY.

DRAWING NOT TO SCALE

CONSTRUCTION ENTRANCE	STANDARD DETAIL NUMBER: HS432	
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE	REVISIONS
	8/30/19	

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
CDD	09/11/24	90% DESIGN
CDD	03/07/24	60% DESIGN

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2703 Jones Franklin Rd, Ste 201
Cary, NC 27518
Tel 919-481-4342
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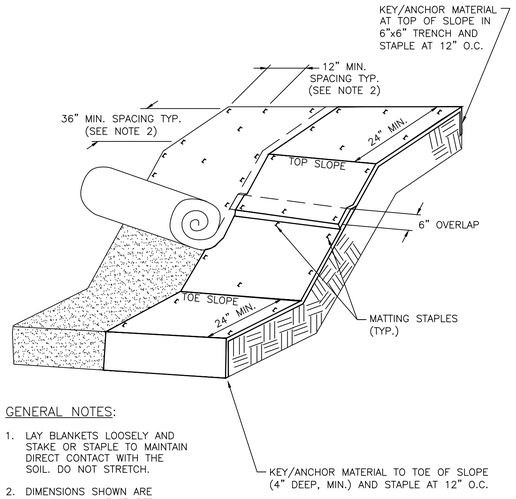
EROSION CONTROL DETAILS

PROJECT NO.
HSP2101

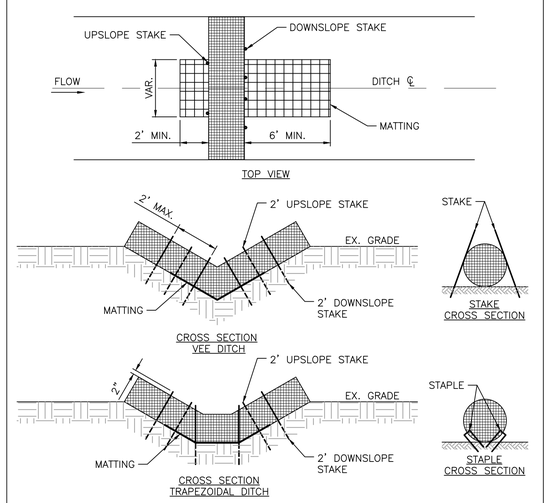
ED-1.0



GENERAL NOTES:

1. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
2. DIMENSIONS SHOWN ARE MINIMUM. MANUFACTURED PRODUCTS MAY HAVE ADDITIONAL REQUIREMENTS THAT MUST BE MET.
3. SLOPE SURFACE SHALL BE FREE OF ROCKS, SOIL CLODS, STICKS, GRASS. MAT/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
4. THE DETAIL SHOWN IS FOR SLOPE MATTING, NOT FOR CHANNEL MATTING.

31-06	SLOPE STABILITY W/EROSION CONTROL MATTING (DETAIL TITLE)	
HIEPC DETAIL I.D.	11/1/2016 (REVISED DATE)	NO SCALE (SCALE)



NOTES:
1. USE MIN. 12" DIA. EXCELSIOR WATTLE.
2. USE 2' WOODEN STAKES WITH A 2" X 2" CROSS SECTION.
3. ONLY INSTALL WATTLES TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES.
4. INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
5. PROVIDE STAPLES APPROX. EVERY 1 LF ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

31-16	WATTLE (DETAIL TITLE)	
HIEPC DETAIL I.D.	11/1/2016 (REVISED DATE)	NO SCALE (SCALE)

EROSION CONTROL GENERAL CONSTRUCTION SEQUENCE

A. NO LAND DISTURBING ACTIVITIES, INCLUDING TIMBERING OR DEMOLITION ACTIVITIES, ARE ALLOWED WITHOUT FIRST OBTAINING A SEDIMENT AND EROSION CONTROL PLAN APPROVAL AND CERTIFICATE OF COVERAGE.

B. CONTACT THE DEMLR RALEIGH REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO COMMENCING LAND-DISTURBING ACTIVITY. THE CONTACT NUMBER IS (919)791-4200.

C. CONFIRM LOCATIONS OF AND CONSTRUCT OR INSTALL SILT FENCES, DIVERSION DITCHES, WATTLES, AND CHECK DAMS AS INDICATED ON THE DRAWINGS. INSTALL ALL OTHER NECESSARY EROSION CONTROL MEASURES WHETHER OR NOT INDICATED ON THE DRAWINGS IN ACCORDANCE WITH THE SPECIFICATIONS.

D. IN ORDER TO MINIMIZE POTENTIAL STREAM BANK EROSION, WOODY VEGETATION WILL BE HAND CUT AND REMOVED AND STUMPS AND ROOT WADS WILL BE LEFT EXCEPT AS NECESSARY UNTIL PERMANENT CROSSING ARE MADE AND FINAL STABILIZATION HAS BEEN PLACED.

E. WHERE APPROPRIATE, CLEAR, GRUB, AND STRIP TOPSOIL TO LIMITS REQUIRED FOR CONSTRUCTION. LEGALLY DISPOSE OF WASTE MATERIAL.

F. BEGIN EXCAVATION AND GRADING ACTIVITIES AFTER ALL REQUIRED EROSION CONTROL MEASURES HAVE BEEN INSTALLED.

G. STOCKPILED FILL MATERIAL SHALL BE PROTECTED FROM SEDIMINTATION AND RUNOFF.

H. BEGIN CONSTRUCTION AND INSTALLATION OF INFRASTRUCTURE AND PERMANENT EROSION CONTROL PROTECTION.

I. BACKFILL AND ESTABLISH FINISH GRADES AS QUICKLY AS POSSIBLE AFTER PIPES HAVE BEEN INSTALLED.

J. APPLY PERMANENT SOIL VEGETATION AFTER PIPE INSTALLATION. ESTABLISH PERMANENT SOIL VEGETATION.

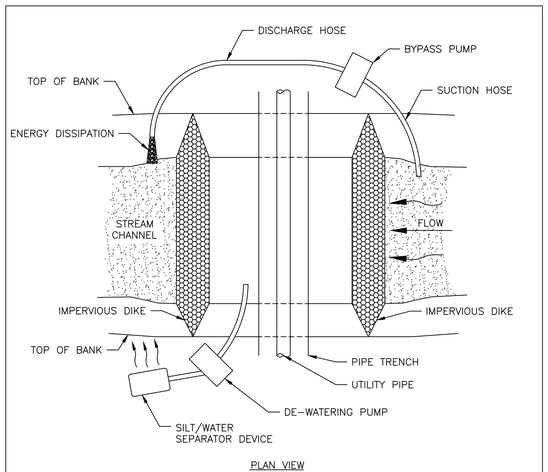
K. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL. NEEDED REPAIRS SHALL BE MADE IMMEDIATELY.

L. GROUND COVER SHALL BE ESTABLISHED ON ALL SLOPES FOLLOWING COMPLETION OF GRADING ON EACH PHASE OF THE WORK. AFTER GROUND COVER IS WELL ESTABLISHED AND THE SITES ARE STABILIZED, RETURN TO THE SITE AND REMOVE ALL TEMPORARY MEASURES INCLUDING SILT FENCES, DIVERSION DITCHES, WATTLES, ROCK CHECK DAMS, AND ALL OTHER MEASURES. INSTALL PERMANENT VEGETATION TO ALL AREAS DISTURBED BY THE TEMPORARY MEASURES.

M. REMOVE EROSION CONTROL MEASURES AND RESTORE AREAS AFFECTED BY MEASURES WITHIN 30 DAYS AFTER ENGINEER HAS DETERMINED THAT FINAL SITE STABILIZATION IS ACCEPTABLE.

N. WHEN THE PROJECT IS COMPLETE, AND PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION HAS BEEN ESTABLISHED, THE PERMITTEE SHALL CONTACT DEMLR TO CLOSE OUT THE E&SC PLAN. AFTER DEMLR INFORMS THE PERMITTEE OF THE PROJECT CLOSE OUT, VIA INSPECTION REPORT, THE PERMITTEE SHALL VISIT HTTPS://WWW.DEQ.NC.GOV/NCG01 TO SUBMIT AN ELECTRONIC NOTICE OF TERMINATION (E-NOT). A $120 ANNUAL GENERAL PERMIT FEE WILL BE CHARGED UNTIL THE E-NOT HAS BEEN FILLED OUT.

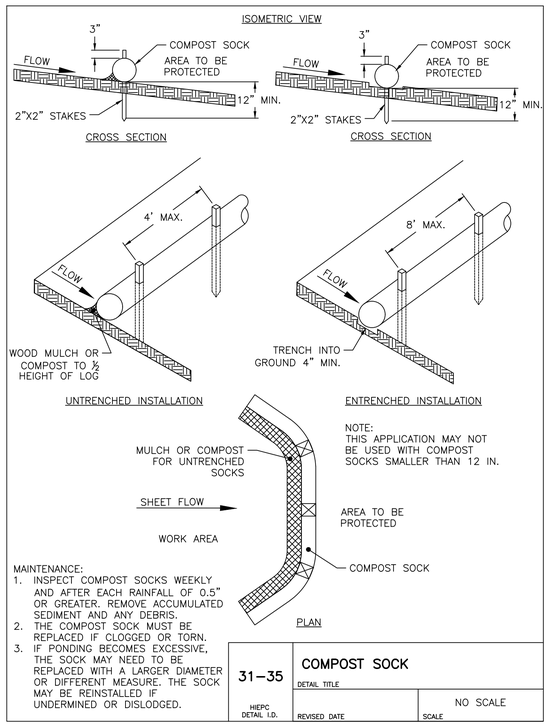
31-17	EROSION CONTROL GENERAL CONSTRUCTION SEQUENCE (DETAIL TITLE)	
HIEPC DETAIL I.D.	10/26/2011 (REVISED DATE)	NO SCALE (SCALE)



PLAN VIEW

NOTE:
MEASURES SHOWN ARE TO CONVEY THE GENERAL INTENT. CONTRACTOR SHALL DETERMINE SIZE AND LAYOUT FOR MEANS AND METHODS USED AND SHALL PERFORM ALL WORK WITHIN EASEMENTS SHOWN.

31-29	UTILITY STREAM CROSSING W/DAM AND PUMPING (DETAIL TITLE)	
HIEPC DETAIL I.D.	(REVISED DATE)	NO SCALE (SCALE)



NOTE:
THIS APPLICATION MAY NOT BE USED WITH COMPOST SOCKS SMALLER THAN 12 IN.

MAINTENANCE:
1. INSPECT COMPOST SOCKS WEEKLY AND AFTER EACH RAINFALL OF 0.5" OR GREATER. REMOVE ACCUMULATED SEDIMENT AND ANY DEBRIS.
2. THE COMPOST SOCK MUST BE REPLACED IF CLOGGED OR TORN.
3. IF PONDING BECOMES EXCESSIVE, THE SOCK MAY NEED TO BE REPLACED WITH A LARGER DIAMETER OR DIFFERENT MEASURE. THE SOCK MAY BE REINSTALLED IF UNDERMINED OR DISLODGED.

31-35	COMPOST SOCK (DETAIL TITLE)	
HIEPC DETAIL I.D.	(REVISED DATE)	NO SCALE (SCALE)

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
CDD	09/11/24	90% DESIGN
CDD	03/07/24	60% DESIGN

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2703 Jones Franklin Rd, Ste 201
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HOLLY SPRINGS, NC

EROSION CONTROL DETAILS

PROJECT NO.
HSP2101

ED-2.0

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes		
Site Area Description	**Stabilize within this many calendar days after ceasing land disturbance**	**Timeframe variations**
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

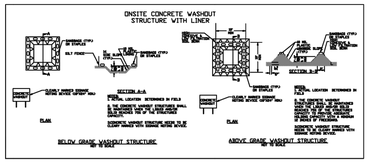
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

NORTH CAROLINA Environmental Quality



CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (enc this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours,*** an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible.*** The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA Environmental Quality

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

PERMANENT SEEDING (MAX. SLOPE 3:1)

PLANTING PERIOD	SEED MIXTURE	RATE (LB/AC)
AUG. 15 – NOV. 1	TALL FESCUE	300
NOV. 1– MAR. 1	TALL FESCUE & ABRUZZI RYE	300 25
MAR. 1 – APR. 15	TALL FESCUE	300
APR. 15 – JUNE 30	HULLED COMMON BERMUDAGRASS	25
JUL. 1 – AUG. 15**	TALL FESCUE & BROWNTOP MILLET & SORGHUM–SUDAN HYBRIDS	120 35 30
LIME		4,000
FERTILIZER	10–10–10	1,000
MULCH	STRAW	4,000

** DENOTES TEMPORARY SEEDING MIXTURE. RESEED ACCORDING TO OPTIMUM SEASON FOR PERMANENT SEEDING.

SOIL PREPARATION:
- SCARIFY SUBSOIL TO A DEPTH OF 3 INCHES.
- SPREAD TOPSOIL TO A MINIMUM DEPTH OF 4 INCHES.

SEED:
- ACCOMPLISH SEEDING BY MEANS OF AN APPROVED POWER DRAWN SEED DRILL, COMBINATION CORRUGATED ROLLER SEEDER, APPROVED HAND OPERATED MECHANICAL SEEDER, OR OTHER APPROVED METHODS TO PROVIDE EVEN DISTRIBUTIONS OF SEED.
- FRESH SEED GUARANTEED 95 PERCENT PURE WITH A MINIMUM GERMINATION RATE OF 85 PERCENT WITHIN ONE YEAR OF TESTS.
- DETERMINE AND MATCH EXISTING GRASS TYPE IN RESIDENTIAL LAWNS.
- PROVIDE THE ABOVE SEED MIXTURES, WITH LIME AND FERTILIZER, IN DISTURBED AREAS INCLUDING NCDOT RIGHT–OF–WAYS.

FERTILIZER:
- MIXED, COMMERCIAL, FERTILIZER CONTAINING 10–10–10 PERCENTAGES OF AVAILABLE NITROGEN, PHOSPHORIC ACID, AND POTASH RESPECTIVELY, PLUS SUPERPHOSPHATE WITH 20 PERCENT P205 CONTENT.
- FERTILIZER SHALL BE DRY, IN GRANULAR (PELLET) FORM, SHALL BE DELIVERED TO THE SITE IN THE MANUFACTURER'S ORIGINAL BAG OR CONTAINER WHICH SHALL BE PLAINLY MARKED AS TO FORMULA.

PERMANENT SEEDING (SLOPES FROM 3:1 TO 2:1)

PLANTING PERIOD	SEED MIXTURE	RATE (LB/AC)
MAR. 1 – JUNE 1 MAR. 1 – APR. 15 MAR. 1 – JUN. 30 MAR. 1 – JUN. 30	SERICEA LESPEDEZA & ADD TALL FESCUE OR ADD WEEPING LOVEGRASS OR ADD HULLED COMMON BERMUDAGRASS	50 120 10 25
JUN. 1 – SEPT. 1**	TALL FESCUE & BROWNTOP MILLET & SORGHUM–SUDAN HYBRIDS	125 30 35
SEPT. 1 – MAR. 1 NOV. 1 – MAR. 1	SERICEA LESPEDEZA (UNHULLED–UNSCARIFIED) & TALL FESCUE & ADD ABRUZZI RYE	70 120 25
LIME		4,000
FERTILIZER	10–10–10	1,000
MULCH	STRAW	4,000

** DENOTES TEMPORARY SEEDING MIXTURE. RESEED ACCORDING TO OPTIMUM SEASON FOR PERMANENT SEEDING.

LIME:
- GROUND DOLOMITIC AGRICULTURAL LIMESTONE, NOT LESS THAN 85 PERCENT TOTAL CARBONATES, GROUND SOT THAT 50 PERCENT PASSES 100 MESH SIEVE AND 90 PERCENT PASSES 30 MESH SIEVE. COARSER MATERIAL WILL BE ACCEPTABLE, PROVIDED THE SPECIFIED RATES OF APPLICATION ARE INCREASE PROPORTIONATELY ON THE BASIS OF QUANTITIES PASSING NO. 100 MESH SIEVE.

MULCHING AND MATTING:
- SLOPES FROM 0 TO 20 PERCENT: NOT LESS THAN 85 LBS PER 1,000 SQ. FT. USE TACK TO PREVENT DISRUPTION OF MULCH.
- SLOPES GREATER THAN 20 PERCENT MULCH WITH MATTING. PIN MATTING TO THE GROUND WITH WIRE STAPLES AT 5–FOOT INTERVALS, IMMEDIATELY AFTER SEEDING.
- FOR TACK USE AN ASPHALT TIE–DOWN OF EMULSIFIED ASPHALT GRADE AE–3 OR CUT–BACK ASPHALT GRADE RC–2 OR OTHER APPROVED EQUAL. THE APPLICATION RATE SHALL BE 0.10 GAL/SY (11 GAL. PER 1,000 SQ. FT.). AN APPROVED JUTE MESH OR NET MAY BE USED IN LIEU OF TACKING STRAW MULCH.

1 TEMPORARY & PERMANENT SEEDING
NTS

TEMPORARY RIPARIAN/WETLAND SEED MIXTURE ACCORDING TO PLANTING PERIOD FOR PIEDMONT

COMMON NAME	RATE/ACRE	OPTIMAL PLANTING DATES
RYE GRAIN	30	AUG. 15 – MAY 1
WHEAT	30	AUG. 15 – MAY 1
GERMAN MILLET	10	MAY 1 – AUG. 15
BROWNTOP MILLET	10	MAY 1 – AUG. 15

TEMPORARY SEEDING NOTES:
- SINGLE SPECIES SELECTION FOR TEMPORARY COVER IS ACCEPTABLE.
- IN SOME CASES WHERE SEASONS OVERLAP, A MIXTURE OF TWO OR MORE TEMPORARY SPECIES MAY BE NECESSARY.
- APPLICATION RATES SHOULD NOT EXCEED TO THE TOTAL RECOMMENDED RATE PER ACRE.
- TEMPORARY SEED SHOULD BE MIXED AND APPLIED SIMULTANEOUSLY WITH THE PERMANENT SEED MIX IF OPTIMAL PLANTING DATES ALLOW.

PERMANENT SEEDING NOTES:
SEED:
- NO SPECIFIC SEEDING RATE IS GIVEN IN ORDER TO ALLOW FOR CUSTOM SEED MIXES BASED ON SITE CHARACTERISTICS AND SEASON.
- HOWEVER, PERMANENT SEED INCLUSION IN THE MIXTURE SHOULD TOTAL 15 POUNDS OF PURE LIVE SEED (PLS) PER ACRE DRILLED OR 15 TO 20 POUNDS PLS PER ACRE BROADCAST APPLIED.
- SELECTION OF FOUR OR MORE SPECIES IS RECOMMENDED FOR INCREASING CHANCES OF SUCCESSFUL VEGETATION ESTABLISHMENT.
- IF OTHER SPECIES SUCH AS WILDFLOWERS ARE ADDED TO THE MIX, THEY SHOULD NOT BE COUNTED IN THE MINIMUM SEEDING RATE FOR GRASSES.
- APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DROP–TYPE SPREADER, DRILL OR HYDROSEEDER ON A FIRM, FRIABLE SEEDBED. WHEN USING A DRILL, EQUIPMENT SHOULD BE CALIBRATED IN THE FIELD FOR THE DESIRED SEEDING RATE.

FERTILIZER:
- APPROPRIATE PH LEVELS ARE BETWEEN 5.5 AND 7. APPLIED LEVELS OF PHOSPHORUS AND POTASSIUM SHOULD BE ADJUSTED GIVEN LOCAL SOIL CHARACTERISTICS.

PERMANENT RIPARIAN/WETLAND SEED MIXTURE ACCORDING TO PLANTING PERIOD FOR PIEDMONT

COMMON NAME	TYPE*	PERCENTAGE OF MIX	OPTIMAL PLANTING DATES
SWITCHGRASS	WARM SEASON	10–15%	DEC. 1 – APR. 1
INDIANGRASS	WARM SEASON	10–30%	
DEERTONGUE	WARM SEASON	5–25%	
BIG BLUESTEM	WARM SEASON	10–30%	
LITTLE BLUESTEM	WARM SEASON	10–30%	
SWEET WOODREED	WARM SEASON	1–10%	
RICE CUTGRASS	WARM SEASON	5–25%	
REDTOP PANICGRASS	WARM SEASON	10–20%	
BEAKED PANICGRASS	WARM SEASON	10–20%	
PURPLE TOP	WARM SEASON	5–10%	
EASTERN GAMMAGRASS	WARM SEASON	5–10%	
INDIAN WOODOATS	COLD SEASON	1–10%	FEB. 15 – APR. 1, AUG. 15 – OCT. 15
VIRGINIA WILDRYE	COLD SEASON	5–25%	
EASTERN BOTTLE–BRUSH GRASS	COLD SEASON	5–10%	
ROUGH BENTGRASS	COLD SEASON	10–20%	
WINTER BENTGRASS	COLD SEASON	2–5%	
SOFT RUSH	WETLAND	1–10%	DEC. 1 – MAY 1, SEP. 1 – NOV. 1
SHALLOW SEDGE	WETLAND	1–10%	
FOX SEDGE	WETLAND	1–10%	
LEATHERY RUSH	WETLAND	2–5%	

*PICK AT LEAST FOUR SPECIES, INCLUDING ONE FROM EACH TYPE.

2 RIPARIAN SEEDING
NTS

NOTE: THE PROJECT CONTACT FOR MAINTENANCE OF EROSION CONTROL DEVICES IS RACHEL JONES, E.I. WITH THE TOWN OF HOLLY SPRINGS AT (919) 577–3156

BY	REVISION	DATE
CDD	REVISED PER OWNER COMMENT	05/08/25
CDD	PERMITTING	01/31/25
CDD	TOWN REVIEW	01/17/25
CDD	90% DESIGN	09/11/24
CDD	60% DESIGN	03/07/24

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026481 EDWARD O. SASSER, JR. ENGINEER
2025.05.08 16:10:03-04'00'
SEAL NOT VALID UNLESS SIGNED AND DATED

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
2703 Jones Franklin Rd, Ste 201
Cary, NC 27518
Tel 919-481-4342
www.hiepc.com
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Service is our passion.

BUSINESS PARK PS & FM IMPROVEMENTS
TOWN OF HOLLY SPRINGS
HOLLY SPRINGS, NC

EROSION CONTROL DETAILS

PROJECT NO.
HSP2101

ED–3.0

BENDS

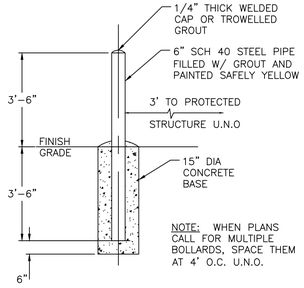
PIPE DIA.	PIPE TYPE	ANGLE	RJ LENGTH
16"	PVC	45°	26'
16"	PVC	22.5°	13'
16"	PVC	11.25°	7'

VERTICAL OFFSETS

PIPE DIA.	PIPE TYPE	ANGLE	RJ LENGTH DOWNWARD/UPWARD
16"	PVC	11.25°	23' / 7'

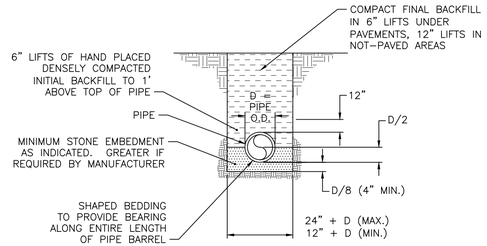
NOTES:
1. RJ LENGTHS ARE BASED ON:
   - TESTING PRESSURE OF 200 PSI, TYPE 4 TRENCH AND A SOIL TYPE CL (USCS).
   - ASSUMED BURY DEPTH OF 4.5 FT.
   - SAFETY FACTOR OF 2.
2. THE CONTRACTOR SHALL NOTIFY ENGINEER IF CONDITIONS DIFFER.
3. OBTAIN GUIDANCE FROM ENGINEER IF ACTUAL BURY DEPTHS ARE LESS.
4. USE DEAD ENDS RESTRAINT LENGTHS FOR VALVES.
5. WHERE FITTINGS AND VALVES ARE IN CLOSE PROXIMITY AND RJ LENGTHS REQUIRED OVERLAP, DETERMINE THE RJ LENGTH REQUIRED FROM EACH AND USE THE HIGHEST (MOST RESTRICTIVE) CONDITION.
6. WHERE REQUIRED RJ LENGTH PASSES THROUGH A CASING PIPE, THE CARRIER PIPE WITHIN THE CASING PIPE DOES NOT COUNT TOWARD THE MINIMUM REQUIRED RJ LENGTH REQUIRED.
7. RJ LENGTHS SHALL BE INSTALLED ON BOTH SIDES OF FITTINGS AND VALVES.

1 RJ LENGTHS
NO SCALE



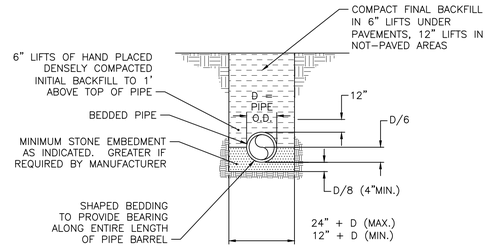
NOTE: WHEN PLANS CALL FOR MULTIPLE BOLLARDS, SPACE THEM AT 4' O.C. U.N.O.

10-01	SITE BOLLARD	
HIEPC DETAIL I.D.	DETAIL TITLE	
	1/12/2016	NO SCALE
	REVISED DATE	SCALE



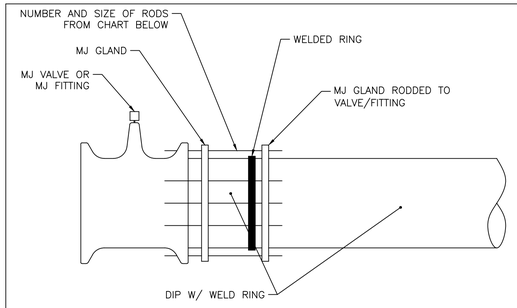
NOTES:
1. BEDDING SHALL BE # 67 STONE.
2. BACKFILL SHALL BE FREE OF ROCK LARGER THAN 2" IN ANY DIRECTION (NO ROCK LARGER THAN ¾" WITHIN 12" OF PIPE) AND FREE OF DEBRIS AND ORGANIC MATTER. COMPACT TO 95% MAXIMUM DRY DENSITY.
3. WHEN ROCK IS ENCOUNTERED, INCREASE BEDDING DEPTH UNDER PIPE TO 6".

31-11	PVC PRESSURE PIPE BEDDING	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE



NOTES:
1. BEDDING SHALL BE NATIVE SOIL WITH NO ROCK LARGER THAN ¾" OR # 67 STONE.
2. BACKFILL SHALL BE FREE OF ROCK LARGER THAN 2" IN ANY DIRECTION (NO ROCK LARGER THAN ¾" WITHIN 12" OF PIPE) AND FREE OF DEBRIS AND ORGANIC MATTER. COMPACT TO 95% MAXIMUM DRY DENSITY.
3. WHEN ROCK IS ENCOUNTERED, INCREASE BEDDING DEPTH UNDER PIPE TO 6" AND USE # 67 STONE.

31-12	DI PIPE BEDDING (TYPE 3 TRENCH)	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE

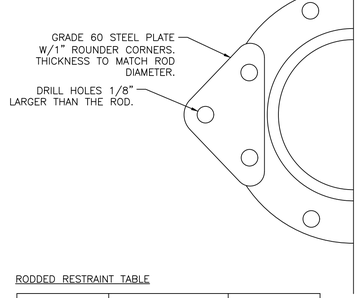


RODDED RESTRAINT TABLE

PIPE DIA.	ROD DIA.	NO. OF RODS
4"	3/4"	4
6"	3/4"	6
8"	3/4"	6
10"	3/4"	8
12"	3/4"	8
14"	3/4"	10
16"	3/4"	12
20"	3/4"	14
24"	3/4"	16
36"	1"	24

NOTE:
1. THREADED TIE RODS TO BE ASTM A307, GRADE B STEEL.
2. FOR 200 PSI MAX. TEST PRESSURE.
3. STEEL RODS AND BOLTS SHALL BE ¾" HOT DIPPED GALVINIZED. BURIED RODS SHALL BE BITUMASTIC COATED.

33-30	MJ COUPLED RESTRAINED JOINT	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE

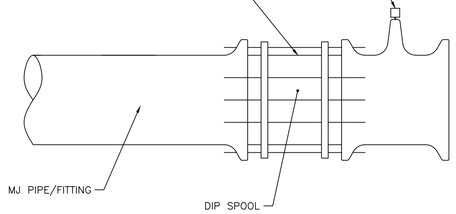


RODDED RESTRAINT TABLE

PIPE DIA.	ROD DIA.	NO. OF RODS
4"	1/2"	2
6"	3/4"	2
8"	3/4"	2
10"	7/8"	3
12"	7/8"	3
14"	1"	4
16"	1"	4
20"	1 1/4"	5
24"	1 1/2"	5
36"	1 1/2	10

NOTE
1. THREADED TIE RODS TO BE ASTM A307, GRADE B STEEL.
2. FOR 200 PSI MAX. TEST PRESSURE.

33-31	RODDED RESTRAINT	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE

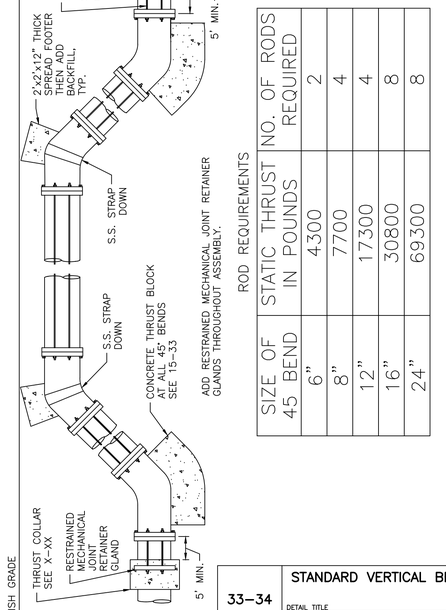


RODDED RESTRAINT TABLE

PIPE DIA.	ROD DIA.	NO. OF RODS
4"	3/4"	2
6"	3/4"	2
8"	3/4"	3
10"	3/4"	4
12"	3/4"	6
14"	3/4"	8
16"	3/4"	10
20"	3/4"	14
24"	3/4"	16
36"	1"	24

NOTE:
1. THREADED TIE RODS TO BE ASTM A307, GRADE B STEEL.
2. FOR 200 PSI MAX. TEST PRESSURE.
3. STEEL RODS AND BOLTS SHALL BE ¾" HOT DIPPED GALVINIZED. BURIED RODS SHALL BE BITUMASTIC COATED.

33-32	RODDED RESTRAINED JOINT	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE



ADD RESTRAINED MECHANICAL JOINT RETAINER GLANDS THROUGHOUT ASSEMBLY.

ROD REQUIREMENTS

SIZE OF 45 BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4300	2
8"	7700	4
12"	17300	4
16"	30800	8
24"	69300	8

33-34	STANDARD VERTICAL BEND	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
CDD	09/11/24	90% DESIGN
CDD	03/07/24	60% DESIGN

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026481 EDWARD O. SASSER, JR. 2025.05.08 16:10:03-04'00'
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MISCELLANEOUS DETAILS

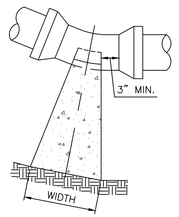
PROJECT NO.
HSP2101

MD-1.0

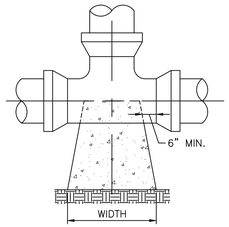
REACTION BEARING AREAS FOR HORIZONTAL PIPE BENDS

		REACTION AREA (SF)					
DIA. (IN)	FITTING	1000 #/SF	1600 #/SF	2000 #/SF	4000 #/SF	8000 #/SF	10000 #/SF
6	11.25	2	1	1	1	1	1
	22.5	3	2	2	1	1	1
	45	5	4	3	2	1	1
	90	9	6	5	3	2	1
	PLUG/TEE	7	4	4	2	1	1
8	11.25	3	2	2	1	1	1
	22.5	5	3	3	2	1	1
	45	9	6	5	3	2	1
	90	16	10	8	4	2	2
	PLUG/TEE	12	8	6	3	2	2
12	11.25	5	4	3	2	1	1
	22.5	10	7	5	3	2	1
	45	20	13	10	5	3	2
	90	36	23	18	9	5	4
	PLUG/TEE	26	16	13	7	4	3
16	11.25	9	6	5	3	2	1
	22.5	18	12	9	5	3	2
	45	35	22	18	9	5	4
	90	64	40	32	16	8	7
	PLUG/TEE	46	29	23	12	6	5
24	11.25	20	13	10	5	3	2
	22.5	40	25	20	10	5	4
	45	78	49	39	20	10	8
	90	144	90	72	36	18	15
	PLUG/TEE	102	64	51	26	13	11
30	11.25	32	20	16	8	4	4
	22.5	63	39	32	16	8	7
	45	122	77	61	31	16	13
	90	225	141	113	57	29	23
	PLUG/TEE	160	100	80	40	20	16
36	11.25	45	29	23	12	6	5
	22.5	90	56	45	23	12	9
	45	176	110	88	44	22	18
	90	324	203	162	81	41	33
	PLUG/TEE	230	144	115	58	29	23

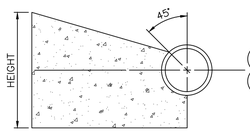
G:\Projects\z_Design Info\Restaint\Thrust Block Calculator.xls



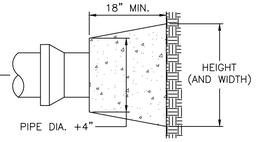
PLAN BENDS



PLAN TEES



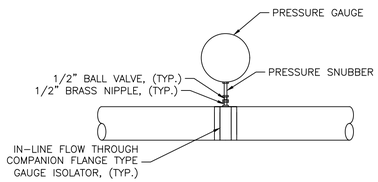
SECTION
BENDS & TEES



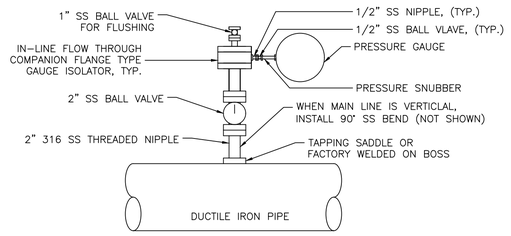
PLAN & ELEVATION PLUGS

NOTES:
1. REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.
2. REACTION AREA CALCULATED BASED ON 150 PSI TEST PRESSURE AND 1.5 SAFETY FACTOR.
3. GENERAL SOIL PROPERTIES: QUICKSAND = 1,000 #/SF; GRAVEL/COARSE SAND = 1,600 #/SF; SOFT CLAY = 2,000 #/SF; MODERATELY DRY CLAY, SAND-CLEAN DRY = 4,000 #/SF; DRY CLAY, SAND-COMPACT FIRM = 8,000 #/SF; ROCK = 10,000 #/SF.
4. USE 6" - 90° BEND VALUE FOR HYDRANTS.
5. WIDTH OF BLOCK SHOULD BE BETWEEN 1X AND 2X BLOCK HEIGHT.
6. CONSULT ENGINEER FOR FITTING OR SIZES NOT SHOWN.
7. CONCRETE SHALL BE 3000 PSI.
8. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
9. ALL FITTINGS SHALL HAVE CONCRETE THRUST BLOCKING UNLESS NOTED OTHERWISE.

33-33	STANDARD THRUST BLOCKING	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE

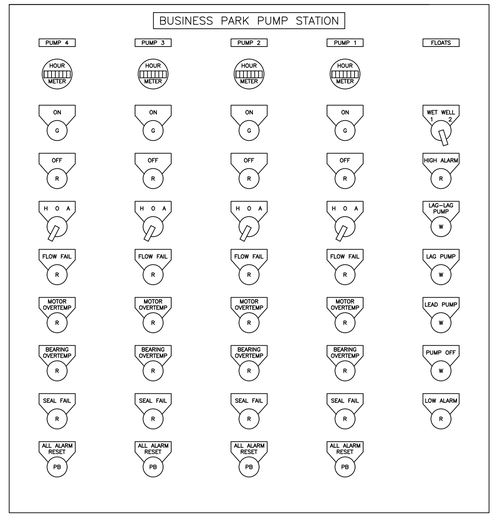


FLOW THROUGH TYPE (10" DIA. AND SMALLER)



SIDE STREAM TYPE (12" DIA. AND LARGER)

33-51	WASTEWATER PRESSURE GAUGE ASSEMBLY	
HIEPC DETAIL I.D.	DETAIL TITLE	
	11/1/2016	NO SCALE
	REVISED DATE	SCALE



NOTES:
1. CONTROL PANEL DRAWING ILLUSTRATES DESIGN INTENT.
2. PUMPS ARE NUMBERED TO REFLECT ORIENTATION OF THE PUMP CONTROL PANEL IN THE BUILDING TO THE PUMPS IN THE WET WELLS.

1 DETAIL - PUMP CONTROL PANEL
SCALE: NO SCALE

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
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CDD	03/07/24	60% DESIGN

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PROJECT NO.
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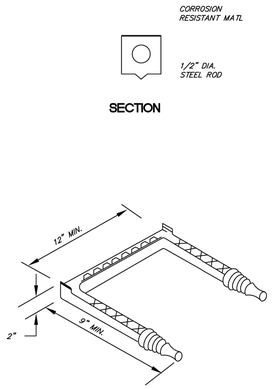


ENCAPSULATED STEEL STEP

NOTES:

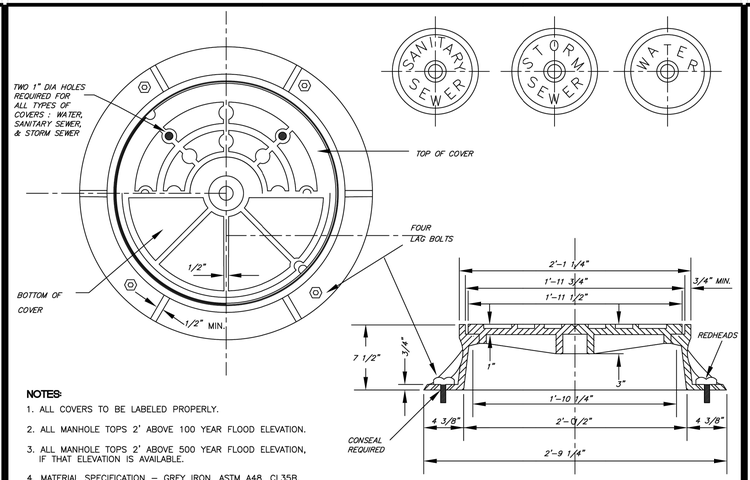
1. VERTICAL SPACING – 16" O.C.
2. STEPS TO PROTRUDE 5" FROM FACE OF STRUCTURE WALL, AND SHALL WITHSTAND A VERTICAL LOAD OF 400 LBS. AND A HORIZONTAL PULL OUT LOAD OF 1000 LBS.

DRAWING NOT TO SCALE

MANHOLE STEPS

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS709	
DATE	REVISIONS
8/28/19	



NOTES:

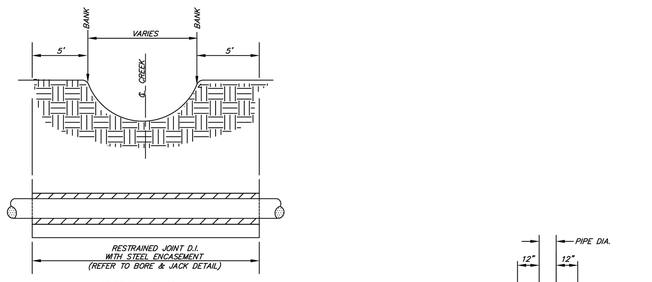
1. ALL COVERS TO BE LABELED PROPERLY.
2. ALL MANHOLE TOPS 2' ABOVE 100 YEAR FLOOD ELEVATION.
3. ALL MANHOLE TOPS 2' ABOVE 500 YEAR FLOOD ELEVATION, IF THAT ELEVATION IS AVAILABLE.
4. MATERIAL SPECIFICATION – GREY IRON, ASTM A48, CL35B, MADE IN USA.

DRAWING NOT TO SCALE

STANDARD MANHOLE RING AND COVER FOR OUTSIDE OF PAVEMENT

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS711	
DATE	REVISIONS
7/24/09	



CROSS SECTION

CONCRETE DETAIL (IF PERMITTED)

NOTES:

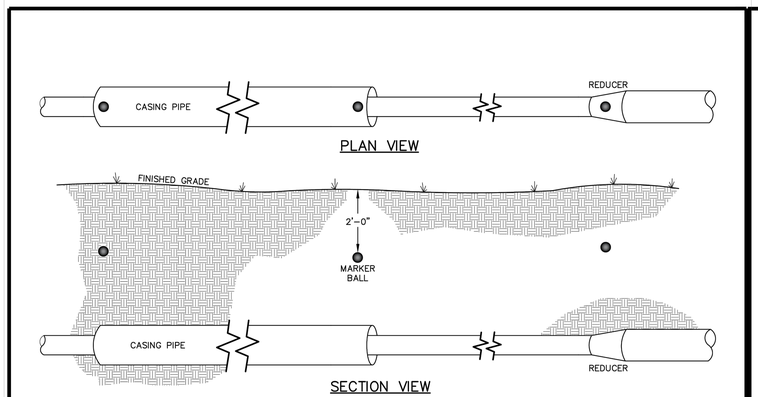
1. TOP OF CASING PIPE MUST BE AT LEAST 1' BELOW SOLID STREAM BOTTOM.
2. CONCRETE ENCASEMENT MAY BE PERMITTED IN CERTAIN CIRCUMSTANCES. SEE CONCRETE DETAIL.
3. IF DUCTILE IRON PIPE USED, IT SHALL BE 401 PROTECT COATING AND PIPE RESTRAINED.
4. IF PVC PIPE USED IT MUST MEET WATERLINE STANDARDS AND RESTRAINED.

DRAWING NOT TO SCALE

STANDARD STEEL ENCASEMENT FOR STREAM CROSSING

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS724	
DATE	REVISIONS
7/24/18	



UTILITY MARKER BALL COLOR
GREEN – SEWER

= NON-PROGRAMMABLE MARKER BALL

NOTES:

1. MARKER BALLS SHALL BE LOCATED ABOVE THE PIPE, 2 FEET BELOW FINISHED GRADE.
2. ADDITIONAL BALLS MAY BE REQUIRED AS DIRECTED BY THE TOWN IN CONGESTED AREAS OR TO MARK AN ATYPICAL ALIGNMENT.

DRAWING NOT TO SCALE

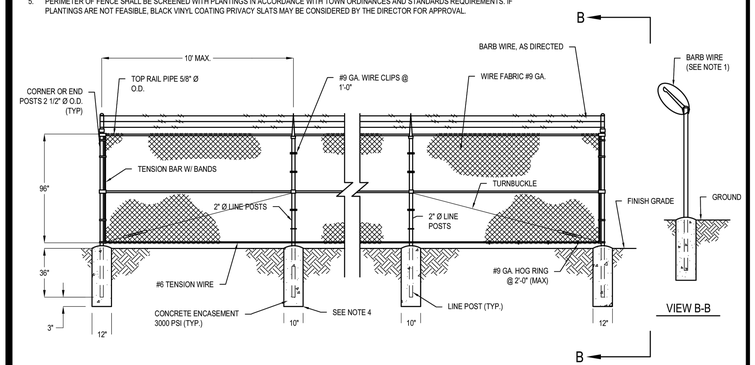
STANDARD UTILITY MARKER BALL LOCATIONS FOR SEWER FORCE MAINS

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS729	
DATE	REVISIONS
2/22/19	

NOTES:

1. ADD 3 STRANDS OF BARB WIRE ALONG THE TOP OF FENCE AS DIRECTED (SEE SPECS).
2. ALL RAILS AND POSTS TO BE SCH. 40 GALV. STEEL PIPE WITH BLACK VINYL COATING.
3. POSTS TO BE SET IN CONCRETE.
4. IF ROCK IS ENCOUNTERED WHEN SETTING POSTS, DRILL HOLES 4-INCHES LARGER IN DIAMETER THAN POSTS AND BACKFILL TO GRADE WITH CLASS "B" CONCRETE.
5. PERIMETER OF FENCE SHALL BE SCREENED WITH PLANTINGS IN ACCORDANCE WITH TOWN ORDINANCES AND STANDARDS REQUIREMENTS. IF PLANTINGS ARE NOT FEASIBLE, BLACK VINYL COATING PRIVACY SLATS MAY BE CONSIDERED BY THE DIRECTOR FOR APPROVAL.



DRAWING NOT TO SCALE

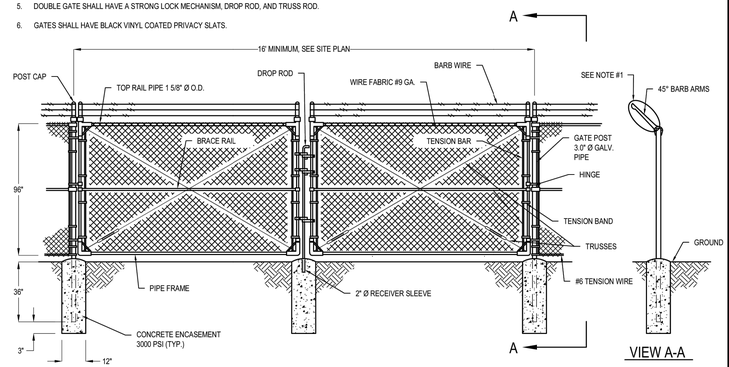
TYPICAL CHAIN LINK FENCE

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS1303	
DATE	REVISIONS
8/31/24	

NOTES:

1. ADD 3 STRANDS OF BARB WIRE ALONG THE TOP OF FENCE AS DIRECTED (SEE SPECS).
2. ALL RAILS AND POSTS TO BE SCH. 40 GALV. STEEL PIPE WITH BLACK VINYL COATING.
3. POSTS TO BE SET IN CONCRETE
4. IF ROCK IS ENCOUNTERED WHEN SETTING POSTS, DRILL HOLES 4-INCHES LARGER IN DIAMETER THAN POSTS AND BACKFILL TO GRADE WITH CLASS "B" CONCRETE.
5. DOUBLE GATE SHALL HAVE A STRONG LOCK MECHANISM, DROP ROD, AND TRUSS ROD.
6. GATES SHALL HAVE BLACK VINYL COATED PRIVACY SLATS.



DRAWING NOT TO SCALE

TYPICAL SECURITY DOUBLE GATE

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS1304	
DATE	REVISIONS
8/31/24	

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
CDD	09/11/24	90% DESIGN
CDD	03/07/24	60% DESIGN

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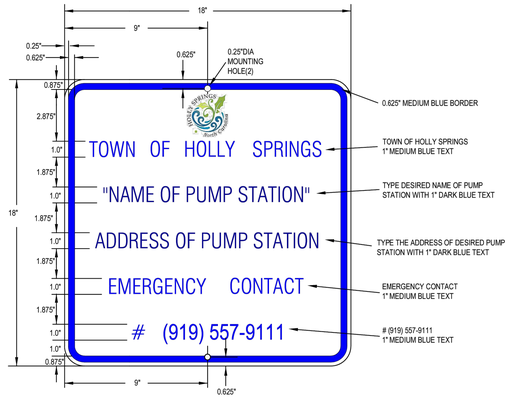


NOTES:

1. 18" x 18" NON-REFLECTIVE 18 GAUGE STEEL
2. TEXT TO BE CENTERED ON SIGN

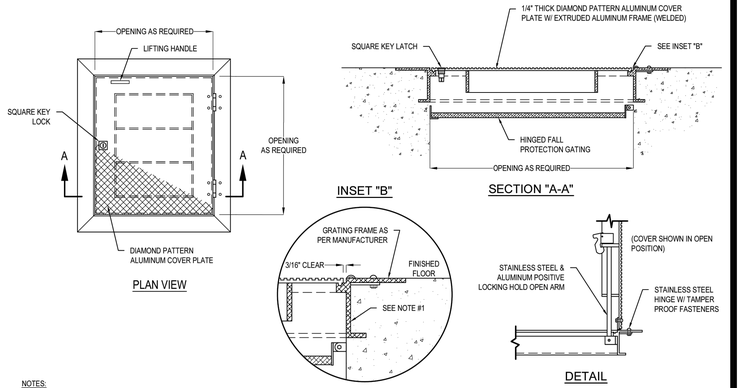
DRAWING NOT TO SCALE

STANDARD PUMP STATION LOCATION SIGN

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS1305

DATE	REVISIONS
7/24/20	
8/31/24	



NOTES:

1. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE OR GROUT SHALL BE COATED WITH BITUMINOUS MATERIAL FOR PROTECTION.
2. HATCHES SHALL BE SINGLE OR DOUBLE HATCH DEPENDING ON OPENING SIZE AND MANUFACTURER'S RECOMMENDATIONS.

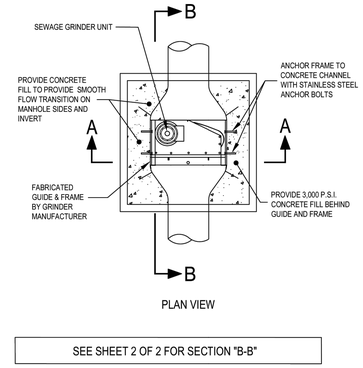
DRAWING NOT TO SCALE

WET WELL HATCH

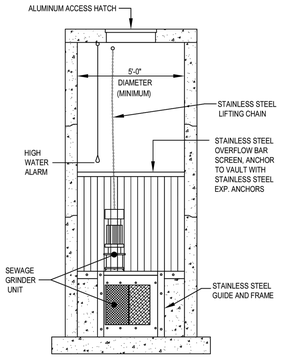
TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS1307

DATE	REVISIONS
8/31/24	



SEE SHEET 2 OF 2 FOR SECTION "B-B"



NOTES:

1. THERE SHALL ONLY BE A SINGLE INFLUENT LINE INTO THE GRINDER VAULT.
2. ALUMINUM ACCESS HATCH SHALL BE SIZED TO ALLOW INSTALLATION AND REMOVAL OF GRINDER UNIT.
3. COAT INTERIOR OF VAULT WITH APPROVED EPOXY OR POLYURETHANE COATING APPLIED PER THE MANUFACTURER'S SPECIFICATIONS. COATINGS SHALL CONFORM TO TOWN OF HOLLY SPRINGS STANDARDS SECTION 13.

1 OF 2

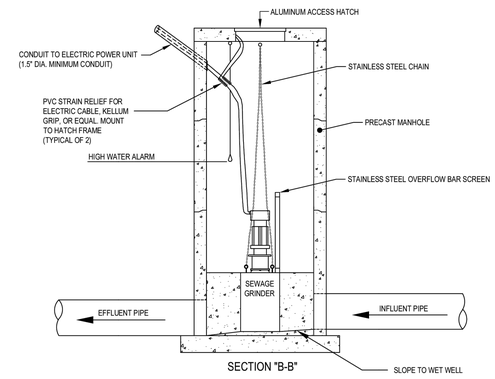
DRAWING NOT TO SCALE

SEWAGE GRINDER VAULT

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS1308

DATE	REVISIONS
8/26/24	
8/27/24	R URDITE
8/31/24	



SEE SHEET 1 OF 2 FOR SECTION "A-A"

NOTES:

1. ALUMINUM ACCESS HATCH SHALL BE SIZED TO ALLOW INSTLLATION AND REMOVAL OF GRINDER UNIT.

2 OF 2

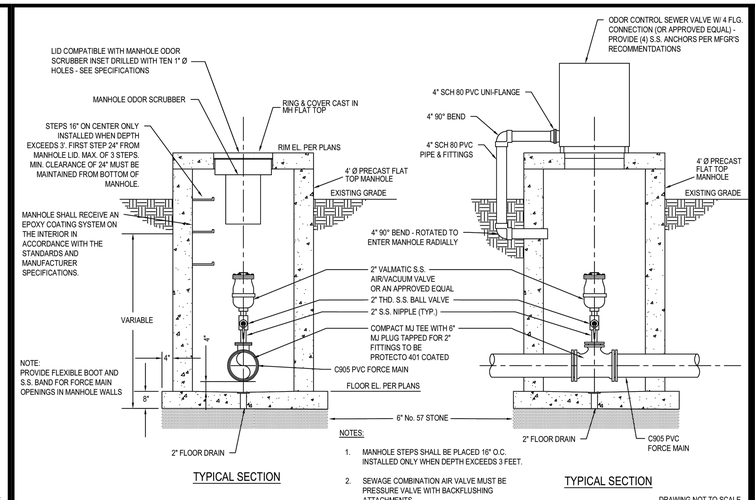
DRAWING NOT TO SCALE

SEWAGE GRINDER VAULT

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS1308

DATE	REVISIONS
8/26/24	
8/27/24	R URDITE
8/31/24	



NOTES:

1. MANHOLE STEPS SHALL BE PLACED 16" O.C. INSTALLED ONLY WHEN DEPTH EXCEEDS 3 FEET.
2. SEWAGE COMBINATION AIR VALVE MUST BE PRESSURE VALVE WITH BACKFLUSHING ATTACHMENTS.

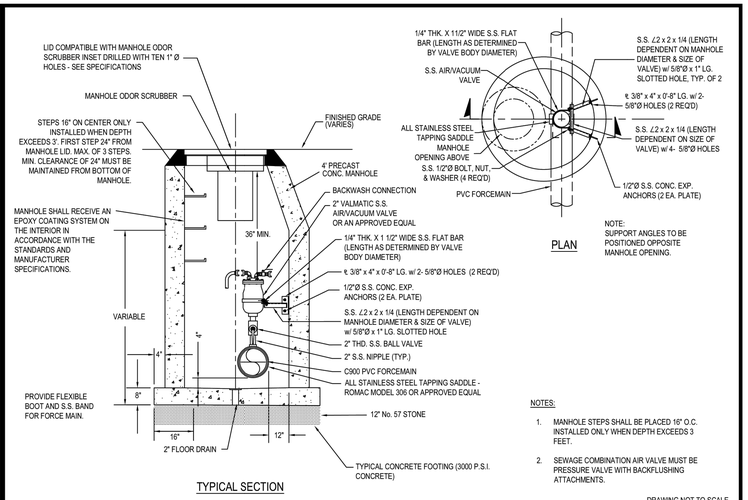
DRAWING NOT TO SCALE

FORCE MAIN AIR RELEASE MANHOLE

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS1310

DATE	REVISIONS
8/31/24	



NOTES:

1. MANHOLE STEPS SHALL BE PLACED 16" O.C. INSTALLED ONLY WHEN DEPTH EXCEEDS 3 FEET.
2. SEWAGE COMBINATION AIR VALVE MUST BE PRESSURE VALVE WITH BACKFLUSHING ATTACHMENTS.

DRAWING NOT TO SCALE

COMBINATION SEWAGE AIR VALVE MANHOLE

WITH ODOR SCRUBBER

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS1311

DATE	REVISIONS
8/31/24	

BY	DATE	REVISED PER OWNER COMMENT
CDD	05/08/25	
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
CDD	09/11/24	90% DESIGN
CDD	03/07/24	60% DESIGN
BY	DATE	REVISION

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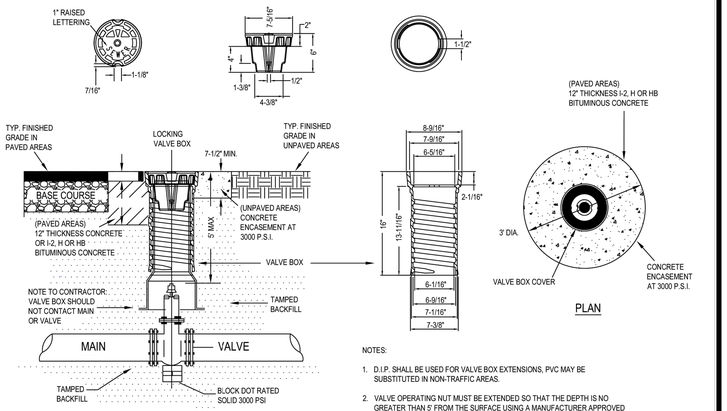
PROJECT NO. HSP2101

SD-2.0



NOTES:

1. D.I.P. SHALL BE USED FOR VALVE BOX EXTENSIONS, PVC MAY BE SUBSTITUTED IN NON-TRAFFIC AREAS.
2. VALVE OPERATING NUT MUST BE EXTENDED SO THAT THE DEPTH IS NO GREATER THAN 5' FROM THE SURFACE USING A MANUFACTURER APPROVED EXTENSION KIT.
3. PRECAST CONCRETE ENCASEMENT IS ALLOWED OUTSIDE OF PAVED AREAS.
4. DOMESTIC MADE IN USA.

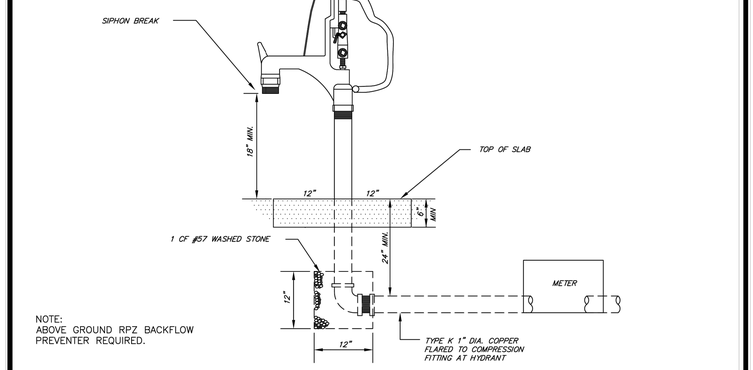
DRAWING NOT TO SCALE

SEWER VALVE BOX INSTALLATION

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS1312

DATE	REVISIONS
8/20/19	
8/27/21	RUM
7/17/23	



NOTE:
ABOVE GROUND RPZ BACKFLOW PREVENTER REQUIRED.

DRAWING NOT TO SCALE

YARD HYDRANT (NONFREEZE)

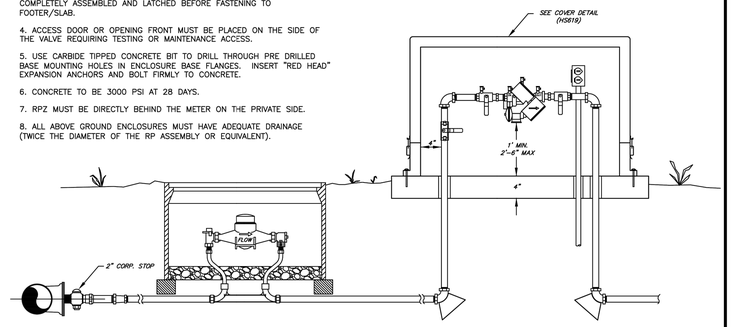
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS602

DATE	REVISIONS
8/30/19	

NOTES:

1. INSTALL VALVE ASSEMBLY IN ACCORDANCE WITH DRAWINGS. BE SURE THAT THE OUTSIDE DIMENSIONS OF THE VALVE ASSEMBLY WILL FIT INTO THE BOX BEFORE SETTING "HOT BOX".
2. PROVIDE GFCI RECEPTACLE, U.L. STND. 943-NEMA3R, INSIDE ENCLOSURE. MOUNT AT LEAST 6" ABOVE DISCHARGE POINT AND NEAR PIPE RISER ON THE HEATER CONNECTION SIDE.
3. WHEN PLACING HOT BOX OVER VALVE ASSEMBLY, BOX SHOULD BE COMPLETELY ASSEMBLED AND LATCHED BEFORE FASTENING TO FOOTER/SLAB.
4. ACCESS DOOR OR OPENING FRONT MUST BE PLACED ON THE SIDE OF THE VALVE REQUIRING TESTING OR MAINTENANCE ACCESS.
5. USE CARBIDE TIPPED CONCRETE BIT TO DRILL THROUGH PRE DRILLED BASE MOUNTING HOLES IN ENCLOSURE BASE FLANGES. INSERT "RED HEAD" EXPANSION ANCHORS AND BOLT FIRMLY TO CONCRETE.
6. CONCRETE TO BE 3000 PSI AT 28 DAYS.
7. RPZ MUST BE DIRECTLY BEHIND THE METER ON THE PRIVATE SIDE.
8. ALL ABOVE GROUND ENCLOSURES MUST HAVE ADEQUATE DRAINAGE (TWICE THE DIAMETER OF THE RP ASSEMBLY OR EQUIVALENT).



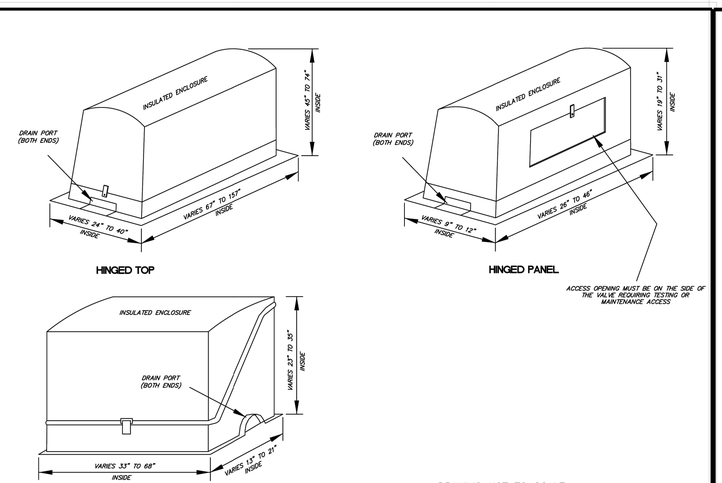
DRAWING NOT TO SCALE

RPZ INSTALLATION FOR COMMERCIAL IRRIGATION METERS

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS618

DATE	REVISIONS
7/24/19	



DRAWING NOT TO SCALE

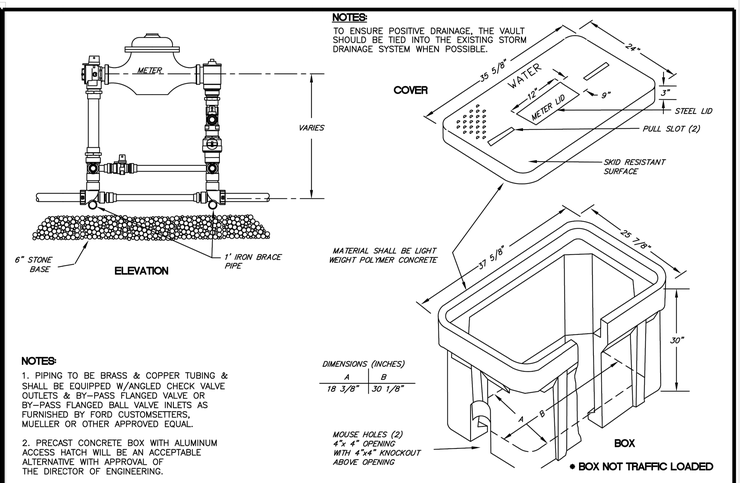
OUTDOOR RPZ SERVICES COVER

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS619

DATE	REVISIONS
8/30/19	

NOTES:
TO ENSURE POSITIVE DRAINAGE, THE VAULT SHOULD BE TIED INTO THE EXISTING STORM DRAINAGE SYSTEM WHEN POSSIBLE.



NOTES:

1. PIPING TO BE BRASS & COPPER TUBING & SHALL BE EQUIPPED W/ANGLED CHECK VALVE OUTLETS & BY-PASS FLANGED VALVE OR BY-PASS FLANGED BALL VALVE INLETS AS FURNISHED BY FORD CUSTOMSETTERS, MUELLER OR OTHER APPROVED EQUAL.
2. PRECAST CONCRETE BOX WITH ALUMINUM ACCESS HATCH WILL BE AN ACCEPTABLE ALTERNATIVE WITH APPROVAL OF THE DIRECTOR OF ENGINEERING.

DIMENSIONS (INCHES)

A	B
18 3/8"	30 1/8"

• BOX NOT TRAFFIC LOADED

DRAWING NOT TO SCALE

STANDARD 2" METER INSTALLATION AND VAULT

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS631

DATE	REVISIONS
3/22/19	

BY	DATE	REVISION
CDD	05/08/25	REVISED PER OWNER COMMENT
CDD	01/31/25	PERMITTING
CDD	01/17/25	TOWN REVIEW
CDD	09/11/24	90% DESIGN
CDD	03/07/24	60% DESIGN

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026481 2025.05.08 16:10:05-04'00' EDWARD O. SASSER, JR. ENGINEER

SEAL NOT VALID UNLESS SIGNED AND DATED

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
2703 Jones Franklin Rd, Ste 201
Cary, NC 27518
Tel 919-481-4342
www.hiepc.com
Firm License No. C-2586

Engineering is our profession.
Service is our passion.

BUSINESS PARK PS & FM IMPROVEMENTS
TOWN OF HOLLY SPRINGS
HOLLY SPRINGS, NC

STANDARD DETAILS

PROJECT NO.
HSP2101

SD-3.0

PROJECT MANUAL

FOR

Business Park Pump Station (PS) & Force Main (FM) Improvements

PROJECT NO. 21-011

May 2025

MAYOR:	**SEAN MAYEFSKIE**
TOWN CLERK:	**LINDA MCKINNEY**
TOWN MANAGER:	**RANDY HARRINGTON**
EXECUTIVE DIRECTOR OF UTILITIES AND INFRASTRUCTURE:	**KENDRA D PARRISH, P.E. CFM**
DEPUTY DIRECTOR OF UTILITIES AND INFRASTRUCTURE:	**RACHEL INGHAM, P.E.**
PROJECT ENGINEER:	**RACHEL JONES**

FINAL 2007

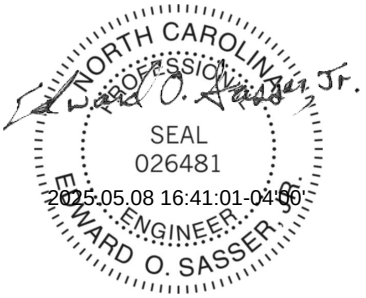
Docusign Envelope ID: 8695CE5B-1E8D-48D4-B951-8B89F51DB72D

TECHNICAL SPECIFICATIONS

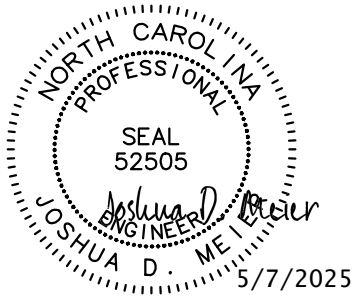
FOR

BUSINESS PARK PS AND FM IMPROVEMENTS

TOWN OF HOLLY SPRINGS



Divisions 1-9 and 31-46 prepared by:
Highfill Infrastructure Engineering, PC
2703 Jones Franklin Road, Suite 201
Cary, North Carolina 27518
Tel 919-481-4342
Firm License No. C-2586



Division 16 prepared by:
Apogee Consulting Group, PA
1151 Kildaire Farm Road
Cary, North Carolina 27511
Tel 919-858-7420
Firm License No. C-1848

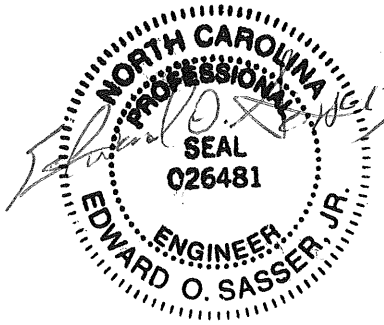
May 2025
HIGHFILL Project No. HSP2101

Prepared by:
Highfill Infrastructure Engineering, P.C.
2703 Jones Franklin Rd, Suite 201
Cary, North Carolina 27518
Tel 919-481-4342
NC Firm License No. C-2586

CERTIFICATION

I HEREBY CERTIFY THAT THE SPECIFICATIONS CONTAINED HEREIN AND THE ACCOMPANYING PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

SIGNED, SEALED, AND DATED THIS 8th DAY OF May, 2025



BY _____
Edward Sasser, P.E.

Project Name: Business Park PS & FM Improvements
Project No.: 21-011

Business Park PS & FM Improvements
Project No. 21-011
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INVITATION TO BID

TOWN OF HOLLY SPRINGS
Holly Springs, North Carolina

MAY 27, 2025

Sealed bids will be received by the Town of Holly Springs until Thursday, June 26, 2025 at 2:00 pm and thereafter immediately opened and read publicly for the Business Park PS & FM Improvements Town of Holly Springs Project No. 21-011. The project is generally described as follows:

> **The replacement of two existing submersible pumps, addition of two additional submersible pumps, bypass pumping, electrical upgrades, generator replacement, site piping and fitting installation, flow meter installation, surge relief, general site improvements, and the installation of approximately 7,400 LF of 16-inch PVC force main and associated air release valves, manholes, and fittings.**

Plans, Specifications, and Contract documents may be seen at the office of the Executive Director of Utilities & Infrastructure, Holly Springs Municipal Bldg., 128 S. Main St., Holly Springs, North Carolina, on the Town's website at www.hollyspringsnc.us (available for download), and at the following electronic plan rooms: Carolina Plan Room, Carolina AGC, iSqFt, Planscope.com (Accent Imaging), PlanHub, Bidclerk, Construct Connect, NC Institute of Minority Economic Development (NCIMED), Dodge Data & Analytics, and HCACarolinas.

REQUIRED: Plan holders are required to sign up for "Construction Bids" notifications at www.hollyspringsnc.us/bids.aspx for further project notifications/addenda. A NON-mandatory pre-bid and site visit meeting shall be held at 1:30 PM on Wednesday, June 11, 2025 at Business Park Pump Station (151 Rough Leaf Lane).

All project questions or requests for clarification should be submitted to the Project Manager, Rachel Jones at Rachel.jones@hollyspringsnc.gov or 919-577-3150.

The project will be funded by public funds from the Town of Holly Springs and Golden LEAF Foundation, therefore; bidding, contract award and bonding requirements shall conform to N.C Statutes for public facilities construction. Minority firms are encouraged to submit proposals.

Award will be made to the lowest, responsive, responsible bidder unless all bids are rejected. The Town of Holly Springs reserves the right to reject any or all bids.

Contractors offering a proposal on this project must be licensed to do the specified type of contracting in the State of North Carolina. The Use of any sub-contractor on this project must be approved by the Engineer. Any bidder that is currently in litigation with the town will be disqualified from bidding.

All bids shall include the entire contract document bound as it was presented for bid, with applicable bidding information filled out. Do not remove sections and resubmit. Each proposal shall be accompanied by a certified check or bid bond in the amount of not less than five percent (5%) of the amount of the total of the itemized bid in the form and subject to the conditions provided in the Instruction to Bidders.

Kendra D. Parrish, PE
Executive Director
Utilities & Infrastructure

INSTRUCTIONS TO BIDDERS

Each proposal shall be submitted in a sealed envelope on the printed form, or exact copies thereof, contained in the Contract Documents. These proposals shall be plainly marked:

"Business Park PS & FM Improvements
Town of Holly Springs Project No. 21-011"

The envelope shall also be marked with the **Bidder's name, address**, North Carolina **contractor license number**, and name and phone number of a contact person. **All bids shall include the entire contract document bound as it was presented for bid, with applicable bidding information filled out. Do not remove section and resubmit.**

The envelope shall show the **date and time of the Bid Opening** in order to guard against premature opening of the Bid.

Deliver bids to: Attn: Brettany DeVolld
Finance Department Front Desk
Town of Holly Springs
128 South Main Street
Holly Springs, NC 27540

Bids submitted by facsimile shall not be accepted.

The Owner may consider non-responsive any Bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all Bids.

Each proposal shall be accompanied by a Bid Bond payable to the Town of Holly Springs for an amount of not less than five percent (5%) of the total amount bid; or in lieu of the Bid Bond, the bidder may offer a certified check in an amount of not less than five percent (5%) of the total amount bid. The Bids and bidder's bond or checks of all bidders may be held for a period of ninety (90) days pending award of the contract. Notification of award of contract shall be evidence of intent to contract and shall extend time for holding the contractor's bid surety for a time mutually agreed between the Town of Holly Springs and the bidder.

Each proposal is required to have a page providing references to include the company name, address, phone number, e-mail and contact name and position and the type of work completed.

AWARDING CONTRACT

"The Town of Holly Springs, in accordance with the provisions of *Title VI of the Civil Rights Act of 1964* (78 Stat. 252) and the Regulations of the Department of Transportation (*49 C.F.R., Part 21*), issued pursuant to such act, hereby notifies all bidders that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the lowest responsible bidder without discrimination on the ground of race, color, or national origin".

Award will be made to the lowest responsible and responsive Bidder for each Contract as soon as practicable, provided that in the selection of equipment or materials, a Contract may be awarded to a responsible Bidder other than the lowest in the interest of standardization or if ultimate economy is clearly evident.

Evaluation of Bids

1. All spaces for lump sum and unit prices in the Bid Form shall be filled in with a number. Spaces left blank will be evaluated as zero ($0.00).
2. Discrepancies between the multiplication of units of Work and Unit Prices will be resolved in favor of the Unit Prices.
3. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
4. Discrepancies between words and figures will be resolved in favor of the words.

The award of the Contract, if it is awarded, will be to the lowest responsive, responsible bidder on the base bid whose qualifications indicate the award will be in the best interest of the Town of Holly Springs. The Town of Holly Springs reserves the right to waive technicalities and/or reject any or all bids.

The Owner will not consider any bid or award of Contract to any person, firm, or corporation who has defaulted in any obligation to the Owner or who, in the opinion of the Owner, failed to perform their work satisfactorily, either as to character or time.

Any bidder that is currently in litigation with the town will be disqualified from bidding.

A conditioned or qualified bid will not be accepted.

Requirements for the submittal information will vary based on the complexity and importance of the product to the project as a whole. Submittals should be prepared in a concise and straightforward manner. Submittals shall clearly identify variances from the specifications. Products that clearly do not meet the requirements of the specifications and plans should not be submitted. Unless noted, products shall be the manufacturer's standard offering, with standard options.

Incomplete submittals, or submittals received after the deadline, shall not be considered.

Submittals are to be delivered to the Engineer at the address indicated in the "Notice To Bidders". The Owner and Engineer shall review all submittals and issue an Addendum to all document holders no later than 7 days prior to the bid opening date, listing the approved products.

Pre-approval of materials or equipment does not, in any manner, preclude the manufacturer from meeting the full requirements of the specifications, including any performance guarantees required, unless specific exceptions are noted in the pre-approval.

No Post-Bid substitutions shall be permitted except as herein provided.

A Performance Bond and a Payment Bond, each in the amount of one hundred percent (100%) of the contract price, with a corporate surety approved by the Town of Holly Springs, will be required for the faithful performance of the contract. Bidders shall provide certification that performance and payment bond sureties are licensed in North Carolina.

Minority Business participation must be documented and submitted with bids, please see Section 00905 in the contract documents for further direction.

Reference Sheet
(To be filled out with each submittal package)

Company Name	Address	Phone	E-mail	Contact person Name	Contact Person Position	Type of Work Completed

- END OF SECTION 00250 -

SECTION 00300
BID PROPOSAL ("Proposal")

TO: THE TOWN OF HOLLY SPRINGS, NORTH CAROLINA ("Owner")

FROM: "BIDDER" _____

ADDRESS _____

_____

DATE OF BID _____, 20___

The Bidder hereby signifies that it is his/her/its intention and purpose to enter into a formal Contract with the Town of HOLLY SPRINGS, North Carolina, to furnish all labor, materials, tools, equipment, apparatus, supplies, and the like required, and to do all the work necessary, for and because of the construction, erection, and/or installation of the proposed "Project":

Business Park PS & FM Improvements

for the Town of HOLLY SPRINGS, North Carolina in accordance with the Contract Documents, including Addenda thereto.** There is deposited, herewith, a certified check in the amount of (must be dollar amount): _____ Dollars ($_____), or a Bid Bond, in the amount of five percent (5%) of the total aggregate amount of the Bid, made payable to the Owner, the same to be refunded to the Bidder under the conditions of and in accordance with the terms of this Proposal, which are as follows:

THAT: The Bidder has carefully examined the Plans and Specifications and all other Contract Documents and fully understands them.

THAT: The Bidder has carefully examined the site of the Project and is familiar with the conditions under which the work, or any part thereof, is to be performed and the conditions which must be fulfilled in furnishing and/or installing, erecting or constructing any or all items of the Project.

THAT: The Bidder shall provide all necessary tools, machinery, equipment, apparatus, and all other means necessary to do all the work and shall furnish all labor, materials and all else required to complete such Contract as may be entered into, in the manner prescribed in and in accordance with the terms of the Specifications and the Contract and in accordance with the true intent and meaning thereof, and in accordance with the Plans and/or Drawings and the requirements of the Consulting Engineers under them, in a first class manner.

[Terms continued on the following page.]

** Fill in appropriate Addenda number(s): Addendum #_____Dated_____
Addendum #_____Dated_____
Addendum #_____Dated_____
Addendum #_____Dated_____
Addendum #_____Dated_____
Addendum #_____Dated_____

THAT: The rights of the Owner and the recommendations of the Consulting Engineers shall not be questioned in the Award of the Contract.

THAT: It is the intention of the Owner to let contracts on the basis of the Bids received in accordance with G.S. 143-129 and in such manner as the Owner may deem to be for the best interests of the Owner.

THAT: The Owner reserves the right to reject any or all proposals.

THAT: The work under each Section will be awarded under one Contract and that the Owner shall have the right to include such item or items as the Owner may deem to be in the best interests of the Owner.

THAT: On being awarded the Contract, the Bidder shall execute a Performance Bond and a Payment Bond, on the forms included herein, each equal to one hundred percent (100%) of the Awarded Contract Price (Contract Sum), as security for the faithful performance of the Contract.

THAT: The Bidder shall submit, in the blank spaces provided, all data, guarantees and other information called for.

THAT: The Bidder shall submit, herewith, drawings, or cuts and Specifications showing and describing in detail the equipment and/or apparatus which the undersigned proposes to furnish.

THAT: This Proposal shall be signed and submitted in the manner prescribed in the Instructions to Bidders.

THAT: Should this Proposal not be accepted by the Owner, the certified check, in the amount of (must be dollar amount): _____ Dollars ($_____) or the five percent (5%) Bid Bond, as applicable, deposited herewith shall be returned to the Bidder.

THAT: Should this Proposal be accepted by the Owner and the Bidder fail or neglect to execute the Contract and furnish the required Bonds within fifteen (15) days after receiving notifications of the acceptance of the Proposal and/or receipt of the formal Contract and Bond forms, the certified check, in the amount of (must be dollar amount): _____ Dollars ($_____), or the Bid Bond, deposited herewith shall be retained by the Owner as liquidated damages, it being understood that the Owner reserves the right to extend the time allowed for executing the Contract and/or furnishing the Bond in its sole discretion.

[Terms continued on the following page.]

THAT: The Bidder shall complete such Contract as may be entered into within the number of consecutive calendar days specified in the Contract from the date of the Notice to Proceed.

THAT: The Bidder proposes to enter into a Contract in accordance with this Proposal, the Plans and Specifications and the Contract Documents included herein, for the prices shown on the following pages.

THAT: The Bidder shall be required to submit a complete detailed itemized unit cost breakdown of the Bid Items on the Itemized Bid Proposal form in Section 00300 along with a computed Lump Sum Bid Price amount with this proposal.

THAT: It is the intent of these Contract Documents to obtain a Contract based on Unit Prices with project awarded based upon the lowest qualified total bid based upon unit prices applied to the estimated quantities. Where a discrepancy exists between words and numbers in the Bid amount, the written words shall govern. Where a discrepancy exists between unit prices and mathematical computations in the Itemized Proposal, the unit prices and quantities in the Itemized Proposal shall govern.

THAT: The successful bidder shall have all proper Bidder licenses and privilege licenses required under North Carolina state laws governing their respective trade(s).

THAT: Notice to Proceed and project available shall occur within 60 days of award of contract by the Town Council.

BID PROPOSAL

GENERAL CONSTRUCTION
FOR THE

Business Park PS & FM Improvements –
Holly Springs, NC

Town of Holly Springs Project 21-011
(the "Project")

ITEMIZED PROPOSAL

The attached itemized list of work items and materials shall be made a part of this contract along with the completed price per unit of work item. The itemized bid proposal shall consist of the full completion of this list supplemented with any work item the contractor deems necessary to complete the project. See Section 01 20 00 – Price and Payment Procedures for pay item descriptions.

Item No.	Description	Estimated Quantity	Unit	Bid Unit Price	Extended Bid Price
1	Mobilization	1	LS	$	$
2	Business Park Pump Station Improvements	1	LS	$	$
3	Electrical Improvements	1	LS	$	$
4	Odor Control System	1	LS	$	$
5	16-Inch PVC Force Main	6,400	LF	$	$
6	16-Inch PVC Force Main – Restrained Joint	1,020	LF	$	$
7	30-Inch Steel Casing Installed by Open-Cut	120	LF	$	$
8	Air Release Valve and 5-ft ID Manhole	8	EA	$	$
9	Fittings	7,000	LB	$	$
10	Select Backfill	240	CY	$	$
11	Rock Excavation	712	CY	$	$
12	Stabilization Stone	267	TON	$	$
13	Temporary Erosion Control Measures	1	LS	$	$
14	SCADA Allowance	1	LS	$ 40,000	$ 40,000
15	Crane Restoration Allowance	1	LS	$ 30,000	$ 30,000
16	Renovation Allowance	1	LS	$ 300,000	$ 300,000
17	Materials Testing Allowance	1	LS	$ 30,000	$ 30,000
				TOTAL BASE BID	$
Alternate Bid Items					
A1	Retain Ex. ATS in Lieu of Replacing	1	LS	$	$
Clearly indicate an Add or Deduct cost by circling choice		Add to Base Bid			Deduct from Base Bid

TOTAL BASE BID PRICE for the construction of the Project complete as indicated by the Contract Documents (in words and figures):

_____Dollars

and _____Cents ($_____)

Bidder_____
(Print)

Low bidder will be selected based on Base Bid. Alternate Bid Item(s) will be added or excluded based on what is in the best interest of the Town.

NOTE: PROPOSAL SIGNATURE REQUIRED ON PAGE 00300-7 ALL PROPOSALS MUST BE PROPERLY EXECUTED TO BE CONSIDERED A VALID BID.

CERTIFIED LIST OF EQUIPMENT/MATERIAL MANUFACTURERS

The Bidder, as part of the procedure for the submission of Bids on the Project, submits the following list of Equipment/Materials Manufacturers to be used in the performance of work to be done on said Project. The list of Manufacturers and all equipment/materials furnished shall be based on requirements of the Contract Documents. Changes to this list after the Bid opening shall only be as approved by the Owner upon request by the Bidder or as required by the Owner based upon review of Bidder's submittals:

EQUIPMENT/MATERIALS	MANUFACTURER
Submersible Pumps	
Ductile Iron Pipe	
PVC Pipe	
Generator	
SUBCONTRACTORS	
Electrical	
SCADA Integrator	
Other	

It is understood and agreed that, if awarded a Contract, the Bidder shall not make any additions, deletions or substitutions to this certified list without the consent of the Owner. Failure to identify a manufacturer for any or all of the items listed shall constitute an entry of one of the manufacturers listed in its respective technical specification.

CERTIFICATION AFFIDAVIT

THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER UNDERSTAND AND AGREE THAT, IF AWARDED A CONTRACT, THIS CERTIFICATION SHALL BE ATTACHED THERETO AND BECOME A PART THEREOF.

_____
[If Bidder is not an individual, enter entity name here]

By: _____
(Signature)

NAME OF SIGNER: _____
(Please Print or Type)

TITLE OF SIGNER:_____
(Please Print or Type)

DATE: _____

BID SECURITY:

Accompanying this Proposal is a (1)_____ in the amount of (2)_____ Dollars ($_____).

NOTE: (1) Insert the words “bank draft,” “certified check,” “bid bond”, “cash”, or “cashiers check”, as the case may be.

(2) Amount must be equal to at least five percent (5%) of the total Bid.

BIDDER’S LICENSE:

The Bidder certifies that (he/she/it) is licensed as a Bidder under the specific North Carolina state law regulating his/her/its particular trade and that the number of the license under which he/she/it now operates is_____.

BIDDER’S CERTIFICATION AS TO ORGANIZATION AND AUTHORITY:

The Bidder certifies that the Affidavit of Organization and Authority, like the other documents attached hereto, form an integral part of the Proposal, and the Bidder acknowledges that the Owner will rely on the information provided therein in reviewing the Proposal and awarding a Contract.

LIQUIDATED DAMAGES:

The Bidder agrees, further, that the Owner may retain those amounts indicated in the Contract from the amount of compensation due the Bidder, under the terms of the Contract, for each and every day that the work remains incomplete and/or unsatisfactory beyond the completion date(s) specified in the Notice to Proceed. This amount is agreed upon as the proper measure of liquidated damages the Owner will sustain, per day, by the failure of the Bidder to complete the work within the stipulated time, and it is not to be construed in any sense as a penalty.

The Bidder shall not have or bring a claim against the Owner, or raise as a defense against the imposition of liquidated damages, other construction purportedly impeding Bidder’s progress or timely project completion.

(SIGNATURE PAGE)

Dated _____, 20___.

_____ (SEAL)
Bidder—Legal Entity

By: _____ (SEAL)
(SIGN HERE)

SEAL-if corporation

_____
Printed Name

_____

_____
Address

(___) _____
Telephone No.

Subscribed and sworn to before me this ___ day of _____, 20___

_____
Notary Public

My Commission Expires:

_____

BID BOND

This is a Bid Bond that is subject to the provisions of Article 3 of Chapter 44A of the North Carolina General statutes.

This Bid Bond is executed on _____, 20__.

The name of the PRINCIPAL is _____ (1)

_____ (2)

The name of the SURETY is _____

_____

The TOWN OF HOLLY SPRINGS, NORTH CAROLINA is the OWNER.

The amount of the Bond is _____

_____ (Dollars) ($_____)

KNOW BY ALL MEN BY THESE PRESENTS, the Principal and Surety above named are hereby held and firmly bound unto the above named OWNER hereinafter called the OWNER in the penal sum of the amount stated above in lawful money of the United States, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the OWNER a certain Bid Proposal, attached hereto and hereby made a part hereof to enter into a Contract in writing, for the construction of:

Business Park PS & FM Improvements – Holly Springs, NC as described by a document entitled "Project Manual for Business Park PS & FM Improvements, Project No. 21-011 dated, May 9, 2025 by the Town of Holly Springs

NOW, THEREFORE

(a) If said Bid Proposal shall be rejected; or in the alternate,

(b) If said Bid Proposal shall be accepted and the Principal shall execute and deliver a Contract in the form of Contract attached hereto (properly completed in accordance with said Bid Proposal) and shall furnish a bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid Proposal, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bid Bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid Proposal; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

ATTEST:

(Principal) Secretary (SEAL)	Principal BY: _____ (3) (Address)
Witness as to Principal (Address)	

ATTEST:

	Surety
N. C. Resident Agent (SEAL)	By: _____ _____(4) (Name) (Address) (Phone Number)
Witness as to Surety (Address)	

(1) Insert the correct name of Principal.
(2) Insert whether the Principal is a corporation, a partnership, a limited liability company or an individual.
(3) If Principal is a partnership, all partners should execute the Bid Bond. If Bidder is a limited liability company, all managers (or all members, if the company is member-managed) should execute the Bond.
(4) Provide contact name, address and phone number for bid bond surety.

POWER OF ATTORNEY
(Attach)

BIDDER'S CERTIFICATES
AFFIDAVIT OF ORGANIZATION AND AUTHORITY
SWORN STATEMENT

STATE OF _____)

COUNTY OF _____)

_____ being first duly sworn on oath deposes and says that the Bidder on the attached Bid Proposal is organized as indicated below and that all statements herein made are made on behalf of such Bidder and that this deponent is authorized to make them.

(Fill Out Applicable Paragraph)

CORPORATION:

The Bidder is a corporation organized and existing under the laws of the State of _____, it operates under the legal name of _____, and the full names of its officers are as follows:

President _____
Secretary _____
Treasurer _____
Manager _____

and it does _____ have a corporate seal. The _____ is/are authorized to sign construction proposals and contracts for the company by action of its Board of Directors taken _____, a certified copy of which is hereto attached. (Strike out this last phrase if not applicable.)

PARTNERSHIP:

The Bidder is a [limited/general] partnership consisting of individual/corporate partners as follows:

General Partners	Limited Partners

The partnership does business under the name of :_____

LIMITED LIABILITY COMPANY:

The bidder is a [member-managed/manager-managed] limited liability company consisting of the following individual/corporate members/managers:

Managers	Members

INDIVIDUAL:

The Bidder is an individual whose full name is:

_____

and if operating under a trade name, said trade name is as follows:

_____

The business address of the Bidder is: _____
_____
_____

Its phone number is: _____

The contact person for this Proposal is: _____

_____
Bidder

By: _____

Subscribed and sworn to before me this _____ day of _____, 20__.

_____ _____
Notary Public County

My Commission Expires:

_____

EQUAL EMPLOYMENT OPPORTUNITY ADDENDUM

During the performance of the Contract the Bidder agrees as follows:

a. The Bidder shall not discriminate against any employee or applicant because of race, color, religion, sex, or national origin. The Bidder shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to race, color, religion, sex, or national origin. Such action shall include but not be limited to the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of the nondiscrimination clause.

b. The Bidder shall, in all solicitations or advertisements for employees placed by or on behalf of the Bidder, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

c. The Bidder shall send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract understanding, a notice, to be provided, advising the labor union or worker's representative of the Bidder's commitments under the Equal Employment Opportunity Section of the Contract, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

d. In the event of the Bidder's noncompliance with the nondiscrimination clauses of the Contract or with any of such rules, regulations, or orders, the Contract may be canceled, terminated, or suspended in whole or in part and the Bidder may be declared ineligible for further OWNER contracts.

e. The Bidder will include the provisions of this Addendum in every subcontract or purchase order unless exempted by rules, regulations, or orders of the OWNER so that such provisions will be binding upon each Subcontractor or vendor.

(Use the following form for execution by a CORPORATION):

_____
Corporate Name

ATTEST:

_____ BY:_____
(Assistant) Secretary (Vice) President

(CORPORATE SEAL)

(Use the following form for execution by a PARTNERSHIP):

_____(SEAL)
Partnership Name

BY: _____(SEAL)
General Partner

(Use the following form for execution by a LIMITED LIABILITY COMPANY):

_____(SEAL)
Company Name

BY:_____(SEAL)
Manager/Member

(Use the following form for execution by an INDIVIDUAL):

BY:_____(SEAL)

WITNESS:

_____

Subscribed and sworn to before me this _____ day of _____, 20__.

_____ _____
Notary Public County

My Commission Expires:

_____

QUALIFICATIONS OF BIDDERS

In order to assist the Owner in determining whether the Bidder is qualified to perform the Work, as set forth in the Contract Documents, the Bidder shall furnish the following information.

1. List of references who are qualified to judge as to his financial responsibility and his experience in work of similar nature to that bid upon:

2. List of previous contracting experience, including dollar values of contracts:

3. List of facilities or equipment that is available for use:

4. Name, residence, and title of the individual who will give personal attention to the work:

5. Financial Statement:

ASSETS

CURRENT ASSETS:

Cash	$_____	
Notes and Accounts Receivable	_____	
Inventories	_____	
PLANT ASSETS:		
Real Estate	$_____	
Machinery	_____	
Good Will, Patents, etc.	_____	$ _____ Total Assets

LIABILITIES:

Notes Payable	$_____	
Accounts Payable	_____	
Accrued Wages	_____	
Other Liabilities	_____	$ _____ Total Liabilities
	EXCESS OF ASSETS OR NET WORTH	$ _____

6. List all pending claims or lawsuits, and any lawsuit within the last 10 years, filed by or against the Bidder, and describe the resolution of each claim or lawsuit:

Claim	Date of Claim	Resolution, if any

The existence of unresolved claims against Bidder may disqualify the Bidder from making a Bid Proposal and entering into a Contract.

Notes:

A. The above is a suggested form for the Financial Statement, but the Bidder is not required to follow the form explicitly. The Financial Statement submitted must clearly show to the satisfaction of the Owner the Bidder's current financial condition. The Owner reserves the privilege of requiring additional information as to financial responsibility of the Bidder prior to awarding Contract.

B. Bidder shall attach additional pages, if necessary, in order to complete the required information.

C. The Bidder shall submit detailed information required for above items 1 through 4 with his Bid Proposal package and, at the discretion of the Bidder, the information required under Item 5 may be furnished after Bid Proposals are received if required by the Owner and Engineer to evaluate the financial qualifications of a prospective Bidder.

AFFIDAVIT OF
STATEMENT OF NON-COLLUSIVE

State of _____)
) ss.
County of _____)

_____being first duly sworn, deposes and says that:

(1) He/she is the _____
(Owner, Partner, Officer, Representative or Agent)
of _____, the BIDDER that has submitted the attached BID PROPOSAL;

(2) He is fully informed respecting the preparation and contents of the attached BID PROPOSAL and of all pertinent circumstances respecting such BID PROPOSAL;

(3) Such BID PROPOSAL is genuine and is not a collusive or sham BID PROPOSAL;

(4) Neither the said BIDDER nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other BIDDER, firm, or person to submit a collusive or sham BID PROPOSAL in connection with the Contract for which the attached BID PROPOSAL has been submitted; or to refrain from bidding in connection with such Contract; or have in any manner, directly or indirectly, sought by agreement or collusion, or communication, or conference with any BIDDER, firm, or person to fix the price or prices in the attached BID PROPOSAL or of any other BIDDER, or to fix any overhead, profit, or cost elements of the BID PROPOSAL price or the BID PROPOSAL price of any other BIDDER, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against The Town of HOLLY SPRINGS, or any person interested in the proposed Contract;

(5) The price or prices quoted in the attached BID are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the BIDDER or any other of its agents, representatives, owners, employees or parties in interest, including this affidavit.

_____
BIDDER

BY _____

ITS _____
(Title)

Subscribed and sworn to before me this _____ day of _____, 20__.

My commission expires _____

END OF AFFIDAVIT

State of North Carolina AFFIDAVIT A – Listing of Good Faith Efforts

County of _____

(Name of Bidder)

Affidavit of_____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- ☐ **1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- ☐ **2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- ☐ **3** – **(15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- ☐ **4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ☐ **5** – **(10 pts)** Attended prebid meetings scheduled by the public owner.
- ☐ **6** – **(20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- ☐ **7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ☐ **8** – **(25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ☐ **9** – **(20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ☐ **10** - **(20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer:_____

Signature:_____

Title:_____

SEAL

State of_____, County of_____

Subscribed and sworn to before me this_____day of _____20___

Notary Public_____

My commission expires _____

State of North Carolina --AFFIDAVIT B-- Intent to Perform Contract with Own Workforce.

County of _____

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____

_____ contract.
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement. The Bidder agrees to make a Good Faith Effort to utilize minority suppliers where possible.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

SEAL

State of _____, County of _____ Subscribed and sworn to before me th

Notary Public _____

My commission expires _____

State of North Carolina - AFFIDAVIT C - Portion of the Work to be Performed by HUB Certified/Minority Businesses

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the portion of the work to be executed by HUB certified/minority businesses as defined in GS143-128.2(g) and 128.4(a),(b),(e) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit.
This affidavit shall be provided by the apparent lowest responsible, responsive bidder within **72 hours** after notification of being low bidder.

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

_____
(Project Name)

Project ID# 2047 _____ Amount of Bid $_____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.
Attach additional sheets if required

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

SEAL

Signature: _____

Title: _____

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____, 20__

Notary Public _____

My commission expires _____

State of North Carolina AFFIDAVIT D – Good Faith Efforts

County of _____

(Note this form is to be submitted only by the apparent lowest responsible, responsive bidder.)

If the goal of 10% participation by HUB Certified/ minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

_____
(Project Name)

Project ID# 2047 Amount of Bid $_____

I will expend a minimum of _____% of the total dollar amount of the contract with HUB certified/ minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below. (Attach additional sheets if required)

Name and Phone Number	*Minority Category	**HUB Certified Y/N	Work Description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

Examples of documentation that may be required to demonstrate the Bidder's good faith efforts to meet the goals set forth in these provisions include, but are not necessarily limited to, the following:

A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.

B. Copies of quotes or responses received from each firm responding to the solicitation.

C. A telephone log of follow-up calls to each firm sent a solicitation.

D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.

E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.

F. Copy of pre-bid roster

G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.

H. Letter detailing reasons for rejection of minority business due to lack of qualification.

I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Pursuant to GS143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

SEAL

State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20 _____

Notary Public _____

My commission expires _____

NONDISCRIMINATION CLAUSE

It is specifically agreed as part of the consideration of the signing of this Bid Proposal, and the resulting execution of a Contract, that the parties hereto, their agents, officials, employees or servants shall not discriminate in any manner on the basis of age, handicap, race, color, creed, gender, religious affiliation, or national origin with reference to the subject matter of the Contract, no matter how remote.

This provision, being incorporated for the benefit of the Town of HOLLY SPRINGS and its residents, may be enforced as set out in the ordinances of the Town of HOLLY SPRINGS, enforcement of this provision shall be by action for specific performance, injunctive relief, or other remedy as by law provided.

This provision shall be binding on the successors and assigns of the parties hereto with reference to the subject matter of the Contract.

(Use the following form for signatures by a CORPORATION):

_____
Corporate Name

ATTEST:

_____ BY:_____
(Assistant) Secretary (Vice) President

_____ _____
(Printed Name) (Printed Name)

(Corporate Seal)

(Use the following form for signatures by a PARTNERSHIP):

_____ _____(SEAL)
WITNESS Partnership Name

_____ BY:_____(SEAL)
(Printed Name) General Partner

(Use the following form for signatures by a LIMITED LIABILITY COMPANY):

_____	_____(SEAL)
WITNESS	Company Name
_____	BY:_____(SEAL)
(Printed Name)	Manager/Member

(Use the following form for signatures by an INDIVIDUAL):

_____(SEAL)

_____
(Printed Name)

_____
WITNESS

_____
(Printed Name)

Subscribed and sworn to before me this _____ day of _____, 20__.

_____	_____
Notary Public	County

My Commission Expires:

_____

NOTICE OF AWARD

TO: CONTRACTOR/BIDDER:_____

ADDRESS:_____

_____

FROM: Town of Holly Springs
PO Box 8
Holly Springs, NC 27540

OWNER: Town of HOLLY SPRINGS
Engineering Department
HOLLY SPRINGS, North Carolina

PROJECT:

Business Park PS & FM Improvements – Holly Springs, NC
Project No. 21-011

You are hereby notified that the Owner has considered the Bid Proposal submitted by you for the above-described project in response to its Notice to Bidders dated _____.

It appears that it is to the best interest of said Owner to accept your Bid Proposal in the amount of: _____Dollars ($_____). You are therefore hereby notified that your Bid Proposal has been accepted for Business Park PS & FM Improvements Project.

The Bidder is required by as a condition of its Award of the Contract to execute and deliver the formal Contract with the Owner and to furnish the required Bidder's Performance and Payment Bonds within fifteen (15) days from the date of the delivery of this Notice to you.

If you fail to execute said Contract and to furnish said Bonds within fifteen (15) days from the date of delivery of this Notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid Proposal as abandoned and to award the work covered by your Bid Proposal to another bidder, or to readvertise the work or otherwise dispose thereof as the Owner may see fit.

Dated this ___day of _____, 20__.

Town of HOLLY SPRINGS, North Carolina

By: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged this _____day of _____, 20_____.

_____
Bidder

By: _____

Title: _____

- END OF SECTION 00300 -

SECTION 00400
ALTERNATES

PART 1 - GENERAL

1. DESCRIPTION OF REQUIREMENTS

A. Submit with the bid, in the spaces provided on the Bid Form, alternate bids stating the price bid to perform the additional, or substitute alternate work scheduled below. The Alternate Bid amount is not included in the Base Bid amount and will not be considered in the determination of the low Bidder. The Owner reserves the right to accept or reject the alternate bid.

2. SELECTION OF ALTERNATES

A. In accepting an alternate bid, the Owner assumes that the bidder has examined the site drawings, architectural drawings, specifications, and is aware of all adjustments of affected work necessary to accomplish the stated desired results, whether or not all such adjustments are described within the Schedule of Alternate Bids.

B. Materials and work shall conform to the applicable sections of the specifications and to typical details on the drawings for the type of work involved.

3. RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions, Special Provisions and other Division - Specification Sections, apply to this Section.

4. SUMMARY

A. This Section specifies administrative and procedural requirements for Alternate Bids.

B. Definition: An alternate bid is an amount proposed by Bidder and stated on the Bid Form for construction activities defined in the Bidding Requirements that may be added to, or substituted for certain of the Base Bid work items as identified in the Alternate Bid Schedule. The alternate bid amount(s) will be used as an “add to” the BASE BID price or a substitute for certain of the items in the base bid total, thereby modifying the total bid amount accordingly. The Total Bid amount will be determined once the Owner decides whether to accept the alternate bid price for the corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in Contract Documents, or not. Once again, the Alternate Bid amount will not be considered in the determination of the low bidder..

C. Coordination: Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project.

D. Notification: Immediately following the award of the Contract, prepare and distribute to each party involved, notification of the status of each Alternate. Indicate whether Alternate Bids have been accepted, rejected, or deferred for consideration at a later date. Include a complete description of negotiated modifications to Alternate Bids.

E. Schedule: A "Schedule of Alternate Bids" is included at the end of this Section. Specification Sections contain requirements for materials and methods necessary to achieve the Work described under each Alternate Bid.

1. Include as part of each Alternate Bid, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate Bid.

5. SCHEDULE OF ALTERNATE BIDS

A. GENERAL

1. The description of the Alternate Bids indicated is understood to be incomplete and abbreviated, and does not necessarily detail the full range of materials and processes needed to complete the work for each alternate, but is intended to imply the scope of such work. Coordinate related work and modify surroundings work as required to properly integrate with the work of each alternate.

B. ALTERNATE BIDS

1. See the Itemized Bid Proposal in Section 00300 – Bid Proposal for alternate bid items.
2. See Section 01 20 00 – Price and Payment Procedures for additional alternate bid item description.

SECTION 00500
AGREEMENT (CONTRACT)

INSTRUCTIONS TO CONTRACTORS AND REQUIREMENTS AS TO FORM FOR TOWN OF HOLLY SPRINGS, NC AGREEMENTS

DO NOT REMOVE FROM AGREEMENT

Please observe the following in executing the attached Agreement:

1. The Owner may contract with four types of legal entities.

   (a) If the Agreement is with an individual, that individual should sign the Agreement exactly as his/her name is set out. If the Agreement is with an individually-owned business, the Agreement should be with the individual owner, and not the named business.

   (b) Execution on behalf of a corporation should be by the president or a vice president, attested by the corporate secretary, with the corporate seal affixed. An official other than president or vice president should attach documentation of his/her authority to execute and bind the corporation.

   (c) If the Agreement is with a partnership, all general partners of the partnership should execute the Agreement unless an authorized partner is designated to execute, in which case documentation of such authorization should be attached.

   (d) If the Agreement is with a limited liability company, all managers of the limited liability company should execute the Agreement. If the limited liability company is member-managed, all members should sign the Agreement. If only certain manager(s) or member(s) of the limited liability company are authorized to execute the Agreement, documentation of such authorization should be attached.

2. After signing the Agreement, the appropriate notary's acknowledgement, in the individual, corporate or partnership form should be completed.

3. The Performance Bond and Payment Bond should be attached to the Agreement package. They should be signed by the Contractor, and its signature should be acknowledged with the appropriate acknowledgement form. Next, the Bonds, in approved form, must be signed by the authorized agent of the Surety Company issuing the Bonds, and an executed Power of Attorney document authorizing the agent to sign must accompany the Bond Documents.

4. The Agreement and Bonds should not be dated, except by the last person executing the Agreement, normally the Town Clerk.

5. The Bid Form and all other documents submitted with the Bid shall be included with the Agreement.

6. Bid Proposal: Complete the Acceptance of Notice section on the last page of this document.

7. Page 00500-3: Fill in the Contractor name and address.

8. Pages 00500-6 through 00500-9: Choose the appropriate signature page and complete it in its entirety.

9. Pages 00500-10 through 00500-15: Complete in their entirety.

10. Page 00500-17: Certificate of Insurance. The General Conditions of the Contract, as modified by the Supplementary Conditions and the Special Conditions, require the Certificate of Insurance to include the Indemnification Agreement on the reverse side of the Certificate. All parties required to be named as additional insured parties by the Contract Documents in connection with the attached Agreement shall be named on the Certificate of Insurance for each policy.

11. Most Certificates of Insurance state under the cancellation clause that "the issuing company will endeavor to mail 30 days written notice to the ..." and "but failure to mail such notice shall impose no obligation or liability of any kind upon the Company, its agents or representatives". If your certificate states this, the words "endeavor to" and "but failure to mail such notice shall impose no obligation or liability of any kind upon the Company, its agents or representatives" must be stricken in order to comply with the Contract Documents.

12. Four copies of the Agreement are sent to the Contractor. The original and duplicates should be signed and returned to the Engineer or Architect for signature by the Owner, after which one duplicate will be returned to the Contractor and one copy will be sent to the Contractor's Bonding Company(ies).

13. Failure to fully complete all four sets of the Agreement will cause delays in the approval by the Owner and therefore delay the issuance of the Notice to Proceed.

AGREEMENT

This Agreement (the "Agreement") is made this ___ day of_____, in the year 20___, by and between the Town of Holly Springs, North Carolina, (the "Owner") and _____ of _____, (the "Contractor").

WITNESSETH

THAT, WHEREAS, an Award of Contract (the "Award") for:

Business Park PS & FM Improvements – Holly Springs, NC
Project No. 21-011

as prepared by Highfill Infrastructure Engineering, P.C. (hereinafter called "Engineer's Consultant"), has recently been awarded to the Contractor by the Owner.

AND WHEREAS, the work to be performed by the Contractor or its subcontractors, and the labor, materials, equipment, apparatus, and supplies to be provided in connection therewith (collectively, the "Work") is more particularly described in the Proposal (the "Proposal") attached hereto.

AND WHEREAS, the aggregate cost of the Work (referred to as either the "Contract Price" or the "Contract Sum") and the individual prices and rates of the various components of the Work that together comprise the Contract Price, are more particularly described in the Proposal.

AND WHEREAS, it was one of the conditions of said Award that a formal contract should be executed by and between the Owner and the Contractor, evidencing the terms of said Award.

NOW THEREFORE, THIS AGREEMENT FURTHER WITNESSETH THAT the Owner and the Contractor represent, warrant, covenant and agree as follows:

It is agreed and understood that the terms and conditions of the following documentation of are a part of and parcel to this Agreement to the same extent as if incorporated herein in full:

> Project Manual for Project No. 21-011 Business Park PS & FM Improvements;; Standard General Conditions of the Construction Contract (EJCDC Document No. 1910-8, 1996 edition), as amended, revised, and supplemented by the Supplementary Conditions (the "Supplementary Conditions") and the Special Conditions (the "Special Conditions") thereto (as so amended, revised and supplemented, the "General Conditions") or 2012 NCDOT Standard Specifications for Roads and Structures.

The Contractor hereby covenants and agrees with the Owner that it will, for a sum equal to the Contract Price, well and faithfully perform, provide and execute the Work in accordance with each and every one of the conditions, covenants, stipulations, terms and provisions contained in the Notice to Bidders/Invitation to Bid, the Instructions to Bidders, the Proposal, the Plans, the Specifications, the General Conditions and the Contract Documents (as that term is defined in the General Conditions), all of which are a part of and parcel to this Agreement to the same extent as if incorporated herein in full.
And the Owner does hereby covenant and agree with the Contractor that it will pay to the Contractor, when due and payable under the terms of the Contract Documents and the Award, the Contract Price, and that it will well and faithfully comply with and perform each and every obligation imposed upon it by said Contract Documents and the terms of said Award.

The Contractor shall commence the Work on the commencement date specified in a written order of the Owner (the "Notice to Proceed"). The Work shall be **finally and fully completed in the manner and times described in Table 1 below**, so that it is ready for final payment, as evidenced by the Engineer's or the Architect's written recommendation. In the event that the Work is not completed to the standards and degrees required by the Contract Times, or either of them, liquidated damages shall be assessed against the Contractor for each day of delay as described herein below.

LIQUIDATED DAMAGES

The parties recognize and acknowledge that Owner will suffer financial losses if the Work is not completed as required within the Contract Times. They also recognize and acknowledge that the damages caused by the contractor's delays are difficult to ascertain and that the expense and difficulty to both parties in proving or contesting the amounts of those losses would be substantial. Instead of requiring proof of those amounts, it is agreed that Contractor shall be liable for and shall pay owner the following amounts under owner's damages, and engineering charges, all as liquidated damages, and not as a penalty in the event the Work remains incomplete at the end of the contract time specified in the Notice to Proceed.

The Contractor agrees further that the Owner may retain those amounts indicated below from the amount of Compensation due the Contractor for each day that the work remains incomplete beyond the completion date specified in the Notice to Proceed. Payment by the Owner to the Contractor in lieu of retainage does not constitute a waiver by the Owner. This amount is agreed upon as the proper measure of liquidated damages the Owner will sustain, per day, by the failure of the undersigned to complete the work within the stipulated time, and it is not to be construed, in any sense, as a penalty. The parties agree this is a reasonable amount.

No Contractor shall have a claim against the Owner as a result of a third party's lack of progress or project completion.

Table 1 - Time for Performance

Contract	Number of days	Owner's Damages	Engineering Charges	Total Liquidated Damages
From NTP to Substantial Completion	390 days	$300 */day*	*$500 /day*	$800 */day*
From Substantial Completion to Final Completion	30 days	$200 */day*	*$300 /day*	$500 */day*

Payment of the charges described herein shall not excuse or relieve the Contractor for any other liability under the Contract Documents for delay in the progress schedule of the Work, and all other penalties imposed on the Contractor and remedies available to the Owner under the Contract Documents shall remain in full force and effect.

IN WITNESS WHEREOF, said Contractor and Owner, being duly authorized, have caused these presents to be signed in their names as of the day and year first above written.

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

By: _____

Name: _____

Title: _____

ATTEST:

By: _____

Name: Linda McKinney

Title: Town Clerk

TOWN OF HOLLY SPRINGS,
a North Carolina municipality

By: _____

Name: Randy Harrington

Title: Town Manager

(SEAL)

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public of _____ County, State of _____, do hereby certify that _____ personally came before me this day and acknowledged that he/she is the Town Clerk of the Town of Holly Springs, a North Carolina municipality, and that, by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by its Town Manager, sealed with its seal, and attested by himself/herself as its Town Clerk.

Witness my hand and official seal, this the _____ day of _____, 20____.

_____
Notary Public

My Commission Expires: _____

[OFFICIAL SEAL]

[Contractor's Signature, if individual(s)]

CONTRACTOR:

_____ (SEAL)

_____ (SEAL)

_____ (SEAL)

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public of _____ County, State of _____, do hereby certify that _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal, this the _____ day of _____, 20__.

_____
Notary Public

My Commission expires: _____

[OFFICIAL SEAL]

IMPORTANT

NOTE: If Contractor is an individual, his/her signature shall be placed above. The signature of the Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment.

[OR: Contractor's Signature, if a corporation]

CONTRACTOR:

_____

a _____ corporation

ATTEST:

_____

_____ Secretary

(SEAL)

By:_____

Name: _____

Title: _____ President

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public of _____ County, State of _____, do hereby certify that _____ personally came before me this day and acknowledged that he/she is _____ Secretary of _____, a _____ corporation, and that, by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by its _____ President, sealed with its corporate seal, and attested by himself/herself as its _____ Secretary.

Witness my hand and official seal, this the _____ day of _____, 20__.

_____

Notary Public

My Commission Expires: _____

[OFFICIAL SEAL]

IMPORTANT

NOTE: If the Contractor is a Corporation, the legal name of the Corporation shall be set forth above, together with the signature of the officer or officers authorized to sign Contracts on behalf of the Corporation. If the signature is by an agent other than an authorized officer of the Corporation, a Resolution must be attached hereto. The signature of the Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment.

[OR: Contractor's Signature, if a partnership]

CONTRACTOR:
_____,
a [general/limited] partnership (SEAL)

By:_____(SEAL)
Name: _____
Title: General Partner

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public of _____ County, State of _____, do hereby certify that _____, General Partner of _____, a _____ [general/limited] partnership, personally appeared before me this day and acknowledged the due execution of the foregoing instrument as his/her act and deed and as the act and deed of the partnership.

Witness my hand and official seal, this the _____ day of _____, 20__.

_____
Notary Public

My Commission Expires: _____

[OFFICIAL SEAL]

IMPORTANT

NOTE: If Contractor is a partnership, the true name of the firm shall be set forth above, together with the signatures of all the general partners. If the signature is by an agent other than a general partner, a Resolution must be attached hereto. The signature of the Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment.

[OR: Contractor's Signature, if a limited liability company]

CONTRACTOR:

_____,
a limited liability company (SEAL)

By:_____(SEAL)
Name: _____
Title: Member/Manager

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public of _____ County, State of _____, do hereby certify that _____ a [Member/Manager] of _____, a _____ limited liability company, personally appeared before me this day and acknowledged the due execution of the foregoing instrument as his/her act and deed and as the act and deed of the company.

Witness my hand and official seal, this the _____ day of _____, 20___.

_____
Notary Public

My Commission Expires: _____

[OFFICIAL SEAL]

IMPORTANT

NOTE: If Contractor is a limited liability company, the true name of the firm shall be set forth above, together with the signatures of all the managers. If the signature is by an agent other than all of the managers of the limited liability company (or all of the members, if the company is member-managed), a Resolution must be attached hereto. The signature of the Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment.

PERFORMANCE BOND

This Bond is executed on _____, 20___.

The name of the PRINCIPAL is_____(1)

a _____(2)

The name of the SURETY is _____

_____

The TOWN OF HOLLY SPRINGS, NORTH CAROLINA is the CONTRACTING BODY.

The amount of the Bond is_____

_____Dollars ($_____)

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL and SURETY above named, are held and firmly bound unto the above named CONTRACTING BODY, hereinafter called the "Contracting Body", in the penal sum of the amount stated above in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the Principal entered into a certain Agreement with the Contracting Body, dated the ____day of _____, 20___ for work described by Plans and Specifications prepared by Town of Holly Springs, herein called and referred to as the "Engineers", a copy of said Agreement is hereto attached and made a part hereof for the construction of:

Business Park PS & FM Improvements – Holly Springs, NC as described by a document entitled Project Manual for Business Park PS, Project No. 21-011, dated May 9, 2025 by the Town of Holly Springs

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Agreement during the original term of said Agreement and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the Agreement, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Agreement that may hereafter be made, notice of which modifications to the SURETY being hereby waived, then, this obligation is to be void; otherwise it shall remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST:

(Principal) Secretary (SEAL)	Principal By:_____(3) (Address)
Witness as to Principal (Address)	
	Surety By:_____(4) (Name) (Address)
ATTEST: By:_____ [N.C. Resident Agent] (SEAL)	(Phone Number)
Witness as to Surety (Address)	

NOTE: Date of Bond must not be prior to date of Agreement.

(1) Insert the correct name of Contractor.

(2) Insert whether the Contractor is a corporation, a partnership, a limited liability company or an individual.

(3) If Contractor is a partnership, all general partners should execute the Bond. If Contractor is a limited liability company, all managers (or all members, if the company is member-managed) should execute the Bond .

(4) Provide contact name, address and phone number for performance bond surety.

PAYMENT BOND

This Bond is executed on _____, 20__.

The name of the PRINCIPAL is _____(1)

a _____(2)

The name of the SURETY is _____

_____

The TOWN OF HOLLY SPRINGS, NORTH CAROLINA is the CONTRACTING BODY.

The amount of the Bond is _____
_____Dollars ($_____)

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL and SURETY above named, are held and firmly bound unto the above named CONTRACTING BODY, hereinafter called the "Contracting Body", in the penal sum of the amount stated above in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas, the Principal entered into a certain Agreement with the Contracting Body, dated the ____day of _____, 20___ for work described by Plans and Specifications prepared by Town of Holly Springs, herein called and referred to as the "Engineers", a copy of said Agreement is hereto attached and made a part hereof for the construction of:

Business Park PS & FM Improvements – Holly Springs, NC as described by a document entitled Project Manual for Business Park PS & FM Improvements, Project No. 21-011, dated May 9, 2025 by the Town of Holly Springs

NOW THEREFORE, if the Principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said Agreement, and any and all duly authorized modifications of said Agreement that may hereafter be made, notice of which modifications to the SURETY being hereby waived, then this obligation is to be void; otherwise it shall remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

ATTEST:

_____	_____
(Principal) Secretary	Principal
(SEAL)	
	By:_____(3)
	_____
	(Address)
_____	
Witness as to Principal	
_____	
(Address)	
	_____
	Surety
	By:_____(4)
	(Name)
ATTEST:	_____
	(Address)
By:_____	_____
[N.C. Resident Agent]	(Phone Number)
(SEAL)	
_____	
Witness as to Surety	
_____	
(Address)	

NOTE: Date of Bond must not be prior to date of Agreement.

(1) Insert the correct name of the Contractor.
(2) Insert whether the Contractor is a corporation, a partnership, a limited liability company or an individual.
(3) If Contractor is a partnership, all general partners should execute the Bond. If Contractor is a limited liability company, all managers (or all members, if the company is member-managed) should execute the Bond.
(4) Provide contact name, address and phone number for payment bond surety.

AFFIDAVIT

(To be attached to all Agreements)

STATE OF)
) SS
COUNTY OF)

_____being first duly sworn on oath deposes and says that s/he is _____(attorney-in-fact or agent) of _____(bonding company) surety on the attached Agreement on _____executed by _____(Contractor).

Affiant further deposes and says that no officer, official or employee of the Owner has any interest directly or indirectly, or is receiving any premium, commission fee or other thing of value on account of the same or furnishing of the Bond, undertaking or Contract of Indemnity, Guaranty, Suretyship in connection with the above mentioned Agreement.

Signed_____

Subscribed and sworn to before me this ____ day of _____, 20___.

_____

(Notary Public,_____County,_____)

My Commission Expires_____

RESOLUTION OF CONTRACTOR'S PARTNERS, MANAGERS OR MEMBERS

(Attach if necessary)

CERTIFICATE OF INSURANCE

(Attach)

[See the General Conditions for specific requirements.]

NOTICE TO PROCEED

TO: CONTRACTOR: _____

ADDRESS: _____

_____

FROM: Kendra D. Parrish, PE, CFM
Executive Director of Utilities & Infrastructure

OWNER: Town of Holly Springs
P.O. Box 8
128 S. Main St.
Holly Springs, North Carolina 27540

PROJECT: Business Park PS & FM Improvements – Holly Springs, NC
PROJECT NO.: 21-011

CONTRACT PRICE/SUM: $_____

You are hereby notified to commence Work on the referenced project on or before _____, 20__ (the "Commencement Date"), and are to finally and fully complete the Work within _____ **CONSECUTIVE CALENDAR DAYS** of the Commencement Date. Your Contract final completion date is therefore _____, 20___.

The Agreement provides for assessment of liquidated damages for each consecutive calendar day after the above established completion date that the Work remains incomplete to the standard and degree required.

ENGINEER/ARCHITECT:

_____

By: _____
Name: _____
Title: _____

Date:_____

- END OF SECTION 00500 -

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Law.

STANDARD GENERAL AND SPECIAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By

AMERICAN COUNCIL OF ENGINEERING COMPANIES

National Society of Professional Engineers®

ASCE American Society of Civil Engineers

AMERICAN COUNCIL OF ENGINEERING COMPANIES

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
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NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN SOCIETY OF CIVIL ENGINEERS

_____

This document has been approved and endorsed by

The Associated General Contractors of America

Construction Specifications Institute

These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-8-A-1 or 1910-8-A-2) (1996 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC User's Guide (No. 1910-50). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17) (1996 Edition).

EJCDC No. 1910-8 (1996 Edition)

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National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314

American Consulting Engineers Council
1015 15th Street N.W., Washington, DC 20005

American Society of Civil Engineers
345 East 47th Street, New York, NY 10017

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between OWNER and CONTRACTOR covering the Work.

3. *Application for Payment*--The form acceptable to ENGINEER which is to be used by CONTRACTOR during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

7. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.

8. *Bonds*--Performance and payment bonds and other instruments of security.

9. *Change Order*--A document recommended by ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*--The Contract Documents establish the rights and obligations of the parties and include the Agreement, the Invitation to Bid, the Instructions to Bidders, this Project Manual, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and ENGINEER's written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by OWNER to CONTRACTOR are not Contract Documents.

13. *Contract Price*--The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment.

15. *CONTRACTOR*--The individual or entity with whom OWNER has entered into the Agreement.

16. *Cost of the Work*--See paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop Drawings and other CONTRACTOR submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *ENGINEER*--The individual or entity named as such in the Agreement. In the discretion of the OWNER, the OWNER may replace the ENGINEER from time to time pursuant to the terms of any agreement(s) between the OWNER and the ENGINEER. Once the CONTRACTOR has been notified in writing by the OWNER of the identity of a new or replacement ENGINEER for the Project or a portion thereof, the CONTRACTOR shall treat such new or replacement ENGINEER as the ENGINEER under the Contract Documents for the remainder of the Project, or the portion of the Project so specified by the OWNER, but nothing herein shall impute any liability on a new or replacement ENGINEER's part for actions or circumstances of a prior ENGINEER. The ENGINEER is the Director of Engineering of the Town of Holly Springs and/or any other party identified by the OWNER as the ENGINEER for the Work from time to time. In its sole discretion, the OWNER may act in the stead of the ENGINEER, exercising any of the rights or responsibilities of the ENGINEER provided under the Contract Documents, so long as the OWNER provides notice to the CONTRACTOR of its intent to do so. In its sole discretion, the OWNER may delegate any of the rights and responsibilities of the ENGINEER to a third party, who for the purposes of rights and responsibilities so delegated, shall be governed by the Contract Documents, so long as the OWNER provides notice to the CONTRACTOR of its intent to do so.

20. *ENGINEER's Consultant*--An individual or entity having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions. The ENGINEER's Consultant is any other party to a subcontract with ENGINEER in connection with the Work.

21. *Field Order*--A written order issued by ENGINEER which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

22. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

23. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

24. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

25. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

27. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

28. *Notice of Award*--The written notice by OWNER to the apparent successful bidder stating that upon timely compliance by the apparent successful bidder with the conditions precedent listed therein, OWNER will sign and deliver the Agreement.

29. *Notice to Proceed*--A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work under the Contract Documents.

30. *OWNER*—The Town of Holly Springs, a municipal corporation in North Carolina, and its successors and assigns, and is the party for whom the work is to be performed. The Owner's Representative is **the Town Manager of the Town of Holly Springs**. The Owner's Representative may be an employee, agent or other representative of the OWNER, and may be an individual or any one of several identified individuals, or a committee or entity, in which case the committee or entity shall select one or more individuals to speak and act on its behalf and on behalf of the OWNER. The OWNER's REPRESENTATIVE has the express authority to bind OWNER with respect to all matters requiring the

OWNER's approval or authorization. Except as otherwise specifically stated, the ENGINEER does not have such authority. The term 'OWNER' means the OWNER or OWNER's REPRESENTATIVE.

31. *Partial Utilization*--Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

32. *PCBs*--Polychlorinated biphenyls.

33. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

34. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part as may be indicated elsewhere in the Contract Documents.

35. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

36. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

37. *Resident Project Representative*--The authorized representative of ENGINEER who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

40. *Site*--Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by OWNER which are designated for the use of CONTRACTOR.

41. *Specifications*--That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto. Specifications shall include all Sections included under the Technical Specifications of the Project Manual.

42. *Subcontractor*--An individual or entity having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the Site.

43. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER, and with the approval of the OWNER, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof. The OWNER's receipt of all certificates of occupancy and approvals by regulatory agencies applicable to the Project is a condition precedent to the Project being deemed 'Substantially Complete'.

44. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions, whether titled the 'Supplementary Conditions,' the 'Special Conditions,' 'Supplementary or Special Conditions,' or otherwise. Unless otherwise indicated, Special Conditions amend and/or supplement the General Conditions as already amended and/or supplemented by Supplementary Conditions.

45. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

46. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

47. *Unit Price Work*--Work to be paid for on the basis of unit prices.

48. *Work*--The entire completed construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary or appropriate to produce such construction, and furnishing, installing, and incorporating all necessary or appropriate materials and equipment into such construction, all as required and more specifically described in the Contract Documents.

49. *Work Change Directive*--A written statement to CONTRACTOR issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

50. *Written Amendment*--A written statement modifying the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the non-engineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

51. *Conditions of the* Contract--The combined General Conditions and Supplementary Conditions, including the Special Conditions.

52. *Project Manual*--The Advertisement for Bids, Instructions to Bidders, Bid Forms, Agreements, Bonds, General Conditions, Supplementary Conditions, Special Conditions, Specifications, and Appendices.

53. *General Contractor*--The Contractor responsible for all Work other than Electrical, Instrumentation, HVAC, and Plumbing Work, as defined in the Contract Documents.

54. *HVAC Contractor*--The Contractor responsible for all HVAC Work as defined in the Contract Documents.

55. *Plumbing Contractor*--The Contractor responsible for all Plumbing Work as defined in the Contract Documents.

56. *Electrical Contractor*--The Contractor responsible for all Electrical and Instrumentation Work as described in the Contract Documents.

57. *Single Prime Contractor*--If the project is awarded as a Single Prime Contract, then the terms General Contractor, HVAC Contractor, Plumbing Contractor, and Electrical Contractor shall be understood to refer to the Single Prime Contractor.

58. *Preoperational Testing*--All field inspections, installation checks, water test, performance tests, and necessary corrections required of Contractor to demonstrate that individual components of the Work have been properly constructed and do operate in accordance with the Contract Documents for their intended purposes.

59. *Startup Testing*-A predefined trial period required for achieving substantial completion during which CONTRACTOR is to operate the entire Work (or any part thereof agreed to by the OWNER) under actual and simulated operating conditions for the purpose of (i) making such minor adjustments and changes to the Work as may be necessary for the Work to comply with the Contract Documents and (ii) complying with the final test requirements in the Contract Documents.

60. The 'Standard Specifications and Details' shall be the '*Town of Holly Springs Engineering Design and Construction Standards,*' that have been adopted as of the date of the work performed by the Contractor.

61. The 'NCDOT Standard Specifications' shall be the '*Standard Specifications for Roads and Structures*' and the '*Roadway Standard Drawings,*' current edition as of the date of the work performed by the Contractor.

1.02 *Terminology*

A. *Intent of Certain Terms or Adjectives*

1. Whenever in the Contract Documents the terms "as allowed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of ENGINEER as to the Work, it is intended that such action or determination will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective

to assign to ENGINEER any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.10 or any other provision of the Contract Documents.

B. *Day*

1. The word "day" shall constitute a calendar day of 24 hours measured from midnight to the next midnight.

C. *Defective*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.04 or 14.05).

D. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of CONTRACTOR, "provide" is implied.

E. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 *Delivery of Bonds*

A. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish.

2.02 *Copies of Documents*

A. The Contract Documents shall be executed by the OWNER and the CONTRACTOR in four (4) counterparts one (1) of which shall be returned to the CONTRACTOR. Additional copies will be furnished upon request at the cost of reproduction and handling to be borne by the CONTRACTOR.

B. The ENGINEER shall provide the CONTRACTOR with three (3) copies of any revised plans, Drawings, and Specifications as may be required

2.03 *Commencement of Contract Times; Notice to Proceed*

A. Notice to Proceed will be given in the timeframe indicated in the Bid Proposal or Notice to Bidders. The Contract Times will commence at the time specified in such Notice to Proceed.

2.04 *Starting the Work*

A. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done, including materials supplied, at the Site prior to the date on which the Contract Times commence to run without express written consent of the OWNER.

2.05 *Before Starting Construction*

A. *CONTRACTOR's Review of Contract Documents:* The data provided in the Specifications and shown on the plans and Drawings is believed by the ENGINEER or the OWNER to be accurate, but the accuracy is not guaranteed by the ENGINEER or the OWNER. The CONTRACTOR must take all levels, locations, and measurements, and verify all dimensions of the Site prior to construction, and adapt its Work to the exact construction. Scale measurements taken from prints shall not be considered except as references; the larger scale Drawings take

precedence over the smaller scale, and Shop Drawings take precedence over all others. All Work under this Contract shall be constructed in accordance with the lines and grades shown on the Contract Drawings or as otherwise directed by the ENGINEER. Elevations of existing ground, structures and appurtenances shown on Drawings and Specifications are presented only as an approximation. Any error or apparent discrepancy in the data shown, or omissions of data, shall be referred immediately to the ENGINEER for interpretation or correction. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless and until CONTRACTOR knew or reasonably should have known thereof.

B. *Preliminary Schedules:* Within ten days after the Effective Date of the Agreement (unless otherwise specified in the Contract Documents), CONTRACTOR shall submit to ENGINEER for its timely review:

1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and

3. a preliminary schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

C. *Evidence of Insurance:* Before any Work at the Site is started, CONTRACTOR shall deliver to OWNER, with copies to the ENGINEER and each additional insured identified in Article 5, as supplemented and amended by the Supplementary Conditions, certificates of insurance (and other evidence requested by the OWNER) that CONTRACTOR is required to purchase and maintain in accordance with Article 5.

D. Execution of the Contract by the CONTRACTOR is a representation by the CONTRACTOR that the CONTRACTOR has visited the Site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with the requirements of the Contract.

2.06 ***Preconstruction Conference***

A. Within 20 days after the Contract Times start to run, but before any Work at the Site is started, or any materials or equipment are delivered to the Site, a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.05.B, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records. The ENGINEER shall notify the CONTRACTOR of the place, date and time of the conference. The CONTRACTOR, its project manager, its superintendent, and any of the CONTRACTOR's other Project coordinators, representatives or other parties whose work on the Project would benefit from the conference shall attend.

B. Construction Conferences. The following conferences with the ENGINEER or the OWNER shall be held to ensure that the Work progresses appropriately and that the OWNER and the Architect are kept apprised of the status of the Work throughout the duration of the Project:

1. Preconstruction Conference. A preconstruction conference shall be held after the award of the Contract and prior to commencement of the Work or delivery of materials or equipment to the Project site. The ENGINEER shall notify the Contractor of the place, date and time of the meeting. The Contractor, its project manager, its superintendent, and any of the Contractor's other Project Coordinators, representatives or other parties whose work on the Project would benefit from the conference shall attend. The OWNER and ENGINEER will attend this conference. The Contractor, major subcontractors, and Contractor's safety representative shall attend this conference. The resumes of both the Contractor's project manager and superintendent shall be submitted to the OWNER for review and approval prior to the conference. The project manager and superintendent shall have at least 2 years experience managing and supervising the type of construction work specified in the Contract

Documents. No work shall be allowed until the Project Superintendent is on-site and working on this project. The conference agenda will include, as a minimum: tentative construction schedule; critical work sequencing; designation of responsible personnel; processing of field decisions; proposal requests and change orders; adequacy of distribution of Contract Documents; submittal of shop drawings and samples; procedures for maintaining record documents; use of site and OWNER's requirements; material deliveries and storage areas; major equipment and material deliveries and priorities; safety; security; housekeeping procedures; partial payment processing; general regard for community relations.

2.07 ***Initial Acceptance of Schedules***

A. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER, and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.05.B. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until acceptable schedules are submitted to ENGINEER.

1. The progress schedule may be a critical path type or any other system likely to provide equivalent results. The progress schedule shall account for all Work to be performed under subcontracts. The progress schedule shall provide for the proper sequence of construction, considering various crafts, purchasing times, shop drawing approval, material delivery, equipment fabrication, and similar time-consuming factors. The progress schedule shall show as a minimum, earliest starting, earliest completion, latest starting, latest completion, and the total float times for each task or item. The progress schedule will be acceptable to ENGINEER if it provides all of the foregoing and an orderly progression of the Work to completion within any specified Milestones and the Contract Times. Such acceptance will not impose on ENGINEER responsibility for the progress schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor.

2. CONTRACTOR's schedule of Shop Drawing and Sample submittals will be acceptable to ENGINEER if it provides a workable arrangement for reviewing and processing the required submittals.

3. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

B. The construction schedule shall be evaluated by the Contractor not less than monthly. An updated and corrected progress schedule shall be submitted to the ENGINEER in triplicate and shall show any rescheduling necessary to reflect the true job conditions. This updated progress schedule shall be submitted monthly to the ENGINEER with the Contractor's pay request. When the shortening of various time intervals is necessary to correct for behind-schedule conditions, the Contractor shall indicate the steps necessary to accomplish the Work in the shortest schedule possible. Information regarding the new time intervals and the reasons for them shall be submitted to the ENGINEER in writing with the revised schedule. Notwithstanding anything apparently to the contrary in the Contract Documents, the ENGINEER may withhold progress payments until such time as the progress schedule or revised progress schedule, if applicable, is received.

2.08 ***Construction Conferences***

A. Regular construction conferences shall be held with the ENGINEER or the OWNER to ensure that the Work progresses appropriately and that the OWNER and the ENGINEER are kept apprised of the status of the Work throughout the duration of the Project.

1. Monthly Progress Meetings. Each prime contractor is required to attend monthly, or more frequently as specified in the contract, progress conferences called or scheduled by ENGINEER at the Project Site. Each prime contractor shall be represented at these meetings by both its home office and Project personnel. These representatives shall have the authority to act on behalf of the Contractor. The meetings shall be open to the Subcontractors, materials suppliers, utility company representatives and any others whose presence and participation would contribute toward maintaining required job progress. It shall be the principal purpose of these meetings to effect coordination, cooperation and assistance in every practical way toward the end of maintaining progress of the Project on schedule and to complete the Project within the specified Contract Time(s). Each prime contractor shall be prepared to assess the progress of the Work as required in its

particular contract and to recommend remedial measures for correction of the progress as may be appropriate. The ENGINEER, or the representative thereof, shall be the coordinator of the conferences and shall provide as chairman. The ENGINEER will record minutes of the proceedings and decisions, and will distribute copies of minutes to attendees. The OWNER and ENGINEER will attend this meeting. The Contractor shall attend this meeting. The agenda will include, as a minimum: review and approve minutes of the previous meeting; review progress of work since last meeting; review proposed 30-60 day construction schedule; field observations, problems and conflicts; problems that impede planned progress; corrective measures and/or procedures to regain projected schedule; revise construction schedule as indicated and plan progress during the next work period; submittal status; pending changes; maintenance of quality and work standards; status of community relations and complaint resolution; complete other current business; schedule next progress meeting.

2. Weekly Coordination Meetings. The Contractor shall meet with the ENGINEER at least once per week to ensure efficient coordination of the various aspects of the Work being performed.

3. Other Required Meetings. As the ENGINEER or the OWNER believes it is appropriate and would be helpful to maintaining the efficiency and quality of the Work, the ENGINEER or the OWNER may schedule a meeting with the Contractor and any other parties. The Contractor shall ensure proper representation at such meetings to effect their purpose, including sending any specific personnel requested by the ENGINEER or the OWNER. Notwithstanding the foregoing, if the Contractor reasonably believes that the progress or quality of the Work will or might be impeded by attendance at the meeting, then the party calling such meeting shall work with the Contractor to reschedule it for a mutually convenient time.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

B. It is the intent of the Contract Documents to describe a functionally complete and operable Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result shall be provided whether or not specifically called for at no additional cost to OWNER.

C. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in Article 9.

D. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though included herein. If through mistake or otherwise, any such provision is not inserted correctly, then upon application of either party, the Contract Documents shall forthwith be physically amended to correct such insertion. If such physical amendment does not occur, however, the correct provision shall be deemed to have been inserted.

3.02 *Reference Standards*

A. *Standards, Specifications, Codes, Laws, and Regulations*

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids or, if Laws or Regulations are different at the time of the Work, then those Laws or Regulations in effect at the time of the Work (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

3.03 ***Reporting and Resolving Discrepancies***

A. *Reporting Discrepancies*

1. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, CONTRACTOR shall report it to ENGINEER in writing at once. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.04; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity, or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

B. *Resolving Discrepancies*. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and the provisions of any standard, specification, manual, code, or instruction of any technical society, organization or association if the standard, specification, manual, code or instruction imposes a weaker or less stringent standard or obligation upon the Contractor or any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work than the Contract Documents appear to impose; otherwise, the standard, specification, manual, code or instruction of any technical society, organization or association shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and the provisions of such standard, specification, manual, code or instruction.

3.04 ***Amending and Supplementing Contract Documents***

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways: (i) a Written Amendment; (ii) a Change Order; or (iii) a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways: (i) a Field Order; (ii) ENGINEER's approval of a Shop Drawing or Sample; or (iii) ENGINEER's written interpretation or clarification.

C. The Drawings may be supplemented from time to time with additional Drawings by the ENGINEER as required to illustrate the Work, or as the Work progresses, with additional Drawings by the CONTRACTOR, subject to the approval of the ENGINEER. Supplementary Drawings, when issued by the ENGINEER or by the CONTRACTOR, after to the approval by the ENGINEER, shall be deemed a part of the Drawings and shall be furnished in sufficient quantity to all those who, in the opinion of the ENGINEER, are affected by such Drawings.

3.05 ***Reuse of Documents***

A. CONTRACTOR and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect contract with OWNER: (i) shall not have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, including electronic media editions; and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaption by ENGINEER. This prohibition will survive final payment, completion, and acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude CONTRACTOR from retaining copies of the Contract Documents for record purposes.

3.06 ***Organization of the Documents***.

A. Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings, shall not control the CONTRACTOR in dividing the Work among Subcontractors or in establishing the extent of the Work to be performed by any trade or party.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

4.01 ***Availability of Lands***

A. OWNER shall furnish the Site. OWNER shall notify CONTRACTOR of any encumbrances or restrictions not of general application but specifically

related to use of the Site with which CONTRACTOR must comply in performing the Work. OWNER will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If CONTRACTOR and OWNER are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in OWNER's furnishing the Site, CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

B. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

D. If all lands, easements and rights-of-way are not obtained as herein contemplated before construction begins, CONTRACTOR shall begin the Work upon and within such lands, easements and rights-of-way as OWNER has at that time acquired.

4.02 ***Subsurface and Physical Conditions***

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that ENGINEER has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that ENGINEER has used in preparing the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is provided in the Specifications and Drawings and may be further identified in the Project Manual or Special Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER, or any of ENGINEER's Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

C. *No Reliance by CONTRACTOR on Reports of Subsurface Investigations*. In the preparation of Drawings and Specifications, the ENGINEER has relied upon reports of subsurface investigations as may be attached to the Contract Documents. Such reports are not part of the Contract Documents.

4.03 ***Differing Subsurface or Physical Conditions***

A. *Notice:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in

connection therewith (except as aforesaid) until receipt of written order to do so.

B. *ENGINEER's Review:* After receipt of written notice as required by paragraph 4.03.A, ENGINEER will promptly review the pertinent condition, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto, and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

C. *Possible Price and Times Adjustments*: Subsurface information, if provided by the OWNER to the CONTRACTOR, is provided for the sole purpose of placing the CONTRACTOR in receipt of all information available to the OWNER and the ENGINEER, and such information is not to be considered part of the Contract Documents. The CONTACTOR acknowledges that it has interpreted the subsurface information according to its own judgment in bidding the Work and that it did not rely on the subsurface information provided to it in making its bid. The CONTRACTOR acknowledges that it assumes all risks contingent upon the nature of the subsurface conditions actually to be encountered by it in performing the Work required by the Contract, even though such actual conditions may result in the CONTRACTOR performing more or less Work than originally anticipated. Unless the OWNER specifically agrees in writing, neither the Contract Time(s) nor the Contract Price(s) shall be adjusted based on basis of the actual subsurface conditions being different than as revealed in the subsurface information provided to the CONTRACTOR by the OWNER.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities, including OWNER, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and CONTRACTOR shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including OWNER, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility.

2. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, OWNER or CONTRACTOR may make a Claim therefor as provided in paragraph 10.05.

4.05 *Reference Points*

A. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point, survey markers, property corners, right of way monuments or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by a North Carolina Professional Land Surveyor (PLS).

B. ENGINEER may check lines, elevations, reference marks, batter boards, and the like, set by CONTRACTOR. CONTRACTOR shall correct any errors disclosed by such check as directed by the ENGINEER. No such check shall be deemed an approval of CONTRACTOR's work, nor shall it relieve CONTRACTOR of the responsibility for accurate construction of the entire Work. CONTRACTOR shall furnish personnel to assist ENGINEER in checking lines and grades. If CONTRACTOR through the course of its Work discovers information leading it to believe that such reference points are in error or that there has been a mistake in survey data, CONTRACTOR shall immediately notify ENGINEER and OWNER.

4.06 ***Hazardous Environmental Condition at Site***

A. *Reports and Drawings:* Reference is made to the Project Manual Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the ENGINEER in the preparation of the Contract Documents.

B. *Limited Reliance by CONTRACTOR on Technical Data Authorized:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Project Manual Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any Claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Except as otherwise described in the Contract Documents, CONTRACTOR shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site that was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, provided that CONTRACTOR uses reasonable care in its operation equivalent to the care used by similar contractors in the locality. CONTRACTOR shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible.

D. If CONTRACTOR encounters a Hazardous Environmental Condition or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, CONTRACTOR shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by paragraph 6.16); and (iii) notify OWNER and ENGINEER (and promptly thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. CONTRACTOR shall not be required to resume Work in connection with such condition or in any affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by CONTRACTOR, either party may make a Claim therefor as provided in paragraph 10.05.

F. If after receipt of such written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in paragraph 10.05. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, (ii) was not created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible, and (iii) was known by the OWNER to exist. Nothing in this paragraph 4.06.G shall obligate OWNER to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this paragraph 4.06.H shall obligate CONTRACTOR to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of paragraphs 4.02, 4.03, and 4.04 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

4.07 ***Existing Utilities***

A. The CONTRACTOR shall be responsible for the location and verification of all utilities prior to construction, both public and private, within the Site. Prior to commencing construction, the CONTRACTOR shall walk the Site verifying the location of all utilities in order to determine which utilities the CONTRACTOR may deem to be in conflict with the Work. At the completion of the walk-though, the CONTRACTOR shall notify the ENGINEER in writing of any such conflicts. The CONTRACTOR shall also attend monthly progress meetings with the OWNER or ENGINEER, and utility company representatives, if appropriate, to discuss potential and/or existing conflicts on all roadway and utility portions of the Work, unless such meeting is waived for a particular month or for the duration of the Project by the ENGINEER. At the option of the OWNER, such meetings may occur in connection with any monthly progress meetings established pursuant to Subparagraph 2.08A.2.

B. Where existing utilities and structures are indicated on the Drawings, it shall be understood that all of the existing utilities and structures affecting the Work may not be shown and that the locations of those show are approximate only. It shall be the responsibility of the CONTRACTOR to ascertain the actual extent and exact location of the existing utilities and structures. In every instance, the CONTRACTOR shall notify the proper authority having jurisdiction and obtain all necessary directions and approvals before performing any Work in the vicinity of existing utilities.

C. The Work shall be carried out in a manner to prevent disruption of existing services and to avoid damage to existing utilities. Temporary connections shall be provided, as required, to ensure that no interruption of existing services occurs. Any damage resulting from the Work shall be promptly repaired by the CONTRACTOR at its own expense in a manner approved by the ENGINEER and further subject to the requirements of any authority having jurisdiction. Where it is required by the authority having jurisdiction that such jurisdiction perform its own repairs or have them done by others, the CONTRACTOR shall be responsible for the costs thereof.

4.08 ***Miscellaneous Site Conditions***

A. Construction Staking and Surveying. The OWNER will perform all construction surveying and staking as called for in the Contract Documents unless a bid

item for construction surveying is included in the itemized Proposal. All Work under this Contract shall be constructed in accordance with he lines and grades shown on the Contract Drawings or as directed by the ENGINEER. Elevations of existing ground, structures and appurtenances are believed to be absolute and therefore are presented only as an approximation. Any error or apparent discrepancy in the data shown or omissions of data required for accurately accomplishing the stake-out survey shall be referred immediately to the ENGINEER for interpretation or correction.

B. The CONTRACTOR shall provide and maintain substantial survey markings delineating easement and property boundaries during construction. These markings shall be in place and approved by the ENGINEER prior to beginning construction activities.

C. Water for Construction. Water needed for construction of the Work may be obtained from the Town of Holly Springs at no charge to the CONTRACTOR. The CONTRACTOR shall be responsible for transporting the water. The CONTRACTOR shall contract the Holly Springs Department of Public Works to have a hose and meter installed so as to obtain water. The CONTRACRTOR shall not operate any main valve or fire hydrant on the Town water system except in accordance with Town of Holly Springs Policy Statement No. P-005.

D. The CONTRACTOR is advised to perform video inspections and take photographs of the proposed construction areas before disturbing the Site in order to establish an accurate record of the pre-construction conditions for comparison to the final restoration work.

E. The CONTRACTOR shall continually notify members of the public that own or occupy private property that may be affected by the schedule Work that affects their property. The OWNER will distribute a letter to all property owners that will be affected by the proposed Work describing the Project. When construction begins, the CONTRACTOR shall notify residents at least 72 hours in advance of when their property will be directly affected by the Work, with continual updates as required by the progress of the Work. In the event of planned utility service disruptions, the Town's Public Works and Utilities Department, or other affected utility provider, shall also be notified. At a minimum, the CONTRACTOR shall distribute door hangers to all residents in the affected area before mobilizing on the Site and then distribute follow-up notices at least 3-days before residents are directly affected by the planned Work. The door hangers shall be provided by the OWNER and will include information deemed to be necessary by the OWNER.

ARTICLE 5 - BONDS AND INSURANCE

5.00 *Evidence of Bonds and Insurance Required Prior to the Work*

A. All evidence of bonds and insurance required in this Article shall be provided prior to the CONTRACTOR or its Subcontractors commencing the Work or making or accepting delivery of materials or equipment to the Site. Failure of the CONTRACTOR to timely obtain and deliver evidence of bonds and insurance as described herein shall not excuse CONTRACTOR from adhering to the progress scheduling for the Work, and any such resulting failure of the CONTRACTOR to adhere to the progress schedule or the Contract Times shall entitle the OWNER to such sanctions and remedies as are provided elsewhere in the Contract Documents for insufficient progress on the Work.

5.01 *Performance, Payment, and Other Bonds*

A. Concurrent with the execution of this Contract, CONTRACTOR shall furnish and maintain, at the CONTRACTOR's cost and expense, performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due pursuant to Paragraph 14.07.C, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Contract Documents.

B. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

C. If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.01.B, CONTRACTOR shall within five (5) business days thereafter substitute another

Bond and surety, both of which shall comply with the requirements of paragraphs 5.01.B and 5.02.

5.02 ***Licensed Sureties and Insurers***

A. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also be approved by the OWNER and meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 ***Certificates of Insurance***

A. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain.

B. The CONTRACTOR shall provide to the OWNER, insurance certificates or other evidence that all Subcontractors are carrying the required insurance. In lieu of each Subcontractor being required to carry the necessary insurance, the CONTRACTOR may insure the activities of its Subcontractors under its policy(ies). In such case, evidence of such coverage shall be provided on the CONTRACTOR's insurance certificates. Subcontractors shall in all cases, however, provide workers' compensation and employer's liability insurance and motor vehicle liability insurance.

C. An authorized representative of the insurance company(ies) providing coverage required herein shall certify that all of the required insurance coverages and amounts specified in the Contract Documents are provided by the submitted policies. The certification shall be signed by the authorized representatives of the insurance company(ies) and notarized. The authorized representative of the insurance company(ies) shall specifically indicate with the submittal which of the policies submitted fulfill which specific coverage and amounts specified under Sections 5.04 and 5.05 of the Contract. The certification, including the correlation, shall be furnished and included with the insurance certificates. One (1) copy of each such insurance policy and the certificates indicating each type of coverage mentioned, and the correlation between the insurance furnished and that required, shall be provided to each insured party.

The insurance required to be provided by the Contractor (except Worker's Compensation and Employer's Liability insurance) shall name the following as additional insureds as primary without contribution:

__√__ The Town of Holly Springs
____ Architect
____ Engineer
____ Architect's or Engineer's Consultant
____ Other: _____

5.04 ***CONTRACTOR's Liability and Property Insurance***

A. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle in the prosecution of the Work.

B. The policies of insurance so required by this paragraph 5.04 to be purchased and maintained shall:

1. with respect to insurance required by paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.07, 6.11, and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work in accordance with paragraph 13.07;

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter);

8. include builder's risk/fire and extended coverage insurance, including coverage for vandalism and malicious mischief for the life of the Contract upon all Work in place and all materials at the Site;

9. include special hazards insurance covering bodily injury and property damage resulting from blasting and explosions, collapse of or structural injury to any structure, and damage to underground structures, pipes or conduits due to the CONTRACTOR's or its Subcontractor's operations;

10. contain provisions or endorsements that:

a. the OWNER shall be notified in writing within thirty (30) days after the filing of each claim under such policy;

b. full coverage shall be reinstated after payment of each claim;

c. the insurer shall have no right of recovery or subrogation against the OWNER, its agents or agencies, or the ENGINEER, it being the intention of the parties that the insurance policies shall protect both the OWNER and the ENGINEER and be primary coverage for any and all losses covered by the policies;

d. the clause "other insurance provisions" in a policy in which the OWNER, its agents or agencies, or the ENGINEER is named as an insured, shall not apply to such insured parties;

e. the insurance companies issuing the policy or policies shall have not recourse against the OWNER, its agents or agencies, or the ENGINEER for the payment of any premiums or for assessments under any form of policy and

f. any all deductibles under the insurance policies shall be assumed by and be at

the sole risk and expense of the CONTRACTOR;

and

11. contain the following Indemnification Agreement, endorsed on the reverse sides of all certificates of insurance:

'Indemnification – To the fullest extent permitted by law, CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and their agents, consultants and employees from and against all claims, damages, losses and expenses, including but not limited to attorney's fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense: (a) is attributable to bodily injury, sickness, disease or death, or to injury or to destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (b) is due to damage caused in whole or in part by any negligent act or omission of CONTRACTOR, and Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not a party indemnified hereunder is partially negligent, or arises out of operation of law as a consequence of any act or omission of the CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether any of them has been negligent; provided, however, that no party shall be entitled to indemnification with respect to such party's own negligence. This provision is intended to indemnify to the fullest extent permitted by law both OWNER and ENGINEER independently of the negligence of the other and thus the OWNER's negligence shall not preclude indemnification by CONTRACTOR of the ENGINEER, and ENGINEER's negligence shall not preclude indemnification by CONTRACTOR or OWNER.

C. SPECIFIC INSURANCE REQUIREMENTS

1. The CONTRACTOR shall provide insurance coverage for the Town as additional insured to be treated as primary insurance without contribution in amounts not less than the following amounts, and greater coverage where required by law.

Check if Required	Insurance	Minimum Coverage
√	Worker's Compensation	[Statutory Minimum]
√	Employer's Liability	$1,000,000
	Comprehensive General Liability including Premises/Operations; Explosion, Collapse and Underground Property Damages; Products/Completed Operations; Broad Form Contractual; Independent Contractors; Broad Form Property Damage; and Personal Liability:	
√	(1) Bodily Injury	$1,000,000 Each Occurrence $2,000,000 Annual Aggregate
√	(2) Property Damage	$1,000,000 Each Occurrence $1,000,000 Annual Aggregate
√	(3) Personal Injury, with employment exclusion deleted	$1,000,000 Annual Aggregate
	Comprehensive Motor Vehicle Liability, including all owned (private and others), hired and non-owned vehicles used in the Work:	
√	(1) Bodily Injury	$1,000,000 Each Person $2,000,000 Each Accident
√	(2) Property Damage	$1,000,000 Each Occurrence
√	Completed Operations Hazard Insurance	Contract [Sum or Price] or $1,000,000 if greater
	Builder's Risk/Fire and Extended Coverage, including vandalism and malicious mischief	Contract [Sum or Price] or $1,000,000 if greater
√	Special Hazards Insurance, including coverage for "boiler and machinery", "blasting and explosion", "collapse of structure" or "injury to any structure due to contractor's operations" and "damage to underground structures,	Contract Amount or $1,000,000, whichever is greater
√	Umbrella Liability	$5,000,000 per occurrence and policy aggregate

2. The comprehensive general liability insurance and compensation motor vehicle disability insurance shall include OWNER, its agents and agencies, ENGINEER and ENGINEER's Consultant and all municipalities where Work is being performed as additional insureds as primary without contribution. The insurance policies required hereunder shall not contain any third-party benefit exclusion.

3. CONTRACTOR may purchase and maintain excess liability insurance in the umbrella form in order to satisfy the limits of liability required for the insurance to be purchased and maintained in accordance with this Paragraph. Evidence of such excess liability shall be delivered to OWNER in the form of a certificate indicating the policy numbers and limits of liability of all underlying insurance. The umbrella liability insurance shall have a combined single limit of not less than $5,000,000.

4. If any of the property and casualty insurance requirements described herein are not complied with at the renewal dates of the insurance policy(ies), then payments to the CONTRACTOR shall be withheld until all requirements have been met, or, at the option of the OWNER, if the renewal premiums have not been paid, then the OWNER may pay the renewal premiums and withhold the cost thereof from any monies due to the CONTRACTOR.

5. In the event that claims in excess of the coverage amounts provided herein are filed by reason of any operations under the Contract, the amount of excess of such claims, or any portion thereof, may be withheld from payment due or to become due to the CONTRACTOR until such time as the CONTRACTOR shall furnish such additional security covering such claims as may be determined by the OWNER.

6. The CONTRACTOR shall submit to the OWNER documentation as to the cost of insurance coverage required hereunder prior to obtaining the policy(ies). The OWNER may, if it deems it to be in its best interest, obtain a portion or all of the coverage on its own and receive a credit from the CONTRACTOR against the Contract Sum for the cost of the insurance so provided by the OWNER.

5.05 ***OWNER's Liability Insurance***

A. CONTRACTOR shall purchase and maintain a separate OWNER's Protective Liability policy, issued to OWNER at the expense of CONTRACTOR, including OWNER and ENGINEER as named insured as primary coverage without contribution. The CONTRACTOR shall provide the OWNER with a certificate of insurance for the policy prior to the effective date of the Contract. The Certificate shall state that the policy cannot be canceled or terminated while the Work under this Contract, and any renewals thereof, is still in progress without 30 days' notice to the OWNER, who shall have the option of reinstating the policy. The CONTRACTOR shall provide renewal certificates no later than 30 days prior to the expiration of date of the policy. The policy of insurance shall provide coverage for not less than the following amounts:

1.	Bodily Injury	$1,000,000	Each Occurrence
2.	Property Damage	$1,000,000	Each Occurrence
		$1,000,000	Annual Aggregate

5.06 ***Additional Insurance***

A. OWNER, CONTRACTOR and ENGINEER, each at their own option and expense, may purchase and maintain any additional insurance it deems necessary or prudent to protect its interests in connection with the Work. Expenses of such insurance and any deductibles shall not constitute a portion of the Contract Price but are to be borne entirely by the party obtaining such insurance.

5.07 ***Waiver of Rights***

A. Intentionally Omitted.

B. Intentionally Omitted.

C. Intentionally Omitted.

5.08 ***Intentionally Omitted.***

5.09 ***Acceptance of Bonds and Insurance; Option to Replace***

A. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR in accordance with this Article 5 on the basis of its not complying with the Contract Documents, OWNER shall notify CONTRACTOR in writing thereof within ten (10) days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.05. CONTRACTOR shall provide such additional information in respect of insurance provided by CONTRACTOR as OWNER may reasonably request. Failure of OWNER to notify CONTRACTOR of its objection shall not constitute a waiver of any condition of a bond, insurance coverage, or any other covenant contained in in the Contract Documents.

5.10 ***Intentionally Omitted.***

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 ***Supervision and Superintendence***

A. CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but CONTRACTOR shall

not be responsible for the negligence of OWNER or ENGINEER in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents, unless the CONTRACTOR knew or should have known of a mistake, error, flaw, miscalculation, or the like, in the design or specification at the time of the making of the Agreement and failed to notify the OWNER and ENGINEER thereof. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

B. At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent thereto who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the Site and shall have authority to act on behalf of CONTRACTOR. All communications given to or received from the superintendent shall be binding on CONTRACTOR.

C. *Project Manager and Superintendent*: The CONTRACTOR's project manager and the CONTRACTOR's superintendent shall be full-time employees of the CONTRACTOR. The project manager and the superintendent shall each have a minimum of five years' experience constructing projects similar to the Project. The project manager's and the superintendent's previous work performances must, respectively, be acceptable to the OWNER as to quality of workmanship and time of performance. The CONTRACTOR shall submit resumes of the project manager and the superintendent to the OWNER at the time the Contract is signed. If either person is or becomes unacceptable to the OWNER, the CONTRACTOR, upon written demand by the OWNER, shall promptly notify the remove the unacceptable person and shall appoint a replacement satisfactory to the OWNER.

D. *Multi-prime Contract Projects*:

1. The general contractor, or any other contractor specifically named by OWNER, shall act as the Project Expediter, responsible for preparing the Project Schedule, including coordinating the progress schedules of the other prime contractors and their subcontractors, ensuring that each prime contractor and subcontractor adheres to its schedule, and communicating regularly with the ENGINEER or the OWNER regarding any concerns that arise during the course of the Project, including, without limitation, the scheduling, adherence to the Drawings, the Specifications and/or the Project Manual.

2. All prime contractors shall be required to cooperate and consult with other contractors and with the Project Expediter during the construction of the Project. Each prime contractor shall schedule and execute its portion of the Work so as to cause the least delay to other contractors. Each prime contractor shall be financially responsible to the other prime contractors for undue delay caused by it to other prime contractors and subcontractors on the Project.

6.02 ***Labor; Working Hours***

A. CONTRACTOR is responsible for expediting the Work efficiently and effectively and with due care to the quality of the Work. CONTRACTOR shall ensure that at least half of the Work is performed with CONTRACTOR's employees. CONTRACTOR shall employ only competent, suitably qualified persons to perform the Work. CONTRACTOR shall at all times maintain good discipline and order at the Site. Whenever OWNER notifies the CONTRACTOR in writing that any person on the Project appears to be incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Project and shall not again be employed on it except with the prior written consent of OWNER. No adjustment shall be made in the Contract Price or the Contract Times on the basis of the removal of such person from the Project.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, and CONTRACTOR will not permit the performance of Work on Saturday, Sunday, or any legal holiday without OWNER's written consent (which will not be unreasonably withheld) given after prior written notice to ENGINEER. 'Regular Working Hours' are defined as 8 hours per day, Monday through Friday, excluding holidays, between the hours of 7:00 AM and 6:00 PM. Requests to work other than Regular Working Hours shall be submitted to ENGINEER not less than 48 hours prior to any proposed additional daily working hours (including second and third shifts), weekend work or scheduled extended work weeks. All requests to work other than Regular Working Hours must comply with all applicable regulations and ordinances. ENGINEER shall review requests, and ENGINEE shall either (1) deny the request or (2) provide CONTRACTOR with terms for additional engineering and/or inspection costs to be paid for by CONTRACTOR as a result of overtime work in excess of the Regular Working Hours. CONTRACTOR shall agree to ENGINEER's terms prior to ENGINEER approving CONTRACTOR's request to work other than Regular Working Hours.

C. This Agreement is subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, Public Law 87-581, 87th Congress. Neither the CONTRACTOR nor any Subcontractor contracting for any part of the Work shall require or permit any laborer or mechanic to be employed on the Work in excess of forty hours in any Work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times that person's basic rate of pay for all hours worked in excess of forty hours in such work week.

D. CONTRACTOR and all Subcontractors shall, insofar as practicable, give preference in the hiring of workers for the Project: 1) according to Minority Outreach Plan as specified in the Contract Documents; and 2) to qualified local residents, with first preferences to give to citizens of the United States who have served in the armed forces of the United States and have been honorably discharged therefor or released from active duty therein.

E. The cost of such overtime Work or the performance of Work on a Saturday, Sunday, or any legal holidays shall be borne by the CONTRACTOR. CONTRACTOR shall reimburse the OWNER for additional engineering and/or inspection costs incurred as a result of overtime work in excess of the Regular Working Hours stipulated herein. At OWNER's option, overtime costs may either be deducted from the CONTRACTOR's monthly payment request or deducted from the CONTRACTOR's retention prior to release of final payment. Overtime costs for the OWNER's personnel shall be based on the individual's current overtime wage rate. Overtime costs for personnel employed by the ENGINEER or OWNER's employees or independent testing laboratory shall be calculated in according with the terms of their respective contracts with the ENGINEER or the OWNER.

F. Temporary lighting and all other facilities necessary for performing and inspecting the Work outside of Regular Working Hours shall be furnished and maintained by the CONTRACTOR at the CONTRACTOR's expense.

G. Work shall not be performed when the weather is inclement, stormy, freezing or otherwise unsuitable. Only such Work as will not suffer injury to workmanship, materials or equipment is permitted. The CONTRACTOR shall carefully protect all Work against damage or injury from the weather, and when Work is permitted during freezing weather, shall provide and maintain approved facilities for heating the materials and equipment and for protecting the finished Work. The CONTRACTOR shall take all necessary precautions (in the event of impending storms) to protect all Work, materials, and equipment from damage or deterioration due to floods, driving rain, wind or snowstorms. The OWNER reserves the right, upon the advice of the ENGINEER, to order additional protective measures over and beyond those proposed by the CONTRACTOR be taken to safeguard all components of the Project. The CONTRACTOR shall have no right to, nor make any claim for compensation for such precautionary measures so ordered, nor have a right to make any claim for compensation from the OWNER for damage to the Work from weather elements.

H. The mixing and placing of concrete or pavement courses, the laying of masonry, and installation of sewers and water mains shall be stopped during rainstorms, if ordered by the ENGINEER; all freshly placed Work shall be protected by canvas or other suitable covering in such manner as to prevent running water from coming in contract with it. Sufficient coverings shall be provided and kept ready at hand for this purpose. CONTRACTOR shall not be entitled to an increase in Contract Times due to Work stoppage and other time not spent working pursuant to this Paragraph.

6.03 ***Services, Materials, and Equipment***

A. Unless otherwise specified in the General Requirements, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work. The CONTRACTOR shall provide temporary toilet facilities for the use of all workmen. Temporary toilet facilities shall comply with local and state sanitation laws and regulations.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents. All construction shall conform (in increasing order of priority in the event of any conflict) to the requirements and dimensions in the Town of Holly Springs 'Engineering Design and Construction Standards', the Town Code of Holly Springs, this Contract, the construction plans, and the Specifications. All materials and workmanship, except as

otherwise provided herein, shall be in accordance with the latest edition of the North Carolina Department of Transportation 'Standard Specifications for Roads and Structures,' and all addenda thereto, and the Town of Holly Springs 'Engineering Design and Construction Standards.'

C. *Delivery of Equipment and Materials*: All materials and equipment delivered to the Site shall be accompanied by certificates, signed by an authorized officer of the Supplier, and notarized, guaranteeing that the materials and equipment conform to Specifications requirements. Such certificates shall be immediately turned over to the ENGINEER. Materials and equipment delivered to the Site without such certificates shall be subject to rejection by the ENGINEER. The CONTRACTOR shall ensure that equipment and materials to be incorporated in the Work shall be delivered to the Site sufficiently in advance of their installation and use in order to prevent delay in the execution of the Work, and that they shall be delivered to the Site, as nearly as is feasible, in the other required for executing the Work. The CONTRACTOR shall provide for continuity of supply to avoid changes of supplies or manufacturers or changes in brans of materials during the Work. The CONTRACTOR shall deliver packaged materials to the Site in the manufacturer's original, unopened, labeled containers and shall not open such containers until the approximate time for the use of the contents.

D. *Storage and Protection of Equipment and Materials*: The CONTRACTOR shall protect all equipment and materials from deterioration and damage. Any equipment or materials of whatever kind that may have become damaged or deteriorated from any cause shall be removed and replaced by new and satisfactory items, at the CONTRACTOR's expense, including expenses of labor and materials for such removal and replacement. The CONTRACTOR shall store all equipment and materials at the Site in accordance with the manufacturer's recommendations, as directed by the ENGINEER, and in conformity with applicable statutes, ordinances, regulations and rulings of any public authority having jurisdiction. The CONTRACTOR shall store the cementitious and wood materials in dry, weather-tight, ventilated spaces. The CONTRACTOR shall store ferrous materials so as to prevent contact with the ground and to prevent rusting and damage from weather. The CONTRACTOR shall story masonry materials so as to prevent them from coming in contact with earth or staining materials and shall cover and protect such materials against weather, moisture, neglect and damage. The CONTRACTOR shall protect materials and equipment from equipment damage, weather, moisture, neglect, and construction operations. The CONTRACTOR shall store all equipment and materials at the Site in accordance with the manufacturer's recommendations, as directed by the ENGINEER, and in conformity with applicable statutes, ordinances, regulations, and rulings of any public authority having jurisdiction. The CONTRACTOR shall not store unnecessary materials or equipment on the Site and shall take care to prevent any structure from being loaded with a weight that may endanger its security or the safety of persons or property. If the Site is such that equipment and materials cannot be safely stored at the Site, then the CONTRACTOR shall be responsible for locating and providing storage areas for equipment and materials. Such storage shall comply with all applicable statutes, ordinances, regulations and rulings of public authorities having jurisdiction.

E. *Hazardous Material*: The operations of neither the CONTRACTOR nor any Subcontractor shall expose any Town of Holly Springs employees or other person to any hazardous chemicals or other occupational safety or health hazards. The CONTRACTOR shall inform the ENGINEER about any hazardous substances that the CONTRACTOR or the Subcontractors might be using and to which the Town of Holly Springs' employees might become exposed. The CONTRACTOR shall also advise the ENGINEER of the appropriate control measures to be used by the Town of Holly Springs' employees to prevent exposure to such substances and to minimize the risks of such exposure. The OWNER shall not be responsible for any improper use of materials or substances referenced in the Contract Documents nor for any materials or substances brought to the Site by the CONTRACTOR.

6.04 *Progress Schedule*

A. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.07 as it may be adjusted from time to time as provided below.

1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.07) proposed adjustments in the progress schedule that will not result in changing the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of Article 12. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

B. If the CONTACTOR does not take the necessary action to accomplish the Work according to the progress schedule established in accordance with Paragraph

2.07, the CONTRACTOR may be ordered by the ENGINEER in writing to take necessary and timely action to improve its Work progress, and CONTRACTOR shall take such action. The ENGINEER's order may include increasing Work forces, providing extra equipment, working extra shifts, or taking other action as required. Should the CONTRACTOR refuse or neglect to take such action or fail to accomplish improvements in meeting the progress schedule, the ENGINEER may take any action authorized under this Contract, including but not limited to withholding of payment of the Contract Price and termination of the Contract.

6.05 ***Substitutes and "Or-Equals"***

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. It is the intent of the parties that the CONTRACTOR shall provide materials of the highest standard known to the trade and to provide materials free from defects in workmanship and product. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to ENGINEER for review under the circumstances described below.

1. *"Or-Equal" Items:* If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment ENGINEER determines that: (i) it is at least equal in quality, durability, appearance, strength, and design characteristics; (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole, and;

b. CONTRACTOR certifies that: (i) there is no increase in cost to the OWNER; and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR.

c. The procedure for review by ENGINEER will be as set forth in paragraph 6.05.A.2.d, as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances.

d. CONTRACTOR shall first make written application to ENGINEER for review of a proposed substitute item of material or equipment that CONTRACTOR seeks to furnish or use, at least 14 days before such substitute item of material or equipment is to be brought to the Site. The application shall include sufficient documentation and samples to allow the ENGINEER to determine the acceptability of the proposed substitute item of material or equipment. The application shall certify that the proposed substitute item will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified. The application will state the extent, if any, to which the use of the proposed substitute item will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute item and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of

any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute item. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute item.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.05.A.2. The substitution shall not be allowed without written approval of the OWNER, in its sole discretion.

C. *Engineer's Evaluation:* ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.05.A and 6.05.B. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until ENGINEER's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." ENGINEER will advise CONTRACTOR in writing of any negative determination.

D. *Special Guarantee:* OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

E. *ENGINEER's Cost Reimbursement:* ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitute proposed or submitted by CONTRACTOR pursuant to paragraphs 6.05.A.2 and 6.05.B and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER approves a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute.

F. *CONTRACTOR's Expense:* CONTRACTOR shall provide all data in support of any proposed substitute or "or-equal" at CONTRACTOR's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. CONTRACTOR shall make a good faith effort to utilize minority business enterprises (MBEs) per North Carolina General Statutes Section 143-128, *et seq*., as Subcontractor for the Work. CONTRACTOR shall submit for approval to the OWNER and the ENGINEER, within ten (10) days after the issuance of the Notice of Award, a list of the names of Subcontractors and Suppliers of principal items of material and equipment. CONTRACTOR shall also submit for approval to the OWNER and the ENGINEER a list of the names of any additional or replacement Subcontractors and Suppliers the CONTRACTOR wishes to use in connection with the Project prior to utilizing their services. The ENGINEER or OWNER shall notify the CONTRACTOR within ten (10) days after receipt of the list of any reasonable objections to any Subcontractor or Supplier. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization, (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom OWNER may have reasonable objection. Acceptance of any Subcontractor, other person or organization by OWNER shall not constitute a waiver of any right of OWNER to reject defective Work or remove such person from the Project pursuant to Paragraph 6.02.A.

B. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other individual or entity, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

C. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors,

Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR.

D. CONTRACTOR shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with ENGINEER through CONTRACTOR. Notwithstanding the foregoing, however, OWNER or ENGINEER may furnish to any such Subcontractor, Supplier or other person or organization, to the extent practicable, information about amounts paid on their behalf to CONTRACTOR in accordance with CONTRACTOR's application for Payment.

E. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

F. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.06, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants, and all other individuals or

G. entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

6.07 ***Patent Fees and Royalties***

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents. In the event of any claim or action by law on account of such patents or fees, it is agreed that the OWNER may retain out of the monies that are due or that may become due to the CONTRACTOR under this Contract, a sum of money sufficient to protect OWNER against loss, and to retain the same until said claims are paid or are satisfactorily adjusted.

6.08 ***Permits***

A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, and the CONTRACTOR shall pay all charges of utility owners for connections to the Work.

6.09 ***Laws and Regulations***

A. The CONTRACTOR shall, at all times, observe and comply with and cause all of its agents and employees and all of its Subcontractors to observe and comply with all such existing Laws or Regulations. The CONTRACTOR shall protect and indemnify the OWNER and the ENGINEER and the municipalities and counties in which Work is being performed, and their officers and agents, against any claim, fee, civil penalty, fine or liability arising from or based on the violation of any such Law or Regulation, whether by the CONTRACTOR or its employees or any of its Subcontractors. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be

responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

B. If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, it shall give ENGINEER prompt written notice thereof. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work, including all fines, fees, charges, civil penalties and he like assessed against the CONTRACTOR and/or the OWNER by any governmental unit or agency (including, without limitation, the OWNER in its capacity as a municipal corporation); however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in paragraph 10.05.

D. *Fines for Noncompliance with Sedimentation and Erosion Control Regulations*: The CONTRACTOR should be aware that State laws and Town ordinances provide for the imposition of fines and other civil penalties for the failure to properly plan, implement and maintain appropriate sedimentation and erosion control practices. The CONTRACTOR shall familiarize itself with all applicable sedimentation and erosion control regulations and shall follow and abide by them closely. Applicable regulations include (by way of illustration and not limitation) North Carolina General Statutes Section 113A-50 *et seq*. and Town of Holly Springs Ordinances. Violations of such regulations include (by way of illustration and not limitation) grading without prior receipt of a valid grading permit or in a manner inconsistent with such permit, failure to take reasonable measures to protect public or private property from damage caused by failure to retain sediment on site, failure to install adequate erosion and sedimentation control devices, failure to maintain temporary and/or permanent erosion control measures, failure to protect exposed slopes, failure to provide adequate ground cover, failure to revise the erosion and sedimentation control plan after notification of the need to do so, failure to keep dirt and mud off of public street, and failure to maintain slopes. Sedimentation and erosion control laws and ordinances shall be considered among the Laws and Regulations described in Paragraph 6.09.B. hereof, and CONTRACTOR shall perform all Work so as to be in compliance with same and pay all fees, fines and civil penalties in connection with the violation(s) of same that do occur. This provision is intended to call CONTRACTOR's attention to State and Town sedimentation and erosion control plans, and nothing herein is intended to impliedly limit the types of regulations deemed to be Laws and Regulations herein, nor is anything herein intended to limit the applicability of Paragraph 6.09.A or 6.09.B as to sedimentation and erosion control laws.

6.10 ***Taxes***

A. CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work. Use tax is due on construction equipment brought into North Carolina for use in the performance of the Work (N.C. Revenue Laws G.S. 105-164.4 and 105-164.6). CONTRACTOR is also liable for payment of applicable privilege licenses (N.C. Revenue Laws G.S. 105-54) and for payment of applicable franchise, corporate income and withholding taxes (N.C. Revenue Laws, G.S. 105-122, 105-123, 105-134, and 105-163.2). The absence of mention of any specific tax herein in no way relieves the CONTRACTOR of its obligation to pay the same.

B. Refunds of all North Carolina sales and use taxes paid in the purchase of building materials, supplies, fixtures and equipment that become a part of or annex to buildings or structures being erected, altered or repaired under contracts with the OWNER are to be made to the OWNER in accordance with state law. Thus, the following procedures shall be followed in order that the OWNER may recover the full amount of the North Carolina sales use and taxes permitted to be refunded to it under the law.

1. It shall be the CONTRACTOR's responsibility to furnish the OWNER documentary evidence showing the material used and sales tax paid by the CONTRACTOR and each of its Subcontractors and Suppliers.

2. With each partial payment request submitted at the end of a calendar month, fiscal yar or final payment, the CONTRACTOR must furnish (i) a certified and notarized statement setting forth the cost of the property purchased

from each vendor and the amount of sales and/or use tax paid thereon, and (ii) documentary evidence supporting the statement, including copies of invoices for which the statement is being submitted, with invoice numbers indexed to the statement.

3. The statement shall show all taxes and assessments paid to the State of North Carolina, the County of Wake, and the Town of Holly Springs, including the North Carolina Sales Tax and the Town of Holly Springs Tax, and the statement shall list any payments made directly to the North Carolina Department of Revenue.

4. In the event the CONTRACTOR makes several purchases from the same vendor, the statement must indicate the invoice numbers, the inclusive dates of the invoices, the total amount of the invoices, and the sales and use taxes paid thereon.

5. Such statement must include the cost of any tangible personal property withdrawn from the CONTRACTOR's warehouse stock and the amount of sales or use tax paid thereon by the CONTRACTOR.

6. Similar certified statements by its Subcontractors must be obtained by the prime CONTRACTOR and furnished to the OWNER.

7. If no tax has been paid during the pay request period, "NONE" shall be entered on the tax form.

C. Materials used in the Project from the CONTRACTOR's or Subcontractor's warehouse stock shall be billed to the OWNER at warehouse stock prices.

6.11 ***Use of Site and Other Areas***

A. *Limitation on Use of Site and Other Areas*

1. CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Storage of equipment or materials, or erection and use of sheds outside of the Site, if such areas on are the property of the OWNER, shall be used only with the OWNER's approval. Such storage or temporary structures, even within the Site, shall be confined to the OWNER's property. CONTRACTOR shall not utilize property other than the Site, including property designated as easement area or right of way area, unless specifically permitted elsewhere in the Contract Documents, without express permission of the owner thereof. Such permission of owners of other properties shall not be sought by the CONTRACTOR without the express permission of the OWNER to so approach such owners. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work. Prior to commencement of Work in the vicinity of property adjacent to the Site, CONTRACTOR, at its own expense, shall take such surveys as may be necessary or expedient to establish the existing conditions of the property. Any damage or injury occurring to any property as a result of any act, omission or neglect on the part of the CONTRACTOR shall be repaired so that the property is restored in a proper and satisfactory manner, or replaced, by and at the expense of the CONTRACTOR, to an equal or superior condition than previously existed.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. CONTRACTOR hall be responsible for all costs in connection with the settlement of or defense against such claims. Before final payment under the Contract shall be made to the CONTRACTOR, the CONTRACTOR shall furnish satisfactory evidence to the OWNER that all claims for damage have been legally settled, that sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

3. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultant, and the officers, directors, partners, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER, or any other party indemnified

hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work CONTRACTOR shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations, and shall include, without limitation, appropriate sedimentation control measures, as applicable. During construction, the CONTRACTOR shall regularly remove from the Site all accumulated debris and surplus of materials of any kind that result from its operations. Unused equipment and tools shall be stored at the CONTRACTOR's yard or base of operations for the Project. When the Work involves installation of sewers, drains, water mains, manholes, underground structures, or other disturbance of existing features in or across streets, rights of way, easements, or private property, the CONTRACTOR shall, as the Work progresses, promptly backfill, compact, grade, and otherwise restore the disturbed area to a basic condition that will permit resumption of pedestrian or vehicular traffic and any other essential activity or function consistent with the original use of the land. Unsightly mounds of earth, large stones, boulders, and debris shall be removed as promptly as possible so that the Site maintains a neat appearance.

C. *Cleaning:* Prior to Substantial Completion of the Work CONTRACTOR shall clean the Site to a neat and orderly condition meeting or exceeding its appearance prior to construction, and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents. Failure to clean and prepare the Site in accordance with this Paragraph shall forestall CONTRACTOR's right to receive its final payment of the Contract Price. At the Contract Time for full performance of the Work, if the cleaning and preparation is not complete, OWNER may make arrangements for same with a third party. The CONTRACTOR shall reimburse the OWNER for all costs associated with such work in a deduction in the Contract Price or by direct payment from the CONTRACTOR to the OWNER, or a combination of both, at the option of the OWNER.

D. *Loading Structures:* CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

E. *Traffic to and from the Site*: The CONTRACTOR shall maintain traffic to, from and around the Site in accordance with the Town of Holly Springs Engineering Design and Construction Standards, Section 150 of the NCDOT 'Standard Specifications for Roads and Structures' and the following provisions: At the end of each workday, the CONTRACTOR shall backfill, up to the edge and elevation of existing pavement, any area adjacent to the travelway that has a drop off of more than three (3) inches. The CONTRACTOR shall perform this work at no additional cost to the OWNER. Access to the Site and properties adjacent to the Site shall be maintained at all times throughout the Project. Where driveways, mailboxes and/or other improvements are disturbed, temporary drives, mailboxes and/or other improvements if appropriate shall be installed immediately and maintained until such time as permanent repair to driveways, mailboxes and/or other improvements is made. An ABC stone base shall be used to maintain temporary driveways. No additional payment shall be made by the OWNER or other parties to the Contract for such temporary driveway construction and maintenance because such Work shall be considered incidental to the Contract and included in the Contract Price.

F. *Work in Streets, Highways and Other Rights of Way*: Excavation, grading, fill, storm drainage, paving and any other construction or installations in rights of way of streets, highways, public carrier lines, utility lines (either aerial, surface or subsurface), and the like, shall be done in accordance with the applicable portions of the Specifications and the requirements of the authorities having jurisdiction. The OWNER shall make all arrangements with the proper authorities for such Work, including the obtaining of permits, and shall pay costs associated with such, with the exception of electrical permits, blasting permits and inspections. The CONTRACTOR shall keep a copy of all required permits on the Site at all times. The CONTRACTOR shall be responsible for all bonds required by the North Carolina Department of Transportation.

G. *Final Clean-up and Site Rehabilitation*: Before leaving the Site upon completion of the Work, the CONTRACTOR shall remove from the Site all accumulated debris and surplus materials of any kind that result from the Project, including construction equipment, tools, sheds, sanitary enclosures, and the like. The completed Project shall be turned over to the OWNER in a neat and orderly condition. The Site shall be rehabilitated or developed in accordance with other sections of the Specifications and Drawings. In the absence of any portion of these requirements, the CONTRACTOR shall completely rehabilitate the Site to a condition and appearance equal or superior to that which existed just prior construction, except for those items whose permanent

removal or relocation was required in the Contract Documents or so ordered by the OWNER.

H. *Mail Service*: Mail service shall not be interrupted by construction activities. In the event that mailboxes are relocated or temporary removed, the CONTRACTOR must provide alternate methods as approved by the US Postal Service and the OWNER for property owners to receive uninterrupted mail service. There will be no separate payments issued for alternate measures required to maintain mail service.

6.12 ***Record Documents***

A. CONTRACTOR shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to ENGINEER for OWNER. Failure to furnish the ENGINEER with accurate and detailed record documents shall be grounds for withholding final payment until such record documents have been properly furnished.

B. CONTRACTOR shall maintain 'as-built' record drawings, current with the progress of the Work on the Project site, available for inspection on site, and shall provide them in mylar and electronic format to the ENGINEER and the OWNER prior to Substantial completion.

6.13 ***Safety and Protection***

A. CONTRACTOR shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work, and shall be solely and completely responsible for conditions of the Site, including the safety of all persons and property at the Site, preparatory to and during performance of the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. CONTRACTOR shall comply with all applicable Laws and Regulations, including such safety regulations as may be prescribed from time to time by the ENGINEER, the OWNER or local authorities having jurisdiction, relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; shall erect and maintain all necessary safeguards for such safety and protection, and shall, when so directed by the ENGINEER or the OWNER, properly correct any unsafe conditions created by, or unsafe practices being committed on the part of its employees, Subcontractors, Suppliers or any individual or entity directly or indirectly employed by any of them. The CONTRACTOR shall fully comply with any and all applicable portions of the latest revision of the North Carolina Division of Highway 'Policies and Procedures for Accommodating Utilities on Highway Right of Way.' In the event of the CONTRACTOR's failure to comply with any of the safety precautions referenced herein or in the Contract Documents, the ENGINEER or OWNER may take the necessary measures to correct the conditions or practices complained of; and all costs thereof will be deducted from the Contract Price due the CONTRACTOR. Failure of the ENGINEER to direct the correction of unsafe conditions or practices shall not relieve the CONTRACTOR of its responsibility hereunder. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. All damage, injury, or loss to any property referred to in paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except and to the extent that such damage or loss is attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work and those people and that property that come into contact with the Work shall

continue, even during non-working hours, until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

C. In the event of any claims for damage or alleged damage to persons or property as a result of Work under this Contract, the CONTRACTOR shall be responsible for all costs in connection with the settlement of or defense against such claims. Before final payment to the CONTRACTOR is made under the Contract, the CONTRACTOR shall furnish satisfactory evidence that all claims for damage have been legally settled or that sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

D. The Construction Documents and the joint and several phases of construction contemplated by the Construction Documents are to be governed at all times by applicable provisions of local and State laws, ordinances and regulations and Federal laws, including but not limited to the latest amendments of the Department of Labor, Bureau of Labor Standards, Safety and Health Regulations for Construction; and Williams and Steiger Occupational Safety and Health Act of 1970, including rules and regulations issued pursuant thereto (OSHA), applicable to the Work and performance of the Contract. Where applicable to the Work, in addition to the requirements of the General Conditions, the CONTRACTOR shall fully comply with any and all applicable portions of the Division of Highway 'Policies and Procedures for Accommodating Utilities on Highway Right of Way' or latest revision. The duty of the ENGINEER to conduct a construction review of the CONTRACTOR's performance is not intended to include a review of the adequacy of the CONTRACTOR's safety measures in, on, or near the Site.

6.14 ***Safety Representative***

A. CONTRACTOR shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 ***Hazard Communication Programs***

A. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

B. CONTRACTOR shall notify the OWNER immediately, and in no event more than eight hours later, after an emergency has occurred if an emergency compromising the safety of persons or property at the Site has occurred.

6.16 ***Emergencies***

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent threatened damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 ***Shop Drawings and Samples***

A. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. CONTRACTOR shall provide on the Shop Drawings complete data with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show ENGINEER the services, materials and equipment that CONTRACTOR agrees to provide, and the Shop Drawings shall be sufficient to enable ENGINEER to review the information for the purposes delineated in paragraph 6.17.E.

B. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.17.E. The numbers of each Sample to be submitted will be as specified in the Specifications.

C. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER as required by paragraph 2.07, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

D. *Submittal Procedures*

1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto; and

d. CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR's review and approval of that submittal.

3. At the time of each submittal, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

4. All submittals required by the Contract Documents shall be submitted in three (3) copies plus the number to be returned to the CONTRACTOR. Samples and Operation and Maintenance Manuals required by the Contract Documents shall be submitted in three (3) copies, none of which will be returned.

5. All submittals shall be checked by CONTRACTOR for accuracy and conformance to the Contract Documents before submittal to ENGINEER. Shop Drawings shall show the location of all structural members, walls, and slabs with relation to the Work on the layout drawings. Any potential interference with structural members, pipes, ducts, or other equipment or work must be brought to the ENGINEER's attention by the CONTRACTOR in writing.

E. *ENGINEER's Review*

1. ENGINEER will timely review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals acceptable to ENGINEER. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. ENGINEER's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of each submittal as required by paragraph 6.17.D.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.17.D.1.

F. *Resubmittal Procedures*

1. CONTRACTOR shall make corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct

specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.18 ***Continuing the Work***

A. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.04 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.19 ***CONTRACTOR's General Warranty and Guarantee***

A. CONTRACTOR warrants and guarantees to OWNER, ENGINEER, and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage normally caused by:

1. abuse, modification, or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or

2. normal wear and tear under normal usage.

B. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

1. observations by ENGINEER;

2. recommendation by ENGINEER or payment by OWNER of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by ENGINEER or any payment related thereto by OWNER;

4. use or occupancy of the Work or any part thereof by OWNER;

5. any acceptance by OWNER or any failure to do so;

6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by OWNER.

C. By entering into the Contract with the OWNER, the CONTRACTOR represents and warrants:

1. That CONTRACTOR is experienced in and competent to perform the type of Work required and to furnish the plant, materials, supplies or equipment to be so performed or furnished by it.

2. That CONTRACTOR is financially solvent, able to pay its debts as they mature, and possessed of sufficient working capital to initiate and complete the Work required under the Contract.

3. That CONTRACTOR is familiar with all federal, state, county, municipal and department laws, ordinances, permits, regulations and resolutions which may be any way affect the Work or those employed therein, including but not limited to any special laws or regulations relating to the Work or any part thereof.

4. That such temporary and permanent Work required by the Contract Documents that is to be done by CONTRACTOR will be satisfactorily constructed and fit for use for its intended purpose and that such construction will not injure any person, or damage any property.

5. That CONTRACTOR has carefully examined the Contract Documents and the Site of the Work and that from its own investigations, it has satisfied itself and made itself familiar with: (1) the nature and locations of the Work; (2) the character, quality and quantity of surface and subsurface materials likely to be encountered, including, but not limited to all structures and obstructions on or at the Project Site, whether natural or man-made; (3) the character of equipment and other facilities needed for performance of the Work; (4) the general and local conditions including, without limitation, the climatic conditions, the availability and cost of labor and the availability and cost of materials, tools and equipment; (5) the quality and quantity of all materials, supplies, tools, equipment, labor and professional services necessary to complete the Work in the manner required by the Contract

Documents; and (6) all other matters or things which could in any manner affect the performance of the Work.

6. That CONTRACTOR will fully comply with all requirements of the Contract Documents.

7. That CONTRACTOR will perform the Work consistently with good workmanship, sound business practice, and in the most expeditious manner, consistent with the best interests of the OWNER.

8. That CONTRACTOR will furnish efficient business administration and experienced superintendents and an adequate supply of workmen, equipment, tools and materials at all times.

9. That CONTRACTOR has carefully reviewed the Work required and that the Work can be planned and executed in a normal and orderly sequence of Work and reasonably scheduled so as to ensure completion of the Project in accordance with the Contract Documents, allowing for normal and reasonable foreseeable weather, labor and other delays, interruptions and disruptions of the Work.

10. That CONTRACTOR will complete the Work within the Contract Time and all portions thereof within any Contract Deadlines.

11. That the Contract Price is based upon the labor, materials, systems and equipment required by the Contract Documents, without exception.

12. That CONTRACTOR will make a good faith effort to utilize minority business enterprises (MBEs) per N.C. General Statutes Section 143-128, *et seq.*, as Subcontractors for the Work.

13. That CONTRACTOR is not at the time of making of the Contract in dispute with the Town of Holly Springs in connection with any project for which it has performed Work.

6.20 ***Indemnification***

A. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all claims, costs, civil penalties, fines, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, civil penalties, fine, loss, or damage:

1. is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and

2. is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such individual or entity. If through the negligence on the part of CONTRACTOR performing the Work, any other contractor or subcontractor shall suffer or claim to have suffered loss or damage, CONTRACTOR shall reasonably attempt to settle such claims with such other contractor or subcontractor by agreement or arbitration. If such other contractor or subcontractor shall assert any claim against OWNER on account of any damage alleged to have been sustained, OWNER shall notify CONTRACTOR, who shall indemnify and hold harmless OWNER against any such claims.

B. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of CONTRACTOR under paragraph 6.20.A shall not extend to the liability of ENGINEER and ENGINEER's Consultants or to the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

D. Nothing in the Contract Documents shall create or give to third parties any claim or right of action against the CONTRACTOR, the OWNER or the ENGINEER beyond such claims or rights as legally exist irrespective of the Contract.

6.21 ***Contractor License Requirements.***

A. CONTRACTOR shall be licensed in North Carolina in an amount equal to one and one-half (1-1/2) times the total Contract Price for all of the Work. CONTRACTOR shall have and maintain a valid Town of Holly Springs Privilege License to perform the Work. If the Work involves any roadway construction, CONTRACTOR shall have and maintain a current unlimited General Contractor's license with the 'Highway Contractor' classification.

ARTICLE 7 - OTHER WORK

7.01 ***Related Work at Site***

A. OWNER may perform other work related to the Project at the Site by OWNER's employees, or let other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to CONTRACTOR prior to starting any such other work; and

2. if OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in paragraph 10.05.

B. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the other work with OWNER's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CONTRACTOR shall not endanger others or any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of OWNER, such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

C. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure to so report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent defects and deficiencies in such other work.

7.02 ***Coordination***

A. If OWNER intends at the time of the making of the Agreement to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility for such coordination.

7.03 Remedies

A. Should CONTRACTOR cause damage to the work or property of any separate contractor at the Site, or

should any claim arising out of CONTRACTOR's performance of the Work at the Site be made by any separate contractor against CONTRACTOR, OWNER, ENGINEER, ENGINEER's Consultants, the Construction Coordinator or any other person, then CONTRACTOR shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law.

B. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER, ENGINEER, ENGINEER's Consultants and the Construction Coordinator harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals, and court and arbitration or mediation costs) arising directly or consequentially out of any action, legal or equitable, brought by any separate contractor against OWNER, ENGINEER, ENGINEER's Consultants or the Construction Coordinator to the extent based on a claim arising out of CONTRACTOR's performance of the Work. Should a separate contractor cause damage to the Work or property of CONTRACTOR or should the performance of work by any separate contractor at the Site give rise to any other claim, CONTRACTOR shall not institute any action, legal or equitable, against OWNER, ENGINEER, ENGINEER's Consultants or the Construction Coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter that seeks to impose liability on or to recover damages from OWNER, ENGINEER, ENGINEER's Consultants or the Construction Coordinator on account of any such damage or claim. If CONTRACTOR is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and OWNER and CONTRACTOR are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, CONTRACTOR may make a claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be CONTRACTOR's exclusive remedy with respect to OWNER, ENGINEER, ENGINEER's Consultants and Construction Coordinator for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not alter the liability of OWNER, ENGINEER, ENGINEER's Consultant and Construction Coordinator for activities that are their respective responsibilities.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, as amended by the Supplementary Conditions and any Special Conditions, and unless OWNER is also acting as the ENGINEER or the inspector for the Project, OWNER shall issue all communications to CONTRACTOR through ENGINEER, or shall copy ENGINEER on its direct correspondence with CONTRACTOR.

8.02 *Replacement of ENGINEER*

A. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer to whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

8.03 *Furnish Data*

A. OWNER shall promptly furnish the data required of OWNER under the Contract Documents.

8.04 *Pay Promptly When Due*

A. OWNER shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.01 and 4.05. Paragraph 4.02 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by ENGINEER in preparing the Contract Documents.

8.06 *Insurance*

A. OWNER's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change*

A. OWNER is obligated to execute Change Orders as indicated in paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. OWNER's responsibility in respect to certain inspections, tests, and approvals is set forth in paragraph 13.03.B.

8.09 ***Limitations on OWNER's Responsibilities***

A. The OWNER shall not supervise, direct, or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

8.10 ***Undisclosed Hazardous Environmental Condition***

A. OWNER's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in paragraph 4.06.

8.11 ***Evidence of Financial Arrangements***

A. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 ***OWNER'S Representative***

A. ENGINEER will be OWNER's representative during the construction period, unless and until the OWNER provides otherwise in writing to the CONTRACTOR, and all instructions of the ENGINEER as the OWNER's representative shall be executed promptly and efficiently by the CONTRACTOR and it's Subcontractor.

9.02 ***Visits to Site***

A. ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER, for the benefit of OWNER, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work.

B. ENGINEER's visits and observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.10, and particularly, but without limitation, during or as a result of ENGINEER's visits or observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

C. After hours or weekend Work shall include only such tasks that do not require observation by the ENGINEER unless the OWNER specifically authorizes otherwise in writing.

9.03 ***Project Representative***

A. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more extensive observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.10 and in the Supplementary Conditions and any Special Conditions. If OWNER designates another representative or agent to represent OWNER at the Site who is not ENGINEER's Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 ***Clarifications and Interpretations***

A. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from the Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a written clarification or interpretation, a Claim may be made therefor as provided in paragraph 10.05.

9.05 ***Authorized Variations in Work***

A. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR, who shall perform the Work involved promptly. If the CONTRACTOR decides that the Field Order should result in an increase of the Contractor Price or a change in the Contract Times, then the CONTRACTOR shall submit a written request regarding such an adjustment to the ENGINEER prior to commencing the Work. If the CONTRACTOR proceeds with the Work prior to the execution of the Change Order, such Work shall be performed with the understanding that the increase in the Contract Price or a change in the Contract Times requested is subject to the approval of the OWNER. The decision rendered by the OWNER concerning the request for an increase in the Contract Price or a change in the Contract Times resulting from a Field Order shall be final.

9.06 ***Rejecting Defective Work***

A. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.07 ***Shop Drawings, Change Orders and Payments***

A. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraph 6.17.

B. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.

C. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

9.08 ***Determinations for Unit Price Work***

A. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding (except as modified by ENGINEER to reflect changed factual conditions or more accurate data) upon OWNER and CONTRACTOR, subject to the provisions of paragraph 10.05.

9.09 ***Decisions on Requirements of Contract Documents and Acceptability of Work***

A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work, the quantities and classifications of Unit Price Work, the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, and Claims seeking changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing, in accordance with the provisions of paragraph 10.05, with a request for a formal decision.

B. When functioning as interpreter and judge under this paragraph 9.09, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to this paragraph 9.09 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.07) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such Claim, dispute, or other matter.

9.10 ***Limitations on ENGINEER's Authority and Responsibilities***

A. Unless otherwise specified in any separate agreement between the OWNER and the ENGINEER, neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by ENGINEER shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Unless otherwise specified in any separate agreement between the OWNER and the ENGINEER,

ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. Unless otherwise specified in any separate agreement between the OWNER and the ENGINEER, ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

C. Unless otherwise specified in any separate agreement between the OWNER and the ENGINEER, ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by paragraph 14.07.A will only be to determine that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The presence or absence of the ENGINEER at the site shall in no way modify the CONTRACTOR's responsibility for conformity with the Drawings and Specifications. Failure of the ENGINEER to reject materials or Work that does not conform with the Drawings and Specifications, whether from lack of discovery or for any other reason, shall in no way prevent later rejection of or corrections to the unsatisfactory materials or Work when discovered. The CONTRACTOR shall have no claim for losses suffered due to any necessary removals or repairs resulting from unsatisfactory Work.

F. The limitations upon authority and responsibility set forth in this paragraph 9.10 shall also apply to ENGINEER's Consultants, Resident Project Representative, and assistants.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If OWNER and CONTRACTOR are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in paragraph 10.05.

C. If CONTRACTOR claims (1) that any work he/she has been ordered to do is not part of the Work required by the Contract Documents (hereinafter referred to as 'Extra Work') and that he/she has performed or is going to perform Extra Work, or (2) that any action or omission of OWNER or ENGINEER is contrary to the terms and provisions of the Contract Documents, CONTRACTOR shall:

(i) Verbally inform the ENGINEER or OWNER of its claim and then Promptly comply with such order;

(ii) File with ENGINEER, within fourteen (14) working days after bring ordered to perform the work claimed by him/her to be Extra Work or within fourteen (14) working days after commencing performance of the Extra Work, whichever date shall be the earlier, or within fourteen (14) working days after the action or omission of the OWNER or the ENGINEER occurred or was due, a written notice stating the basis of his/her claim and a request for a determination thereof;

(iii) File with ENGINEER thirty (30) calendar days after said alleged Extra Work was required to be performed or said alleged Extra Work was commenced, whichever date shall be earlier, or said alleged action or omission by OWNER or ENGINEER occurred or was due, a verified detailed statement, with documentary evidence of the items and basis of his/her claim;

(iv) Produce for OWNER's examination, upon notice from OWNER, all his/her books of account, bills, invoices, payrolls, subcontracts, time books, progress records, daily reports, bank deposit books, bank statements, checkbooks and canceled checks showing all of his/her actions and transactions in connection with or relating to or arising by reason or his/her claim, and submit

himself/herself and persons in his/her employment and in his/her Subcontractor's employment for examination under oath by any person designated by OWNER to investigate any claims made against OWNER under the Contract, such examination to be made at the offices of OWNER or OWNER's agent;

(v) Proceed diligently, pending and subsequent to determination of OWNER with respect to any such disputed matter, with the performance of the Contract and in accordance with all instructions of OWNER and ENGINEER.

D. CONTRACTOR's failure to comply with any or all of the provisions of Paragraph 10.01.C shall be deemed to be: (1) a conclusive and binding determination that said order, work action or omission is not additional or Extra Work for CONTRACTOR and is not contrary to the terms and provisions of the Agreement; and (2) a waiver by CONTRACTOR of all claims for additional compensation or damages or extension of Contract Times as a result of said order, work action or omission.

E. Only OWNER may waive or modify any of the provisions of Paragraph 10.01.C or 10.01.D, which waiver must be done in writing and signed by OWNER. In any action against OWNER to recover any sum in excess of the sum certified by the OWNER to be due under or by reason of the Contract, CONTRACTOR must allege in in his/her complaint and prove at trial compliance with the provisions of Paragraph 10.01.C. Nothing in paragraphs 10.01.C, 10.01.D, or this paragraph shall in any way affect OWNER's right to obtain an examination of CONTRACTOR before trial or discovery and inspection in any action that might be instituted by or against OWNER or CONTRACTOR.

10.02 ***Unauthorized Changes in the Work***

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in paragraph 3.04, except in the case of an emergency as provided in paragraph 6.16 or in the case of uncovering Work as provided in paragraph 13.04.B.

10.03 ***Execution of Change Orders***

A. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

1. changes in the Work which are: (i) ordered by OWNER pursuant to paragraph 10.01.A, (ii) required because of acceptance of defective Work under paragraph 13.08.A or OWNER's correction of defective Work under paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.18.A.

10.04 ***Notification to Surety***

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

10.05 ***Claims and Disputes***

A. *Notice:* Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to ENGINEER and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. Notice of the amount or extent of the Claim, dispute, or other matter with supporting data shall be delivered to the ENGINEER and the other party to the Contract within 60 days after the start of such event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of such Claim, dispute, or other matter). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a

result of said event. The opposing party shall submit any response to ENGINEER and the claimant within 30 days after receipt of the claimant's last submittal (unless ENGINEER allows additional time).

B. *ENGINEER's Decision:* ENGINEER will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. ENGINEER's written decision on such Claim, dispute, or other matter will be final and binding upon OWNER and CONTRACTOR unless:

1. an appeal from ENGINEER's decision is taken within the time limits and in accordance with the dispute resolution procedures set forth in Article 16 or in the Supplementary Conditions; or

2. if no such dispute resolution procedures have been set forth in Article 16 or in the Supplementary Conditions, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within 30 days after the date such decision is delivered to OWNER and CONTRACTOR, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of delivery of such decision, if the appealing party is the CONTRACTOR, and within 90 days after the date of delivery of such decision, if the appealing party is the OWNER, or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by OWNER and CONTRACTOR), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

C. If ENGINEER does not render a formal decision in writing within the time stated in paragraph 10.05.B, a decision denying the Claim in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, in which case an appeal from the denial of the claim may be made in accordance with subparagraph 10.05.B.1 or 10.05.B.2.

D. No Claim for an adjustment in Contract Price or Contract Times (or Milestones) will be valid if not submitted in accordance with this paragraph 10.05.

E. CONTRACTOR shall diligently continue all Work and adhere to the progress schedule to the extent possible during the resolution of any dispute, including a Claim, even if the dispute or Claim pertains to Contract Times, Contract Price, or any other integral feature of the Agreement, unless the OWNER and the CONTRACTOR agree otherwise in writing.

10.06 ***Requests for Changes in the Work***

A. At any time ENGINEER may request a quotation from CONTRACTOR for a proposed change in the Work. Within 21 calendar days after receipt of a request for a quotation for a proposed change, the CONTRACTOR shall proceed to submit a written and detailed proposal for an increase or decrease in the Contract Price or alterations of the Contract Times for the proposed change. ENGINEER shall have 21 calendar days after receipt of detailed proposal to respond in writing. The proposal shall include an itemized estimate of all cost and time for performance that will result directly or indirectly from the proposed change. Unless otherwise directed, itemized estimates shall be in accordance with Articles 11 and 12, and in sufficient detail to reasonably permit an analysis by ENGINEER of all material, labor, equipment, subcontracts, overhead costs and fees, and shall cover all Work involved in the change, whether such Work was deleted, added, changed, or impacted. Any amount claimed for subcontracts shall be similarly supported. Itemized schedule adjustments shall be in sufficient to permit an analysis of impact as required by the Contract Documents. Notwithstanding the request for quotation, CONTRACTOR shall carry on the Work and maintain the progress schedule.

10.07 ***Effect of the Change Order***

A. The adjustment in the Contract Price and/or Contract Times stated in a Change Order shall comprise the total price and/or time adjustment due or owed the CONTRACTOR for the work or changes defined in the Change Order. By executing the Change Order, the CONTRACTOR acknowledges and agrees that the stipulated price and/or time adjustments include the costs and delays for all Work contained in the Change Order, including costs and delays associated with the interruption of schedules, extended overheads, delay, and cumulative impacts or ripple effect on all other non-affected Work under this Contract. Signing of the Change Order constitutes full and mutual accord and satisfaction for the adjustment in contract price or time as a result of increases or decreases in costs and time of performance caused directly or indirectly from the change, subject to the current scope of the entire Work as set forth in the Contract Documents. Acceptance of this waiver constitutes an agreement between OWNER and CONTRACTOR that the Change Order represents an equitable adjustment to the Contract, and that CONTRACTOR will waive all rights to file a claim on this Chang Order after it is properly executed.

ARTICLE 11 - COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to CONTRACTOR will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by OWNER.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

3. Payments made by CONTRACTOR to Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER, who will then determine, with the advice of ENGINEER, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in this paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of CONTRACTOR.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. Rental rates shall include all fuel, lubricants, insurance and the like necessary in connection with the use of the equipment. Equipment rental charges shall not exceed the prorated rental rates listed in the current edition of the 'Compilation of Rental Rates for Construction Equipment' as published by the Associated Equipment Distributors. Hourly charges shall be determined by dividing the monthly rates by 176. The rental of any such equipment, ma-

chinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

e . Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance of the Work, provided and to the extent that such losses and damages have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage, and similar petty cash items, all of which must be in connection with and in furtherance of the Work.

i. When the Cost of the Work is used to determine the value of a Change Order or of a Claim, the cost of premiums for additional Bonds and insurance required because of the changes in the Work or caused by the event giving rise to the Claim.

j. When all the Work is performed on the basis of cost-plus, the costs of premiums for all Bonds and insurance CONTRACTOR is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnerships and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.01.A.1 or specifically covered by paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the Site.

3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

4. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 11.01.A and 11.01.B.

6. Any costs due to the CONTRACTOR, or the Subcontractors or Suppliers, not properly performing or supplying the Work, including, without limitation, not adhering to the progress schedule.

C. *CONTRACTOR's Fee:* When all the Work is performed on the basis of cost-plus, CONTRACTOR's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, CONTRACTOR's fee shall be determined as set forth in paragraph 12.01.C. The CONTRACTOR's fee shall not be applied to payroll taxes, social security contributions, or unemployment taxes.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to paragraphs

11.01.A and 11.01.B, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

11.02 ***Cash Allowances***

A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. CONTRACTOR's costs for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

B. Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 ***Unit Price Work***

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER subject to the provisions of paragraph 9.08.

B. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

C. OWNER or CONTRACTOR may make a Claim for an adjustment in the Contract Price in accordance with paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

11.04 ***Costs Included in Contract Price***

A. ENGINEER acknowledges that the Contract Price includes CONTRACTOR's costs of bonds, insurance, transportation of materials, labor and equipment, general administration, and the like. Gravel construction entrances to the Site also are included in the Contract Price.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 ***Change of Contract Price***

A. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in paragraph 11.01) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 12.01.C).

C. *CONTRACTOR's Fee:* The CONTRACTOR's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee or a mutually acceptable percentage of Cost of Work; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under paragraphs 11.01.A.1 and 11.01.A.2, the CONTRACTOR's fee shall be 15 percent;

b. for costs incurred under paragraph 11.01.A.3, the CONTRACTOR's fee shall be five percent based on the Subcontractor's cost of Work;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 ***Change of Contract Times***

A. The Contract Times (or Milestones) may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Times (or Milestones) shall be based on written notice submitted by the party making the claim to the ENGINEER and the other party to the Contract in accordance with the provisions of paragraph 10.05.

B. Any adjustment of the Contract Times (or Milestones) covered by a Change Order or of any Claim for an adjustment in the Contract Times (or Milestones) will be determined in accordance with the provisions of this Article 12.

C. Pending any adjustment of the Contract Times pursuant to the terms of this paragraph 12.02, the CONTRACTOR shall diligently continue all Work and adhere to the progress schedule and the Contract Times to the extent possible.

12.03 ***Delays Beyond CONTRACTOR's Control***

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in paragraph 12.02.A. Extensions granted to the Contract Times shall reflect the actual delay likely to be caused to the date of Substantial Completion. For example, a 3-day delay in the landscaping of the exterior due to abnormal weather conditions may or may not result in a full 3-day delay in the remainder of the Work such that Substantial Completion is also delayed a full three days. Only the resulting delay to Substantial Completion shall be credited to the Contract Times. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God. 'Abnormal weather' is defined as weather that is more severe than the average weather for the particular time(s) and date(s) in question as compared to the last 5-year average. The 'average' shall be based on the 'Local Climatological Data' published by the National Oceanic and Atmospheric Administration for the Project area. It shall be the responsibility of the CONTRACTOR to furnish all data necessary to support its request. The

CONTRACTOR shall not be entitled to additional compensation as a result of time extensions not due to acts or neglect by the OWNER.

12.04 ***Delays Within CONTRACTOR's Control***

A. The Contract Times (or Milestones) will not be extended due to delays within the control of CONTRACTOR. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.05 ***Delays Beyond OWNER's and CONTRACTOR's Control***

A. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay.

12.06 ***Delay Damages***

A. In no event shall OWNER or ENGINEER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. delays caused by or within the control of CONTRACTOR; or

2. delays beyond the control of both OWNER and CONTRACTOR including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

13. The CONTRACTOR agrees to make no claim against OWNER, ENGINEER, their agents, representatives, or employees for damages or a change in the Contract Price for delay in the performance of this Contract occasioned by any act or omission to act of the OWNER or any of its representatives, and agrees that any such potential claim shall be fully satisfied by an extension of time to complete performance of the deemed Work as provided in Paragraph 12.03.

12.07 ***Float Times and Contract Times and Contract Price***

A. Notwithstanding the agreement made by the parties that the CONTRACTOR controls and has responsibility for matters of scheduling, sequencing and arranging the Work, the parties hereby agree that the float time is a benefit to the OWNER in the progress schedule, and therefore, without obligation to extend either the overall completion date or any intermediate completion dates set out in the progress schedule, the OWNER may initiate changes to the Work that absorb float time only. OWNER-initiated changes that affect the critical path on a critical path methods schedule shall be the sole grounds for extending (or contracting) said completion dates. CONTRACTOR-initiated changes that encroach on the float time identified in the current progress schedule may be accomplished with the OWNER's concurrence. Such changes, however, shall give way to OWNER-initiated changes competing for the same float time.

B. Portions of the Work that are listed in the progress schedule with a float time may, at the option of the OWNER, be performed using any or no amount of float time, but in no event shall performance of the Work during the float times entitle the Contractor to an increase in the Contract Price as to such portions of the Work or as to other portions of the Work.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 ***Notice of Defects***

A. Prompt notice of all defective Work of which OWNER or ENGINEER has actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 ***Access to Work***

A. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 ***Tests and Inspections***

A. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections,

tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04.B shall be paid as provided in said paragraph 13.04.B; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection or approval. Testing to be performed under the Contract Documents shall be performed in accordance with the North Carolina Department of Transportation 'Materials Specifications Guidelines' and the Town of Holly Springs 'Engineering Design and Construction Standards'. If and to the extent that the Town of Holly Springs testing standards conflict with and are more stringent than those of the North Carolina Department of Transportation, testing shall be performed in accordance with the Town of Holly Springs standards.

D. CONTRACTOR shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to OWNER and ENGINEER.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered and made available for inspection at the CONTRACTOR's expense.

F. Uncovering Work as provided in paragraph 13.03.E shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same, and given ENGINEER time to inspect same, and ENGINEER has not acted with reasonable promptness in response to such notice.

G. The CONTRACTOR shall allow the ENGINEER sufficient time and opportunity for testing materials and equipment to be used in the Work. The CONTRACTOR shall advise the ENGINEER promptly upon placing orders for materials and equipment so that arrangements may be made, if desired by the ENGINEER, for inspection before shipment from the place of manufacture. The CONTRACTOR shall at all times furnish the ENGINEER and all OWNER representatives appropriate facilities for performing inspections and tests, including any labor necessary, and shall allow proper time for inspecting and testing materials, equipment, and workmanship. In setting Contract Times and a progress schedule for the Work, the CONTRACTOR should anticipate that delays may be caused in the execution of the Work due to the necessity of materials and equipment being inspected and accepted for use. The CONTRACTOR shall furnish, at its own expense, samples of all materials required by the ENGINEER for testing, and shall make its own arrangements for providing water, electric power, and/or fuel for various inspections and tests of structures and equipment.

H. The CONTRACTOR shall furnish the services of representatives of the manufacturers of certain equipment if so prescribed in the Specifications. The CONTRACTOR shall also place its orders for such equipment requiring that, after the equipment has been tested prior to final acceptance of the Work, the manufacturer shall furnish the OWNER with certified statements that the equipment has been installed properly and is ready to be placed in functional operation. Tests and analyses required of equipment shall be paid for by the CONTRACTOR, unless specified otherwise in the Contract Documents.

I. The OWNER reserves the right to independently perform, at its own expense, laboratory tests on random samples of material or performance tests on equipment delivered to the Site. These tests if made shall be conducted in accordance with the Specification requirements or other appropriate standards. The entire shipment represented by any given sample or piece of equipment may be rejected on the basis of the failure of a sample or piece of equipment to meet specified test requirements. All rejected materials and equipment shall be removed from the Site, whether stored or installed in the Work, and the required replacement shall be made, all at no

additional cost to the OWNER in accordance with the terms of Paragraphs 13.06 through 13.09.

J. Whenever nonconformance is discovered by the ENGINEER as a result of tests, inspections, or investigations, the CONTRACTOR shall bear responsibility for the full cost of such tests, whether otherwise required to pay for such tests, inspections or investigations under the Contract Documents, and shall directly pay for such services or shall reimburse the OWNER for such costs. Once nonconformance has been discovered, the cost of any additional tests and investigations that are ordered by the ENGINEER to ascertain subsequent conformance with the Contract Documents shall be borne by the CONTRACTOR, whether or not the original tests, inspections, or investigations of such nonconforming Work were originally required by the Contract Documents to be borne by another party.

13.04 ***Uncovering Work***

A. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

B. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a Claim therefore as provided in paragraph 10.05.

13.05 ***OWNER May Stop the Work***

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will or is likely to conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

B. If OWNER stops Work under Paragraph 13.05.A, CONTRACTOR shall be entitled to no extension of Contract Times or increase in Contract Price.

13.06 ***Correction or Removal of Defective Work***

A. CONTRACTOR shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by ENGINEER, remove it from the Project and replace it with Work that is not defective, even if such Work has previously been overlooked by ENGINEER and estimated as a basis for payment. At any time during the progress of the Work and up to the date of final acceptance, the ENGINEER shall have the right to reject any Work that does not conform to the requirements of the Contract Documents, even if such Work has been previously inspected and paid for. Any omissions or failure on the part of the ENGINEER to disapprove or reject any Work or materials at the time of inspection shall not be construed as an acceptance of any defective Work or materials. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others or other portions of the Work affected by such correction, removal, or replacement).

B. The ENGINEER may order tests of imperfect or damaged Work, equipment, or materials to determine the required functional capability for possible acceptance, if there is no other reason for rejection. The cost of such tests shall be borne by the CONTRACTOR; and the nature, tester, extent of supervision of the tests shall be as determined by the ENGINEER. If the results of the tests indicate that the required functional capacity of the Work, equipment, or material was not impaired, then the Work, equipment, or materials by deemed acceptable by the OWNER. If the results of such tests reveal that the

required functional capability of the questionable Work, equipment or materials have been impaired, then such Work, equipment or materials shall be deemed imperfect Work, equipment or materials immediately upon their identification as such in lieu of performing the tests for functional capability.

13.07 ***Correction Period***

A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for CONTRACTOR's use by OWNER or permitted by Laws and Regulations as contemplated in paragraph 6.11.A is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) repair such defective land or areas, or (ii) correct such defective Work or, if the defective Work has been rejected by OWNER, remove it from the Project and replace it with Work that is not defective, and (iii) satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or repaired or may have the rejected Work removed and replaced, and all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR immediately upon the submissions of an invoice for such expenses to the CONTRACTOR by the ENGINEER or the OWNER.

B. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

C. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed, or, if such correction or removal and replacement took longer than one year, then for such period of time as the correction or removal and replacement took. All warranties for the Work so affected shall be extended for the same amount of time.

D. CONTRACTOR's obligations under this paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 ***Acceptance of Defective Work***

A. If, instead of requiring correction or removal and replacement of defective Work, OWNER (and, prior to ENGINEER's recommendation of final payment, ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall pay all Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by CONTRACTOR pursuant to this sentence. If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and OWNER shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, OWNER may make a Claim therefor as provided in paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

13.09 ***OWNER May Correct Defective Work***

A. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.06.A, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days written notice to CONTRACTOR, correct and remedy any such deficiency.

B. In exercising the rights and remedies under this paragraph, OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the Site, take possession of all or part of the Work and

suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors, and ENGINEER and ENGINEER's Consultants access to the Site to enable OWNER to exercise the rights and remedies under this paragraph.

C. All Claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by OWNER in exercising the rights and remedies under this paragraph 13.09 will be charged against CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, including a proportionate decrease in the amount of the CONTRACTOR's fee. If the parties are unable to agree as to the amount of the adjustment, OWNER may make a Claim therefor as provided in paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of CONTRACTOR's defective Work.

D. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies under this paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The schedule of values established as provided in paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments*

1. Once a month after the Work has commenced, CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by the CONTRACTOR covering the Work completed as of the date of the Application for Payment and accompanied by such supporting documentation as is required by the Contract Documents. The due date for submitting an Application for Payment shall be the 25th day of the month for which the application is being made. Request for payment shall be submitted on the standard forms included in the Contract Documents unless approved otherwise by the ENGINEER. All submittals shall include five (5) copies of Application for Payment forms, all bearing original signatures. The Certificate of Sales Tax Paid, shall be notarized and bearing original signatures and shall able be submitted as described under Section 6.10. If payment is requested on the basis of materials and equipment not incorporated into the Work but delivered and suitable stored at the Site or at another location agreed to in writing by the OWNER, the Application for Payment shall also be accompanied by such supporting data, satisfactory to the OWNER, which shall establish the OWNER's title to materials and equipment, clear of liens, and protection of the OWNER's interest in the materials and equipment, including the maintenance of insurance on materials stored off the Site.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of CONTRACTOR and all Subcontractors who have performed Work, or are otherwise receiving payment under the Application for Payment, stating that all previous progress payments received on account of the Work have been applied on account to discharge CONTRACTOR's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

4. Beginning with the second Application for Payment, each Application shall include evidence that payment received on the basis of materials and equipment not incorporated and suitably stored, has in fact been paid to the respective Supplier(s) within sixty days of payment by OWNER. Failure to provide such evidence of

payment may result in the withdrawal of previous approval(s) and removal of the cost of related materials and equipment from the next submitted Application for Payment.

5. Each Application for Payment shall include the current list of Subcontractors and Suppliers providing labor and materials to the Site. Failure to provide an accurate list, or the existence of Subcontractors or materials at the Site that have not been approved by the OWNER and ENGINEER, may result in the withdrawal of previous approval(s) and/or removal of the cost of labor and/or materials provided by unapproved Subcontractors and/or Suppliers from the current and future Applications for Payment.

B. *Review of Applications*

1. ENGINEER will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

2. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's observations on the Site of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.08, and to any other qualifications stated in the recommendation);

c. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work; and

d. any fines owned by CONTRACTOR (to third parties or the OWNER), setoffs, or other reductions in the amount due to CONTRACTOR have been subtracted from the current or previous Application for Payment.

3. Except as specified in any separate agreement between the OWNER and the ENGINEER, and only to the extent of that agreement, the ENGINEER through his recommendation will not thereby be deemed to have represented that: (i) inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents; or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

4. Except as specified in any separate agreement between the OWNER and the ENGINEER, and only to the extent of that agreement, neither ENGINEER's review of CONTRACTOR's Work for the purposes of recommending payments nor ENGINEER's recommendation of any payment, including final payment, will impose responsibility on ENGINEER to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for CONTRACTOR's failure to comply with Laws and Regulations applicable to CONTRACTOR's performance of the Work. Additionally, said review or recommendation will not impose responsibility on ENGINEER to make any examination to ascertain how or for what purposes CONTRACTOR has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or equipment has passed to OWNER free and clear of any Liens.

5. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.02.B.2. ENGINEER may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of

subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Written Amendment or Change Orders;

c. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.09;

d. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.A;

e. ENGINEER has knowledge of any setoff, fine, or other reduction in the amount due to CONTRACTOR in connection with the Application for Payment and such amount has not been properly accounted for in the Application for Payment;

f. The Application for Payment is un any way incomplete; or

g. Unapproved Subcontractors or Suppliers are performing Work at supplying materials to the Site.

C. *Payment Becomes Due*

1. Thirty days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of paragraph 14.02.D) become due, and when due will be paid by OWNER to CONTRACTOR.

2. Should CONTRACTOR neglect to pay any undisputed claims made in writing to OWNER within thirty days after completion of the Work or any portion thereof, and continuing unsatisfied for a period of ninety days, OWNER may pay such claims and deduct the amount thereof from the balance due CONTRACTOR. OWNER may also, with the written consent of the CONTRACTOR, use any monies retained, due, or to become due under this Contract for the purpose of paying for both labor and materials for such Work, even if claims have not been filed.

3. Payment under the Payment Bond and the withholding of retainage by the OWNER for claims shall not be mutually exclusive protections for OWNER. OWNER may exercise both.

4. Any and all liens for work and materials may be paid off by OWNER within a reasonable time after filing for record of a notice of such liens in accordance with State and local laws, except where the claim on which the lien is filed is being actively litigated by CONTRACTOR; in such case OWNER may pay the amount of any final judgment or decree or any such claim within a reasonable time after such final judgment or decree shall be rendered.

5. All monies paid by OWNER in settlement of liens as aforesaid, with all costs and expenses incurred by OWNER in connection therewith, shall be charged to CONTRACTOR, shall bear interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank, and shall be deducted from the next payment(s) due CONTACTOR under the terms of this Contract or shall be reimbursed by CONTRACTOR immediately upon receipt by the CONTRACTOR of an invoice therefor by the OWNER if insufficient payments are outstanding to the CONTRACTOR to cover such cost and expenses.

6. As this agreement is a public construction contract, final payment shall be governed by North Carolina General Statute § 143-134.1 and the applicable interest rate shall be four percent per annum.

D. *Reduction in Payment*

1. OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

a. claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens;

c. there are other items entitling OWNER to a set-off against the amount recommended;

d. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.02.B.5.a through 14.02.B.5.c or paragraph 15.02.A; or

e. Insufficient funds have been deducted from the Application for Payment to cover all fines owned by CONTRACTOR (to third parties or the OWNER) and other setoffs and reductions in amount due to the CONTRACTOR in connection with the Application for Payment.

2. If OWNER refuses to make payment of the full amount recommended by ENGINEER, OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

3. If it is subsequently determined that OWNER's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.02.C.1.

14.03 ***CONTRACTOR's Warranty of Title***

A. CONTRACTOR warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

B. No materials or supplies for the Work shall be purchased by CONTRACTOR or any Subcontractor subject to any chattel mortgage, fixture filing, or under a conditional sale contract or other agreement by which an interest is retained by the seller. CONTACTOR warrants that CONTRACTOR has good title to all materials and supplies used by CONTRACTOR in the Work, free from all liens, claims or encumbrances.

C. CONTRACTOR shall indemnify and save OWNER harmless from all claims growing out of the lawful demands of Subcontractors, Suppliers, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. CONTRACTOR shall at OWNER's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If CONTRACTOR fails to do so, than OWNER may, after having provided ten (10) days' written notice on CONTRACTOR, withhold from the CONTRACTOR's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims. OWNER may hold such withheld money until satisfactory evidence is furnished that all liabilities have been discharged, or use the money to pay the unpaid obligations. Once the obligations have been satisfied, payment to CONTRACTOR shall be resumed in accordance with the terms of this Contract. In no event shall the provisions of this paragraph be construed to impose any obligations upon OWNER to either CONTRACTOR or CONTRACTOR's Surety. In paying any unpaid bills of the CONTRACTOR, OWNER shall be deemed the agent of CONTRACTOR, and any payment so made by OWNER shall be deducted from the Contract Price due to CONTRACTOR. OWNER shall not be liable to CONTRACTOR for any such payment made in good faith.

14.04 ***Substantial Completion***

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Promptly thereafter, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER or OWNER do not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within 14 days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said 14 days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes

justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

B. OWNER shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list unless the OWNER has stopped or suspended the Work or terminated the Contract pursuant to the terms hereof.

14.05 ***Partial Utilization***

A. Use by OWNER at OWNER's option of any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER, and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following conditions.

1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

2. No occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of paragraph 5.10 regarding property insurance.

3. Payment in full for portions of the Project that are completed and used by OWNER shall not be made until the entire Project has been completed. Partial payments and retainage shall continue to be handled as described elsewhere in the Contract Documents. Under no circumstances shall occupancy and use of completed portions of the Project by OWNER be considered grounds for either reducing the retainage withheld from CONTRACTOR's partial payment or increasing the Contract Price.

14.06 ***Final Inspection***

A. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will promptly make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 ***Final Payment***

A. *Application for Payment*

1. After CONTRACTOR has, in the opinion of ENGINEER, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in paragraph 6.12), and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.04.B.7; (ii) consent of the surety, if any, to final payment; and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in paragraph 14.07.A.2 and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

B. *Review of Application and Acceptance*

1. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application for Payment to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise, ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due*

1. Thirty days after the presentation to OWNER of the Application for Payment and accompanying documentation, the amount recommended by ENGINEER will become due and, when due, will be paid by OWNER to CONTRACTOR.

14.08 ***Final Completion Delayed***

A. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 ***Waiver of Claims***

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by OWNER against CONTRACTOR, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by CONTRACTOR against OWNER other than those previously made in writing that are still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *OWNER May Suspend Work*

A. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. If the OWNER suspends the Work without cause, then CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes a Claim therefor as provided in paragraph 10.05.

15.02 *OWNER May Terminate the Contract or Suspend the Work for Cause*

A. The occurrence of any one or more of the following events will justify suspension of the Work and/or termination of the Contract (which termination may or may not be preceded by a suspension of the Work), for cause:

1. CONTRACTOR's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.07 as adjusted from time to time pursuant to paragraph 6.04);

2. CONTRACTOR's disregard of Laws or Regulations of any public body having jurisdiction;

3. CONTRACTOR's disregard of the authority of ENGINEER; or

4. CONTRACTOR's violation in any substantial way of any provisions of the Contract Documents.

5. CONTRACTOR's abandonment of the Work, or sublet or assignment of its rights and/or responsibilities under this Contract, or any part thereof, without the previous written consent of OWNER, or the CONTRACTOR's assignment of any right, obligation or claim under the Contract without the previous written consent of the OWNER or otherwise than as herein specifically permitted;

6. Delays within the control of the CONTRACTOR, pursuant to Paragraph 12.04.A, have caused or will shortly cause the Work to interfere with the intended use of the Site, or a portion thereof, for other purposes, which interference would not have occurred if Contract Times had been met;

7. Any material misstatement by CONTRACTOR in any of the public bidding documents or failure of the CONTRACTOR to comply with any public bidding law.

B. If one or more of the events identified in paragraph 15.02.A occur, OWNER may, after giving CONTRACTOR (and the surety, if any) seven days written notice, terminate the services of CONTRACTOR, exclude CONTRACTOR from the Site, and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case, CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by OWNER arising out of or relating to completing the Work, such excess will be paid to CONTRACTOR. If such claims, costs, losses, and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and, when so approved by ENGINEER, incorporated in a Change Order. When exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed, and may pay more than the prevailing rate if necessary to have the Work completed in accordance, or as close thereto as feasible, with the original progress schedule and Contract Times.

C. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

D. If the OWNER suspends Work due to repeated unsafe Work conducted by the CONTRACTOR, confirmed by subsequent inspection by OSHA NC, then the CONTRACTOR shall not be allowed any adjustment in the Contract Price or extension of Contract Times for delays caused by such suspension, and CONTRACTOR shall bear all responsibilities under this Contract for such delays.

15.03 ***OWNER May Terminate For Convenience***

A. Upon seven days written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Contract. In such case, CONTRACTOR shall be paid (without duplication of any items):

1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such completed and acceptable Work;

2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. for all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. for reasonable expenses directly attributable to termination.

B. CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

C. Upon receiving the OWNER's notification of termination of the Contract, the CONTRACTOR shall immediately and expeditiously terminate any ongoing Work and inform its Subcontractors and Suppliers of termination, all so as to minimize the costs, expenses and other damage sustained prior to the effective date of the termination.

15.04 ***CONTRACTOR May Stop Work or Terminate***

A. If, through no act or fault of CONTRACTOR, the Work is suspended for more than 90 consecutive days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within 30 days after it is submitted, or OWNER fails for 30 days to pay CONTRACTOR any sum finally determined to be due and not disputed by either party, then CONTRACTOR may, upon seven days written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Contract and recover from OWNER payment on the same terms as provided in paragraph 15.03. In lieu of terminating the Contract and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within 30 days after it is submitted, or OWNER has failed for 30 days to pay CONTRACTOR any sum finally determined to be due and not disputed by either party, CONTRACTOR may, seven days after written notice to OWNER and ENGINEER, stop the Work until payment is made of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.04 are not intended to preclude CONTRACTOR from making a Claim under paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping the Work as permitted by this paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 ***Methods and Procedures***

A. Dispute resolution methods and procedures, if any, shall be as set forth in the Supplementary Conditions. If no method and procedure has been set forth, and subject to the provisions of paragraphs 9.09 and 10.05, OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute. CONTRACTOR shall continue to diligently pursue completion of the Work and maintain the progress schedule during any dispute resolution process, unless otherwise agreed by CONTRACTOR and OWNER in writing. The Town of Holly Springs shall follow the rules of the State Construction Office entitled "Rules Implementing Mediated Settlement Conferences in North Carolina Public Construction Projects, Adopted February 26, 2002" as found at:
http://www.nc-sco.com/Guidelines/SBC/sbc_Dis_rules.pdf

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligation*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Agreement.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Amendments*

A. This Contract may only be amended in writing by an instrument executed by the party or parties granting additional rights against it to others or upon whom additional obligations are being imposed.

17.07 *Assignment*

A. CONTRACTOR shall not assign, transfer, convey or otherwise dispose of the Contract, or of its legal right, title, or interest in or to the same or obligations or warranties made thereunder, in whole or in part, without the prior written consent of the OWNER. CONTRACTOR shall not assign by power of attorney or otherwise any monies due it and payable under this Contract without the prior written consent of the OWNER. Such consent, if given, shall in no way relieve the CONTRACTOR from any of the obligations of this Contract. OWNER shall not be bound to abide by or observe the requirements of any such assignment.

17.08 *Addresses*

A. Both the address given in the Bid Form upon which this Agreement is founded, and CONTRACTOR's office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to CONTRACTOR shall be certified, mailed, or delivered. The delivering at either of the above named placed, or depositing in a postpaid wrapper directed to the address in the Bid Form, in any post office box regularly maintained by the post office department, or any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon CONTRACTOR; and the date of said service shall be the date of such delivery or mailing. The CONTRACTOR's notice address may be changed at any time by instrument in writing, executed and acknowledged by CONTRACTOR, and delivered to OWNER and ENGINEER. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon CONTRACTOR personally.

17.09 *Forms*

A. The form of all submittals, notices, change orders, and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by ENGINEER. Standard forms, which ENGINEER expects to use, are contained in the pages of the Special Conditions following these General Conditions.

17.10 *Dissemination of Information*

A. It is expressly agreed and understood that the CONTRACTOR shall not at any time publicly disseminate any information concerning the Project without prior approval from the OWNER. Such approval will not be unreasonably withheld but may be given with certain

stipulations, such as OWNER participation in the creation of the public product or OWNER review and the option to refuse ultimate release of the final product should it fail to meet the OWNER's standards and goals. Public dissemination includes but is not limited to electronic, video, audio, photographic or hard copy materials serving as, in whole or part, professional papers or presentations, news releases, articles, or other media products, and/or CONTRACTOR's business collateral pieces.

17.11 ***Other***

The section headings contained herein are for reference purposes only and shall not in any way affect the meaning or interpretation of this Agreement. This Agreement has been produced by negotiation of the parties, each of whom had an opportunity to consult with an attorney, and the rule of construction against the interest of the drafter shall not apply.

END OF SECTION

FORMS

Note -- Do Not Copy This Page

If the last page of this Section is odd, insert a blank sheet (slip sheet) here.

NOTE

The following forms shall be used during construction:

FOR PAYMENT APPLICATIONS – 1 COMPLETE SET IS TO BE SUBMITTED TO THE TOWN

PAYMENT APPLICATIONS ARE TO BE SUBMITTED EVERY MONTH FOR PAYMENT

NCDOT PROJECTS FORM DBE-IS TO BE INCLUDED IN PAYMENT APPLICATION

APPLICATION FOR PROGRESS PAYMENT (5 pages)
MBE INFORMATION
FORM DBE-IS (if NCDOT)
TAX STATEMENT AND CERTIFICATION (
FIELD ORDER
WORK CHANGE DIRECTIVE INSTRUCTIONS
WORK CHANGE DIRECTIVE
CHANGE ORDER INSTRUCTIONS
CHANGE ORDER (2 PAGES)
ATTACHMENT TO CHANGE ORDER, SUPPORTING DOCUMENTATION
CONTRACTOR'S RELEASE OF OWNER
CONSENT OF SURETY TO FINAL PAYMENT
FINAL RECEIPT

APPLICATIONS FOR PROGRESS PAYMENT

FOR PAYMENT APPLICATIONS – 1 COMPLETE SET IS TO BE SUBMITTED TO THE TOWN, ATTN: DEBBIE ABBENE (Debbie.Abbene@hollyspringsnc.gov)

PAYMENT APPLICATIONS ARE TO BE SUBMITTED EVERY MONTH FOR PAYMENT

NCDOT PROJECTS FORM DBE-IS TO BE INCLUDED IN PAYMENT APPLICATION

Each Application for progress payment must include, as a minimum, the following information:

1. Pay Request cover letter as included on page 00900-20.

2. Town of Holly Springs Cover Sheet as included on page 00900-21.

3. Itemized quantity sheet(s) as included on page 00900-22.

4. A Certificate of Sales Tax Paid as included on page 00900-23.
   If no sales tax has been paid in the period, then a certificate should be included stating that no sales tax was paid.

5. Updated schedule.

6. Form DBE-IS if NCDOT Project

7. Subcontractor Payment Report on page 00905-10.

8. Five full sets of the above information.

9. A progress schedule updated to reflect current status of project. If project is still on a previously submitted schedule, submit another copy of the schedule with "No Change" noted, along with the date of submittal.

10. S&EC Rain Event Logs

11. S&EC Self Inspection Logs

12. MBE Documentation for Contract Payments on page 00905-15

PAY REQUEST COVER LETTER

(To Be Submitted)

DATE: _____

TO: Town of Holly Springs

RE: _____

We hereby certify that the labor and materials listed on this request for payment have been used in the construction of this Work, or that all materials included in this request for payment and not yet incorporated into the construction are now on the site or stored at an approved location with proper insurance to protect these stored materials; and that all lawful charges for labor, materials and the like, covered by previous Certificates of Payment have been paid and that all other lawful charges on which this request for payment is based have been paid for in full or will be paid for in full from the funds received in payment of this request within ten (10) calendar days from receipt of this partial payment from the OWNER.

CONTRACTOR: _____

_____

BY: _____

_____

TIME: _____

_____

State of _____
County of _____

Sworn to and subscribed before me this _____ day of _____, 20___.

_____
Notary Public (Seal)

My Commission Expires

_____

APPLICATION FOR PAYMENT

Town of Holly Springs, North Carolina

Project _____

Contractor _____

Project No. _____

Period _____

Payment No. _____

The undersigned Contractor certifies that to the best of its knowledge and belief, all items, units, quantities and prices of all work and material indicated on sheet(s) _____of this periodic estimate are correct; that all Work has been performed and Materials supplied in full accordance with the terms and conditions of the construction Contract Documents between the undersigned as Contractor and the Town of Holly Springs as Owner, dated _____, _____, and all authorized changes thereto; that the following is a true and correct statement of the Contract amount up to and including the last day of the period covered by this estimate; and that no part of the "Total Amount Due" has been received.

Total Contract Amount, Including Change Orders	_____	
Total Amount Earned, To Date	_____	_____ % Earned
5% Retainage	_____	
Total Earned Less Retainage	_____	
Total Previously Approved	_____	
Amount Due This Estimate	_____	
Unpaid From Previous Estimate	_____	
Current Amount Due	_____	
Balance to Finish, Including Retainage	_____	

The Contractor further certifies that all claims outstanding as of this date against the undersigned as Contractor for labor, materials, and expendable equipment employed in the performance of said Contract up to the date of this estimate have been paid in full accordance with the requirements of this Contract.

CONTRACTOR_____ BY_____ TITLE_____ DATE_____

APPROVAL FOR PAYMENT:

_____	_____	_____
Resident Project Representative	Engineer/Architect	Town of Holly Springs – Owner's Representative

APPLICATION FOR PAYMENT

Town of Holly Springs, North Carolina

PAYMENT NO. _____
PROJECT _____
PERIOD _____
CONTRACTOR _____

ITEM NO	DESCRIPTION OF ITEMS	UNIT	UNIT PRICE	BID QUANTITIES	CURRENT QUANTITY	QUANTITY TO DATE	CURRENT AMOUNT	CONTRACT AMOUNT	% COMP	AMOUNT EARNED TO DATE

TOTAL EARNED TO DATE _____
TOTAL PAID TO DATE _____
5% RETAINAGE _____
AMOUNT DUE THIS ESTIMATE _____

CERTIFICATE OF SALES TAX PAID

PAYMENT NO. 1

PROJECT _____ OWNER - TOWN OF HOLLY SPRINGS, WAKE COUNTY, NORTH CAROLINA

CONTRACTOR_____ FOR PERIOD _____ TO _____

VENDOR	ADDRESS	INVOICE #	DATE	AMOUNT	NC TAX	COUNTY	COUNTY TAX

I hereby certify that the above listed vendors were paid sales tax upon purchases of building materials during the period covered by this construction estimate, and the property upon which such taxes were paid was or will be used in the performance of this Contract. No tax on purchases or rentals of tools and/or equipment is included in the above list. All of the materials listed above became a part of or are annexed in the above referenced construction project.

By _____ _____
Signature *Title*

_____, being duly sworn, certifies that the foregoing statement of sales taxes paid in connection with the referenced Contract is true to the best of his or her knowledge and belief.

Sworn to before me this _____day of _____, 20__.

_____
Notary Public

My commission expires _____, 20____.

Form DEB-IS

State of North Carolina

Department of Transportation

Subcontractor Payment Information

Submit with Invoice to: **Town of Holly Springs**
P O Box 8
Town of Holly Springs, NC 27540

Firm Invoice No. Reference: _____

NCDOT PO/Contract Number: _____

WBS No. (State Project No.): _____

Date of Invoice: _____

Signed: _____

Invoice Line Item Reference	Payer Name	Payer Federal Tax ID	Subontractor/Subconsultant/Material Supplier Name	Subcontractor/Subconsultant/Material Supplier Federal Tax ID	Amount Paid to Subcontractor/Subconsultant/Material Supplier This Invoice	Date Paid To Subcontractor/Subconsultant/Material Supplier This Invoice

Total Amount Paid to Subcontractor Firms **$**_____

NOTE: These documents are scanned into our Fiscal program. Please do not highlight or shade the figures.

Rev. 12/05

FIELD ORDER

FIELD ORDER NO.: _____ DATE: _____

PROJECT: _____

RE: _____

_____

TO CONTRACTOR: This Field Order is issued to interpret/clarify the Contract Documents, order minor changes in the work, and/or memorialize trade-off agreements. Both parties hereby agree that the work described by this Field Order is to be accomplished without change in Contract Sum or Price, Contract Time or Times, and/or claims with other costs.

DESCRIPTION: _____

_____

_____

_____

_____

ATTACHMENTS: _____

_____

REFERENCES: _____

_____

RECOMMENDED:	**APPROVED:**	**ACCEPTED:**
By: _____	By: _____	By: _____
Inspector (Authorized Signature)	Development Inspection Administrator or Senior Engineer (Authorized Signature)	Contractor (Authorized Signature)
Date: _____	Date: _____	Date: _____

Distribution: Project Inspector
Lead Inspector
Project Engineer
Director of Engineering/Town Engineer
Contractor

WORK CHANGE DIRECTIVE INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed for use in situations involving changes in the Work which, if not processed expeditiously, might delay the Project. These changes are often initiated in the field and may affect the Contract Sum or Price or the Contract Time or Times. This is not a Change Order, but only a directive to proceed with Work that may be included in a subsequent Change Order.

For supplemental instructions and minor changes not involving a possible change in the Contract Sum or Price or the Contract Time or Times, a Field Order instead shall be used.

B. COMPLETING THE WORK CHANGE DIRECTIVE FORM

Engineer or Architect initiates the form, including a description of the items involved and attachments.

Based on conversations between Engineer or Architect and Contractor, Engineer or Architect completes the following:

> METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT SUM OR PRICE: Mark the method to be used in determining the final cost of Work involved and the estimated net effect on the Contract Sum or Price. If the change involves an increase in the Contract Sum or Price and the estimated amount is reached before the additional or changed Work is completed, another Work Change Directive must be issued to change the estimated price or Contractor may stop the changed Work when the estimated price is reached. If the Work Change Directive is not likely to change the Contract Sum or Price, the space for estimated increase (decrease) should be marked "Not Applicable."
>
> METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT TIME OR TIMES: Mark the method to be used in determining the change in Contract Time or Times and the estimated increase or decrease in Contract Time or Times. If the changes involves an increase in the Contract Time or Times and the estimated times are reached before the additional or changed Work is completed, another Work Change Directive must be issued to change the times or Contractor may stop the changed Work when the estimated times are reached. If the Work Change Directive is not likely to change the Contract Time or Times, the space for estimated increase (decrease) should be marked "Not Applicable."

Once Engineer or Architect has completed and signed the form, all copies should be sent to Owner for authorization because neither Engineer nor Architect alone has the authority to authorize changes in the Contract Sum or Price or the Contract Time or Times. Once authorized by Owner, a copy should be sent by Engineer or Architect to Contractor. The Contract Sum or Price and the Contract Time or Times may only be changed by Change Order signed by Owner and Contractor with Engineer's or Architects' recommendations.

Once the Work covered by this directive is completed or final cost and times are determined, Contractor should submit documentation for inclusion in a Change Order.

THIS IS A DIRECTIVE TO PROCEED WITH A CHANGE THAT MAY AFFECT THE CONTRACT SUM OR PRICE OR THE CONTRACT TIME OR TIMES. A CHANGE ORDER, IF ANY, SHOULD BE CONSIDERED PROMPTLY.

WORK CHANGE DIRECTIVE

WORK CHANGE DIRECTIVE NO.: _____ DATE: _____

Project: _____

Contractor _____

Engineer/Architect _____

You are directed to proceed promptly with the following change(s):

Description: _____

Purpose of Work Change Directive: _____

Attachments (List documents supporting change): _____

If a claim is made that the above change(s) have affected the Contract Sum or Price or the Contract Time or Times, any claim for a Change Order based thereon will involve one or more of the following methods of determining the effect of the change(s).

Method of determining change in Contract Sum or Price:

- Unit Prices
- Lump Sum
- Other _____

Method of determining change in Contract Time or Times:

- Contractor's records
- Engineer's records
- Other

_____

_____

_____

Estimated (increase/decrease) in Contract Price:

$_____

Estimated (increase/decrease) in Contract Times:

Substantial Completion:_____days;

Ready for final payment: _____days;

If the change involves an increase, the estimated price and times are not to be exceeded without further authorization.

RECOMMENDED:	**APPROVED:**	**ACCEPTED:**
By: _____	By: _____	By: _____
Development Inspection Administrator or Senior Engineer (Authorized Signature)	Director of Engineering (Authorized Signature)	Contractor (Authorized Signature)
Date: _____	Date: _____	Date: _____

Distribution: Project Inspector
Lead Inspector
Project Engineer
Director of Engineering/Town Engineer
Contractor

CHANGE ORDER INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling Contract changes that affect the Contract Sum or Price or the Contract Time or Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect the Contract Sum or Price or the Contract Time or Times.

Changes that affect the Contract Sum or Price or the Contract Time or Times should be promptly covered by a Change Order. The practice of accumulating change order items to reduce the administrative burden may lead to unnecessary disputes.

If milestones have been listed, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Sum or Price or the Contract Time or Times, a Field Order may be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer or Architect initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer or Architect has completed and signed the form, all copies should be sent to Contractor for approval. After approval and signature by Contractor, all copies should be sent to Owner for approval. Engineer or Architect should distribute executed copies after approval by Owner.

If a change only applies to the Contract Sum or Price or to the Contract Time or Times, cross out the part of the tabulation that does not apply.

CHANGE ORDER

CHANGE ORDER NO.: _____ DATE: _____

Project:_____

Contractor:_____

Engineer/Architect:_____

CONTRACTOR is directed to make the following changes in the Contract Documents.

Description:

_____

Attachments:

_____

CHANGE IN CONTRACT SUM OR PRICE:	CHANGE IN CONTRACT TIME OR TIMES:
Original Contract Price $_____	Original Contract Times Substantial Completion:_____ Ready for final payment: _____ days or dates
Net change from previous Change Orders No. ____ to No. ____: $_____	Net change from previous Change Orders No. ____ to No. ____: _____ days
Contract Sum or Price prior to this Change Order $_____	Contract Times with all approved Change Orders Substantial Completion:_____ Ready for final payment:_____ days or dates
Net Increase (decrease) of this Change Order $_____	Net Increase (decrease) of this Change Order _____ days
Contract Sum or Price with all approved Change Orders $_____	Contract Times with all approved Change Orders Substantial Completion:_____ Ready for final payment:_____ days or dates

RECOMMENDED:	**APPROVED:**	**ACCEPTED:**
By: _____	By: _____	By: _____
Director of Engineering	Town Manager	Contractor
(Authorized Signature)	(Authorized Signature)	(Authorized Signature)
Date: _____	Date: _____	Date: _____

CHANGE ORDER NO.: _____

Page ___ of ___

The adjustment in Contract Sum or Price and/or Contract Time or Times stated in this Change Order shall comprise the total price and/or time adjustment due or owed the CONTRACTOR for the work or changes defined in this Change Order. By executing the Change Order, the CONTRACTOR acknowledges and agrees that the stipulated price and/or time adjustments include the costs and delays for all work contained in the Change Order, including costs and delays associated with the interruption of schedules, extended overheads, delay, and cumulative impacts or ripple effect on all other non-affected work under this Contract. Signing of the Change Order constitutes full and mutual accord and satisfaction for the adjustment in Contract Sum or Price or Contract Time or Times as a result of increases or decreases in costs and time of performance caused directly and indirectly from the change, subject to the current scope of the entire work as set forth in the Contract Documents. Acceptance of the waiver constitutes an agreement between OWNER and CONTRACTOR that the Change Order represents an equitable adjustment to the Contract, and that CONTRACTOR waives all rights to file a claim on this Change Order after it is properly executed.

IN WITNESS WHEREOF, the undersigned have caused the execution hereof:

CONTRACTOR: _____

ATTEST:

_____
Secretary

[Corporate Seal]

By: _____

Name: _____

Title: _____

Address: _____

Date: _____

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

By: _____ Date: _____

Title: _____

OWNER: TOWN OF HOLLY SPRINGS

Approval as to form and legal sufficiency:

By: _____

Title: _____

Date: _____

By: _____

Name: _____

Title: _____

Date: _____

Distribution:

CONTRACTOR'S RELEASE OF OWNER

The Contractor, known as _____,

for the construction of Project: _____,

hereby and forever releases the Town of Holly Springs (Owner), its officers, agents, and [Engineers/Architects]: _____, from all past, present, and future claims and liability to the Contractor for anything done or furnished for, relating to, or for any act of neglect of the Owner, its engineers, or any persons relating to or affecting the work.

Contractor's Certification:

Contractor: _____

Authorized Representative: _____

Date: _____

CONSENT OF SURETY COMPANY TO FINAL PAYMENT

PROJECT: _____

OWNER: _____

CONTRACTOR: _____

CONTRACT: _____ DATE: _____

TO: _____

_____

_____

_____

In accordance with the provisions of the Contract between the Town of Holly Springs (Owner), and the Contractor, known as _____, the Surety Company, known as _____, on bond of Contractor, hereby approves of the final payment to Contractor, and agrees that final payment to Contractor shall not relieve the Surety Company of any of its obligations to the Owner as set forth in said Surety Company's bond.

In witness whereof, the Surety Company has hereunto set its hand this ____ day of _____ in the year _____.

_____
Surety Company

_____
Signature of Authorized Representative

_____
Typed Name and Title of Authorized Representative

[Seal]

FINAL RECEIPT

Contract: _____

Received this _____ day of _____, 20___ as full and final payment of the cost of all improvements provided for in the foregoing Contract the sum of _____ Dollars and _____Cents, ($_____), in cash, being the full amount accruing to the undersigned by virtue of said Contract, said cash covering and including full payment for all extra work and material furnished by the undersigned in the construction of said improvements, and all incidentals thereto, and the undersigned hereby releases the said _____ from all claims whatsoever growing out of the said Contract.

These presents are to certify that all persons doing work upon or furnishing materials or supplies for said improvements under the foregoing Contract have been paid in full.

The undersigned further certifies that all taxes imposed by Chapter 212, North Carolina Statues (Sales and Use Tax Act), as amended, have been paid and discharged.

_____
CONTRACTOR

By: _____ (Seal)

_____
(Typewritten Name)

SECTION 00905

OUTREACH PLAN AND GUIDELINES FOR RECRUITMENT AND SELECTION OF MINORITY BUSINESSES FOR PARTICIPATION IN TOWN OF HOLLY SPRINGS CONSTRUCTION CONTRACTS

In accordance with G.S. 143-128.2 these guidelines establish goals for minority participation in single-prime bidding, separate-prime bidding, Construction Manager-at-Risk, and alternative contracting methods on Holly Springs construction projects in the amount of $300,000 or more. The Outreach Plan shall also be applicable to the selection process of architectural, engineering and Construction Manager-at-Risk services.

The Town of Holly Springs current goal for minority participation for public building construction is ten percent (10%). The overall goal will be reviewed annually or as soon as relevant data is available.

INTENT

The intent of these guidelines is that the Town of Holly Springs, as awarding authority for construction projects, and the contractors and subcontractors performing the construction contracts awarded, shall cooperate and in good faith do all things, legal, proper and reasonable to achieve the statutory goal of ten percent (10%) for participation by minority businesses in each construction project as mandated by GS 143-128.2. Nothing in these guidelines shall be construed to require contractors or awarding authorities to award contracts or subcontracts to or to make purchases of materials or equipment from minority-business contractors or minority-business subcontractors who do not submit the lowest responsible responsive bid or bids.

DEFINITION

1. Minority - a person who is a citizen or lawful permanent resident of the United States and who is:
    a. Black, that is, a person having origins in any of the black racial groups in Africa;
    b. Hispanic, that is, a person of Spanish or Portuguese culture with' origins in Mexico, South or Central American, or the Caribbean Islands, regardless of race;
    c. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, or the Pacific Islands;
    d. American Indian, that is, a person having origins in any of the original peoples of North America; or
    e. Female

2. Minority Business - means a business
    a. In which at least fifty-one percent (51 %) is owned by one or more minority persons, or in the case of a corporation, in which at least fifty-one percent (51 %) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals; and
    b. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.

3. Socially and economically disadvantaged individual – means the same as defined in 15 U.S.C. 637. "Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias because of their identity as a member of a group without regard to their individual qualities". "Economically disadvantaged individuals are those socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged".

4. Public Entity - means State and all public subdivisions and local government units.

5. Owner – The Town of Holly Springs.

6. Designer - Any person, firm, partnership, or corporation, which has contracted with the Town of Holly Springs to perform architectural or engineering work.

7. Bidder - Any person, firm, partnership, corporation, association, or joint venture seeking to be awarded a public contract or subcontract.

8. Contract - A mutually binding legal relationship, or any modification there of, obligating the seller to furnish equipment, materials or services, including construction, and obligating the buyer to pay for them.

9. Contractor - Any person, firm, partnership, corporation, association, or joint venture which has contracted with the Town of Holly Springs to perform construction work or repair.

10. Subcontractor - A firm under contract with the prime contractor or Construction Manager-at-Risk for supplying materials or labor and materials and/or installation. The subcontractor mayor may not provide materials in the subcontract.

3. Minority and Small Business Participation Outreach Plan

1. Work with minority-focused and small business groups that support MBE and small business inclusion in the solicitation of bids.

2. Place more emphasis on the importance of soliciting certified MBE firms and small businesses for subcontracting opportunities at pre-bid conferences and in the bid documents. Examine specifications to identify special subcontracting opportunities and strongly encourage prime contractors to solicit bids for subcontracts from MBE firms.

3. Provide detailed information to majority contractors concerning the Guidelines for Recruitment and Selection of Minority Business and Outreach Plan and provide information on G.S. 143-129 by holding meetings with the contractors.

4. Assess the effectiveness of the MBE Program, and identify opportunities to enhance it, by evaluating MBE participation and compliance and reviewing the "good faith efforts" provided in bid packages.

5. Identify subcontracting opportunities unique to each construction contract and project and concentrate heavily on targeting certified MBE firms and small businesses that have expressed an interest in the Town's projects. Identify these opportunities and contact interested businesses no later than 10 days prior to the bid opening and provide a list of prime contractors plan to participate in the project.

6. Build new business relationships through networking and continue networking with other North Carolina cities and counties to find out how their Outreach Program and MBE program is working and sharing "best practices" and ideas to improve the program.

7. Participate in education opportunities throughout the community as they become available and offer training sessions to share the Town's Outreach Plan with interested businesses and organizations.

8. Be visible through participation in trade shows and business organizations of interest to MBE firms, majority contractors and small businesses, and provide information to the general public about the MBE Program, and continue outreach efforts to the business community.

9. Enhance the Town's web page by including the Outreach Plan and Guidelines, listing good faith efforts, and creating links to MBE resources, and creating awareness of specific subcontracting opportunities.

10. Make available to minority-focused agencies, a list of subcontracting opportunities when they are identified, no later than 10 days prior to the bid opening, and a list of prime bidders that subcontractors may wish to contact for subcontracting consideration.

11. Continue to maintain a database specifically for MBE firms and majority contractors to ensure those firms wishing to do business with the Town of Holly Springs have access to up to date information.

12. Advertise upcoming bid opportunities in minority-focused media.

13. Work with architects and engineers to make subcontracting opportunities more noticeable and more easily understood by potential contractors and subcontractors.

DESIGNER

Under the single-prime bidding, separate prime bidding, dual bidding, Construction Manager-at-Risk, or alternative contracting method, the designer must do all of the following:

a. Attend the scheduled prebid conference to explain minority business requirements to the prospective bidders.
b. Assist the owner to identify and notify prospective minority business prime and subcontractors of potential contracting opportunities.

c. Maintain documentation of any contacts, correspondence, or conversations with minority business firms made in an attempt to meet the goals.
d. Review jointly with the owner, all requirements of G.S. 143-128.2(c) and G.S. 143-128.2(f) - (i.e. bidders' proposal for identification of the minority. businesses that will be utilized with corresponding dollar value of the bid and affidavit listing Good Faith Efforts or affidavit of self-performance of work, if the contractor will perform work under contract by its own workforce) - prior to recommendation of an award.
e. During the construction phase of the project, review "MBE Documentation for Contract Payment" form with monthly pay applications to the owner and forward copies to the Town of Holly Springs.

PRIME CONRACTOR(S) CONSTRUCTION MANAGER-AT RISK. AND ITS FIRST-TIER SUBCONTRACTORS

Under the single-prime bidding, the separate-prime bidding, dual bidding, Construction Manager-at-Risk and alternative contracting methods, contractor(s) must do all of the following:

a. Attend the scheduled prebid conference.
b. Identify or determine those work areas of a subcontract where minority businesses may have an interest in performing subcontract work.
c. At least ten (10) days prior to the scheduled day of bid opening, notify minority businesses of potential subcontracting opportunities listed in the proposal. The notification must include all of the following:
    (1) A description of the work for which the subbid is being solicited.
    (2) The date, time and location where subbids are to be submitted.
    (3) The name of the individual within the company who will be available to answer questions about the project.
    (4) Where bid documents may be reviewed.
    (5) Any special requirements that may exist, such as insurance, licenses, bonds and financial arrangements.
d. During the bidding process, comply with the contractor(s) requirements listed in the proposal for minority participation.
e. Identify on the bid the minority businesses that will be utilized on the project with corresponding total dollar value of the bid and affidavit listing good faith efforts as required by G.S. 143-128.2(c) and G.S. 143-128.2(f) or Intent to Perform Contract With Own Workforce affidavit.
f. Make documentation showing evidence of implementation of Prime Contractor, Construction Manager-at-Risk and First Tier Subcontractor responsibilities available for review by the Town of Holly Springs upon request.
g. Provide one of the following upon being named the apparent low bidder: (1) an affidavit that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal. This affidavit shall give rise to a presumption that the bidder has made the required good faith effort; or (2) if the percentage is not equal to the applicable goal, then documentation of all good faith efforts taken to meet the goal. The documentation must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations, and evidence of other specific actions demonstrating

recruitment and selection of minority businesses for participation in the contract. Failure to comply with these requirements is grounds for rejection of the bid and award to the next lowest responsible and responsive bidder.

h. Identify the name(s) of minority business subcontractor(s) and corresponding dollar amount of work on the schedule of values.
i. Submit with each monthly pay requests(s) and final payment(s), "MBE Documentation for Contract Payment" for designer's review.
j. If at any time during the construction of a project, it becomes necessary to replace a minority business subcontractor I immediately advise the owner in writing of the circumstances involved. The prime contractor shall make a good faith effort to replace a minority business subcontractor with another minority business subcontractor.
k. Make a good faith effort to solicit subbids from minority businesses during the construction of a project if additional subcontracting opportunities become available.

MINORITY BUSINESS RESPONSIBILITIES

The Town of Holly Springs does not certify minority, disadvantaged or woman-owned businesses. Any business which desires to participate as an MBE will be required to complete and submit for certification, documents required by the agencies listed below. Only those firms holding current certification through at least one of the following agencies will be considered eligible for inclusion in meeting the MBE participation percentage goals:

North Carolina Administration Department Historically Underutilized Business (HUB) certification.
North Carolina Department of Transportation Minority/Disadvantage/Woman- owned Business certification.
Small Business. Administration 8(a) certification.
Other governmental agencies on a case-by-case basis.

A copy of these guidelines will be issued with each bid package for the Town of Holly Springs construction projects. These guidelines shall apply to all contractors regardless of ownership.

MINIMUM COMPLIANCE REQUIREMENTS

All written statements, affidavits or intentions made by the Bidder shall become a part of the agreement between the Contractor and the Town of Holly Springs for the performance of the contract. Failure to comply with any of these statements, affidavits or intentions, or with the minority business guidelines shall constitute a breach of contract. A finding by the Town that any information, submitted either prior to award of the contract or during the performance of the contract, is inaccurate, false or incomplete, shall constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the Town of Holly Springs whether to terminate the contract for breach.

In determining whether a contractor has made Good Faith Efforts, the Town will evaluate all efforts made by the Contractor and will determine compliance in regard to quantity, intensity, and results of these efforts. Contractors are required to earn at least 50 points. Failure to file a

required affidavit or documentation that demonstrates that the contractor made the required good faith effort is grounds for rejection of the bid.

(1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed. Value = 10 points.

(2) Making the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due. Value = 10 points.

(3) Breaking down or combining elements of work in economically feasible. units to facilitate minority participation. Value - 15 points.

(4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and those included in the bid documents to provide assistance in recruitment of minority businesses. Value = 10 points.

(5) Attending any prebid meetings scheduled by the public owner. Value = 10 points.

(6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors. Value = 20 points.

(7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing. Value = 15 points.

(8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit. Value = 25 points.

(9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public building construction or repair project when possible. Value = 20 points.

(10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands. Value = 20 points.

Town of Holly Springs

Intent to Perform Contract With Own Workforce

County of_____

Affidavit of_____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the

_____ contract.
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Seal

Title: _____

State of North Carolina, County of _____
Subscribed and sworn to before me this _____day of _____20___
Notary Public _____
My commission expires _____

TOWN OF HOLLY SPRINGS, NORTH CAROLINA
"GOOD FAITH EFFORT"

County of _____

Affidavit of _____
(Name of Bidder)

I have made a good faith effort to comply under the following areas checked: (A minimum of 50 points is required to have achieved a "good faith effort")

(Y/N)

_____ (1) Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed. Value = 10 points

_____ (2) Making the construction plans, specifications and requirements available for review by prospective minority businesses or providing these documents to them at least 10 days before the bid or proposals are due. Value = 10 points

_____ (3) Breaking down or combining elements of work into economically feasible units to facilitate minority participation. Value = 10 points

_____ (4) Working with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses. Value = 10 points.

_____ (5) Attending any pre-bid meetings scheduled by the public owner. Value = 10 points.

_____ (6) Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors. Value = 20 points.

_____ (7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of minority business based on lack of qualification should have the reasons documented writing. Value = 15 points.

_____ (8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily is required. Assisting minority businesses in obtaining the 'same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit. Value = 25 points.

_____ (9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible. Value = 20 points.

_____ (10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands. Value = 20 points.

In accordance with GSI43-128.2(d) the undersigned will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon execution of a contract with the Owner. Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certified that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized _____

Officer: Signature: _____

Seal

Title: _____

State of North Carolina, County of _____
Subscribed and sworn to before me this _____day of _____20___
Notary Public _____
My commission expires _____

Town of Holly Springs **- Portion of the Work to be Performed by Minority Firms**

****** (NOTE: THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL) ******

If the portion of the work to be executed by minority businesses as defined in GS 143-128.2 (g) is equal to or greater than 10% of the bidders total contract price, then the bidder must complete this affidavit. This affidavit shall be provided by the apparent lowest responsible, responsive bidder within 72 hours after notification of being low bidder.

Affidavit of: _____ I do hereby certify that on the
(Bidder)

_____
(Project Name)

Project ID # _____Amount of Bid $ _____

I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority Businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.

Attach additional sheets if required.

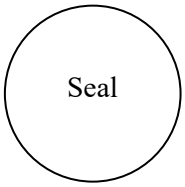
Name and Phone Number	* Minority Category	Work Description	Dollar Value

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Socially and Economically Disadvantaged (D)

Pursuant to GS 143-128.2 (d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____



Signature: _____

Title: _____

State of North Carolina, County of _____
Subscribed and sworn to before me this _____day of _____20___
Notary Public _____
My commission expires _____

If the goal of 10% participation by minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts.

Affidavit of: _____

(Bidder)

I do certify the attached documentation as true and accurate representation of my good faith efforts.

(Attach additional sheets if required)

Name and Phone Number	*Minority Category	Work Description	Dollar Value

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Socially and Economically Disadvantaged (D)

Documentation of the Bidder's good faith efforts to meet the goals set forth in these provisions. Examples of documentation shall include the following evidence:

A. Copies of solicitation for quotes to at least three (3) minority business firms form the source list provided for each subcontract to be let under this contract (if 3 or more finns are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contract, and location, date and time when quotes must be received.

B. Copies of quotes or responses received from each firm responding to the solicitation.

C. A telephone log of follow-up calls to each firm sent a solicitation.

D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.

E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.

F. Copy of pre-bid roster.

G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.

H. Letter detailing reasons for rejection of minority business due to lack of qualification.

I. Letter documenting proposed assistance offered to minority businesses in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Date: _____ Name of Authorized Officer: _____

Seal

Signature: _____

Title: _____

State of North Carolina, County of _____
Subscribed and sworn to before me this _____day of _____20___
Notary Public _____
My commission expires _____

Identification of Minority Business Participation

I, _____
(Name of Bidder)

do hereby certify that on this project, we will use the following minority business enterprises as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #	Work Type	*Minority Category

*Minority categories: Black, African American (B), Hispanic (R), Asian American (A).
American Indian (I), Female (F), Socially and Economically Disadvantaged (D)

The total value of minority business contracting will be ($) _____.

Town of Holly Springs, NC

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor/Architect: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments to be made to minority business contractors on this project for the above-mentioned period.

Firm Name	*Minority Category	Payment Amount	Owner Use Only

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Socially and Economically Disadvantaged (D)

Date: _____ Approved/Certified By: _____
Name

_____
Title

_____
Signature

****THIS DOCUMENT MUST BE SUBMITTED WITH EACH PAY REQUEST & FINAL PAYMENT**

SECTION 00910

CERTIFICATE OF TOWN ATTORNEY

I am the Town Attorney for the Town of Holly Springs and after receiving these documents, I find them legally sufficient as to form.

BY:_____

TITLE:_____

DATE:_____

CERTIFICATE OF FINANCE OFFICER

I hereby certify that I am the legal and duly appointed Financial Officer for the Owner of this project and that provision for the payment of the moneys to fall due under this agreement has been made or will be made by appropriation duly made or by bonds or notes duly authorized, as required by the Local Government and Fiscal Control Act.

BY:_____

TITLE:_____

DATE:_____

- END OF SECTION 00910 -

SECTION 01000
DEFINITIONS, ABBREVIATIONS and REFERENCE STANDARDS

PART 1 - DEFINITIONS

A. CONTRACTOR – The successful Bidder to whom a contract has been awarded and who has properly executed the contract documents.

B. EASEMENT – An interest in land owned by another that entitles its holder to a specific use. Or a property right to use or control real property of another.

C. ENGINEER – The Director of Engineering of the Town of Holly Springs or other representative duly authorized by the Director of Engineering.

D. INSPECTOR – The Lead Development Inspector, a Construction Inspector, or other representative duly authorized by the Director of Engineering.

E. ENGINEER'S CONSULTANT – Duly authorized representative from hired firm.

F. INVERT - The lowest point in the internal cross section of a pipe or other culvert.

G. OWNER – The Town of Holly Springs, a Municipal Corporation of the State of North Carolina.

H. PLANS – The approved design drawings that show the work to be done.

I. RIGHT OF WAY - The area that encompasses public streets, sidewalks and utility strips.

J. SUBGRADE - That portion of the roadbed prepared as a foundation for the pavement structure.

PART 2 – ABBREVIATIONS The following is a partial list of abbreviations that may appear in the specifications, plans, and/or estimates and their definitions.

A. A.B.C. aggregate base course

B. A.B.S. Acrylonitrile Butadiene Styrene

C. A.F.F. above finished floor

D. AWG American Wire Gauge

E. B.C.Y bank cubic yard

F. BHP brake horsepower

G. BOC back of curb

H. BV butterfly valve

I. C/O sewer clean out

J. °C degrees Centigrade

K. C.F. cubic feet

L. CMP corrugated metal pipe

M. CV check valve

N. cy or cu. yd. cubic yard

O. DIP ductile iron pipe

P. EI or EIT Engineer Intern

Q. EIP existing iron pipe

R. EOP edge of pavement

S. °F degrees Fahrenheit

T. FES flared end section (pipe)

U. ft. foot

V. gpd gallons per day

W. gpm gallons per minute

X. GV gate valve

Y. HDPE high density polyethylene

Z. HP horsepower

AA. ID internal diameter

BB. in. inches

CC. inv invert

DD. lbs. pounds

EE. L.F. Linear Feet

FF. MH manhole

GG. max. maximum

HH. min. minimum

II. M.S.F thousand square feet

JJ. MSL mean sea level

KK. MUTCD Manual on Uniform Traffic Control Devices

LL. NCDENR North Carolina Department of Environment and Natural Resources

MM. NCDOT North Carolina Department of Transportation

NN. NPDES National Pollutant Discharge Elimination System

OO. O.C. on center

PP. OD outside diameter

QQ. OHPL overhead power line

RR. OSHA Occupational Safety and Health Act

SS. oz. ounce

TT. PAM Polyacrylamide

UU. P.C. point of curvature

VV. P.E. Professional Engineer, registered in North Carolina

WW. pH measure of the acidity or alkalinity of a solution

XX. P.L.S. Professional Land Surveyor, registered in North Carolina

YY. ppm parts per million

ZZ. psi pounds per square inch

AAA. PL property line

BBB. P.T. point of tangency

CCC. PVC polyvinyl chloride

DDD. P.V.C. point of curvature on vertical curve

EEE. P.V.T. point of tangency on vertical curve

FFF. Qmax maximum discharge

GGG. Qmin minimum discharge

HHH. R. or Rad. radius

III. RCP reinforced concrete pipe

JJJ. RH relative humidity

KKK. SCS Soil Conservation Service

LLL. sec. second

MMM. S.F. or sq. ft. square feet

NNN. S.Y. or sq. yd. square yard

OOO. TDH total dynamic head

PPP. TOHS Town of Holly Springs

QQQ. Typ. typical

RRR. UPL underground power line

SSS. VAC volts (alternating current)

TTT. VDC volts (direct current)

UUU. WM water meter

VVV. WV water valve

WWW. yd yard

PART 3 – REFERENCE STANDARDS

All materials, products and procedures incorporated into the work shall be in strict accordance with the following codes, standards and specifications. Wherever reference is made to any published standard, code or standard specification, it shall mean the latest edition in effect at the invitation for bids.

A. American Association of State Highway and Transportation Officials (AASHTO)

B. American National Standards Institute (ANSI)

C. American Society of Testing and Materials (ASTM)

D. American Water Works Association (AWWA)

E. Ductile Iron Pipe Research Association (DIPRA)

F. Manual on Uniform Traffic Control Devices for Streets and Highways, as prepared by the National Advisory Committee on Uniform Traffic Control Devices (MUTCD)

G. North Carolina Department of Transportation (NCDOT), July 2006 "Standard Specifications for Roads and Structures", may be obtained from NCDOT Design Services Unit, Manual Distribution, P.O. Box 25201, Raleigh, NC 27611, phone 919-250-4128.

H. National Pre-Cast Concrete Association (NPCA)

I. North Carolina Department of Environment and Natural Resources (NCDENR)

J. National Electrical Code (NEC)

K. National Electrical Manufacturers Association (NEMA)

L. Natural Resources Conservation Service (NRCS [formerly "SCS"])

M. New York Department of Transportation (NYDOT)

N. Occupational Safety and Health Act (OSHA)

O. Soil Conservation Service (SCS)

P. Town of Holly Springs (TOHS) "Engineering Design and Construction Standards" - may be obtained from the office of the Engineering Director, Holly Springs Municipal Bldg., 128 S. Main St., Holly Springs, North

Carolina. Where TOHS standard specifications exceed NCDOT standards, the TOHS standard specification shall apply.

Q. Underwriters Laboratories, Inc. (UL)

END OF SECTION 01000

SECTION 02000
SUBMITTALS

PART 1 – SUBMITTALS

A. General Submittal Requirements

i. Submittals shall meet the requirements of the General Conditions and Supplementary Conditions.

ii. The following submittals will be required for this project:

- Pumps
- Concrete
- Hatches
- Valves
- Fittings
- Flow Meter
- Channel Grinder
- Fencing
- Painting and Coatings
- Temporary Bypass Pumping
- Crane Components
- Odor Control System
- HVAC
- Emergency Shower and Eye Wash
- Electrical
- SCADA Equipment
- Pipe
- Pipe Restraint
- Steel Casing
- Air Release Valves
- Erosion Control Measures

iii. The Contractor shall transmit submittals in sufficient time to allow thorough review by the Engineer.

iv. Submittals shall be accompanied by a letter of transmittal containing the date, project name, Contractor's name, supplier, manufacturer, number and title of submittal, notification of exceptions and/or deviations from the Contract requirements, and any other pertinent data to facilitate review.

v. The Contractor shall thoroughly check all submittals for accuracy and conformance to the intent of the Contract Documents, and make any

necessary changes, prior to submitting them to the Engineer. All submittals shall bear the Contractor's certification stating that they have been so checked. **This certification shall include the following statement: "By this Submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers, and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all contract requirements." SUBMITTALS WITHOUT THE CONTRACTOR'S CERTIFICATION WILL BE RETURNED TO THE CONTRACTOR WITHOUT REVIEW.**

vi. No material shall be ordered, fabricated or shipped or any work performed until the Engineer returns the required submittal to the Contractor with satisfactory review indicated.

vii. The Engineer's review of the Contractor's submittals shall in no way relieve the Contractor of any responsibility under the Contract. An acceptance of a submittal shall be interpreted to mean that the Engineer has no specific objections to the submitted material, subject to conformance with the Contract Documents.

B. Shop Drawings

i. The Contractor shall submit to the Engineer for review shop drawings for all fabricated work and for all manufactured items for which shop drawings are required elsewhere in the project manual.

ii. Where manufacturer's publications in the form of catalogs, brochures, illustrations or other data sheets are submitted, items for which approval is requested shall be specifically indicated. Submittals showing only general information shall not be acceptable.

iii. Within ten (10) days after notice to proceed, the contractor shall submit three (3) copies of his preliminary schedule of shop drawing submittals to the Engineer for approval.

C. Layout and Installation Drawings

i. The Contractor shall submit to the Engineer, for review, layout and installation drawings for all pipes, valves, fittings, sewers, manholes, electrical, conduits, etc. to be provided under this contract.

ii. Within ten (10) days after notice to proceed, the contractor shall submit three (3) copies of his preliminary schedule of layout and installation drawing submittals to the Engineer for approval.

PART 2 – OTHER REQUIREMENTS

A. Progress Schedule

i. The Contractor shall submit three (3) copies of its proposed progress schedule to the Engineer for review and approval, in accordance with the General Conditions.

ii. Progress schedule shall be updated monthly, with three (3) copies submitted to the Engineer with the application for payment. The Engineer may withhold progress payments until such time as the schedule or revised schedule is received.

iii. Progress schedule shall be prepared in the form of a horizontal bar chart showing in detail the proposed sequence of work. Schedule shall be time scaled showing start and completion dates for each stage of the work. The schedule shall account for all subcontractors. The schedule shall provide for proper sequence of construction considering various crafts, purchasing time, submittal review, material delivery, equipment fabrication and similar time-consuming factors. The schedule shall show as a minimum, earliest starting earliest completion, latest starting, latest completion, and total float for each task or item.

B. List of Subcontractors

i. The Contractor shall submit to the Engineer for review, prior to the preconstruction conference, a listing of all subcontractors. This submittal shall include a description of the work to be performed by each subcontractor, the estimated value of such work, and the subcontractor's experience performing similar work. This list shall be kept current throughout the project duration. All subcontractors shall be approved by the Town of Holly Springs.

C. As-Built Drawings

i. If Town employee signed and sealed the construction plan: Contractors shall provide a complete as-built point file so that the Town Project Engineer can provide three (3) complete sets of field-surveyed and sealed As-Built plans, (1 set mylar, 2 sets blue prints) at the completion of the project, prior to final payment. As-builts shall conform to the requirements set forth in the Town of Holly Springs, "Engineering Design and Construction Standards", with all information tied to the appropriate local Town benchmark monument.

ii. If Town outsourced the sign and seal of the Construction Plan: Contractor shall provide a complete as-built point file to original design engineer and provide three (3) complete sets of field-surveyed and sealed As-Built plans, (to the Town of Holly Springs) (1 set mylar, 2 sets blue prints) at

the completion of the project, prior to final payment. As-builts shall conform to the requirements set forth in the Town of Holly Springs, “Engineering Design and Construction Standards”, with all information tied to the appropriate local Town benchmark monument.

END OF SECTION 02000

SECTION 01 11 00
SUMMARY OF WORK
(SINGLE PRIME CONTRACT)

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project Overview.

2. Contract Description.

3. Work Sequence.

4. Specification Conventions.

5. General Arrangement.

1.2 PROJECT OVERVIEW

A. The Business Park Pump Station is located behind 601 Trinity Creek Drive, Holly Springs, NC 27540 (in an easement on Duke Energy property) with access via Roughleaf Lane. The station is owned and operated by the Town of Holly Springs. The pump station was installed and began operation in 2009. The existing pump station is a submersible station that houses two constant speed pumps. An existing 16-inch force main conveys wastewater to the Utley Creek WRF. The project adds two additional pumps and a parallel 16-inch force main.

B. General Operation: This section includes the general operation of the system. See specific item specifications for greater detail.

There are two existing wetwells that are connected and operate as a single wetwell. Each wetwell will contain two pumps. The pumps in each wetwell will pump to separate but parallel force mains. The wetwells can be isolated by a slide gate and the force mains can be interconnected by opening valves; however, the general operation below is for normal operation with the wetwells operating as a single wetwell and the force mains operating in parallel but separate operation.

1. Wetwell 1 will contain pumps 1 and 2. Wetwell 2 will contain pumps 3 and 4.

2. Wetwell 1 and 2 are connected with a slide gate to isolate the wetwells. Normal operation is to operate as a single (larger) wetwell with the slide gate open.

3. Pumps 1 and 2 will pump to the existing 16-inch force main. Pumps 3 and 4 will pump to the new 16-inch force main. If maintenance is necessary, one force main can be shut down using site valves.

4. Floats will turn pumps on/off. Each wetwell will have floats. The pump control panel will have a selector to choose which set of floats to use for water level control.

5. As water level rises in the wet well, a float will trigger the lead pump to run.

6. If the water level continues to rise a float will trigger the lag pump to run.

7. If the water level continues to rise, a float will trigger the lag-lag pump to run. The pump station is at firm capacity with three pumps running.

8. When the water level falls to the “pumps off” level, a float will turn all pumps off.

9. A single pump control panel will operate all pumps and automatically alternate lead, lag, and lag-lag pumps to distribute run time evenly across all pumps.

10. A transducer will read water level in the wet well and send data to the existing SCADA system.

1.3 CONTRACT DESCRIPTION

A. Work of the Project includes selective demolition, replacement of two existing submersible pumps and installation of two new submersible pumps (total of four pumps), installation of new site piping and valve interconnects, replacement of a channel grinder, installation of a new emergency bypass connection, installation of two new flow meters, installation of a new surge relief valve, installation of two new check valves, replacement of the standby diesel-powered generator, installation of a new odor control system, installation of a new emergency shower and eye wash with tepid water system, site grading, installation of a new gravel access road, electrical improvements, and the installation of approximately 7,400 LF of new 16-inch PVC force main with air relief valves and manholes.

B. Furnish labor, materials, equipment, services and accessories, and install materials, equipment and accessories, necessary to provide a complete and functioning system as shown on the Drawings and specified in the Construction Specifications.

1.4 WORK SEQUENCE

A. See Drawings for Work sequence.

B. Sequencing of Construction Plan: Before start of construction, submit a detailed Sequencing of Construction Plan regarding phasing of demolition and new Work for acceptance by Owner in accordance with Section 01 33 00 – Submittal Procedures. Comply with Project requirements. After acceptance of plan, construction sequencing shall comply with accepted plan unless deviations are accepted by Owner in writing. Work performed out of sequence will not be accepted.

1.5 SPECIFICATION CONVENTIONS

A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

1.6 GENERAL ARRANGEMENT

A. Drawings indicate the extent and general arrangement of Work. If changes to the Drawings are deemed necessary by the Contractor to accommodate the materials and equipment he proposes to furnish, provide details and reasons for changes as soon as practicable to the Engineer for review. The specific equipment proposed for use by the Contractor on the project may require changes, in structures, auxiliary equipment, piping, electrical, mechanical, controls or other work to provide a complete satisfactory operating installation. The Contractor shall submit to the Engineer as soon as practicable for review, Drawings and details showing changes to verify conformance with the overall project structural and architectural requirements and overall project operating

performance. Changes shall be made without additional cost to the Owner for changed work or related work under other Contracts of the Project. The price bid shall include all costs in connection with the preparation of new drawings and details and all changes to construction work to accommodate the proposed equipment, including increases in the costs of other Contracts. Submit proposed changes in accordance with the Standard General Conditions of the Construction Contract (EJCDC C-700) Paragraph 6.05 and Construction Specification Section 01 25 00, Substitution Procedures Paragraph 1.4.

PART 2– PRODUCTS – Not Used

PART 3– EXECUTION – Not Used

END OF SECTION

SECTION 01 14 00
WORK RESTRICTIONS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Access to Site.

2. Work by Owner at the Site.

3. Contractor's Use of Site.

4. Facility Outages.

5. Pipeline Shutdowns.

6. Work in Rights-of-way.

7. Work in Easements.

1.2 ACCESS TO SITE

A. Work Site shall be accessed at the locations indicated on the Drawings. Where Contractor determines additional access areas are beneficial for his particular means and methods, obtain approval for use of those areas and provide written permission from the property or right-of-way owner prior to encroachment into those areas and install required erosion control and other measures necessary to meet regulatory requirements. Access to the Site at locations other than those indicated on the Drawings is at the sole discretion of the Owner.

1.3 WORK BY OWNER AT THE SITE

A. Coordinate Work with Owner operations at the site.

B. Owner will remove and retain possession of the following items before start of Work:

1. None.

C. Remove and deliver to Owner the following items before start of Work:

1. None.

D. Coordinate Work with utilities of Owner and public or private entities.

1.4 CONTRACTOR’S USE OF SITE

A. Confine construction operations, construction facilities, storage of equipment and materials, and all Work to the Construction Limits depicted on the Drawings. Where Contractor determines additional areas are beneficial for his particular means and methods, obtain approval for use of those areas and provide written agreement with the property or right-of-way owner that indicates approval of use of the area and clearly defines the terms and conditions of the approval, including bond requirements, or rents or payments due for use, prior to encroachment into those areas.

B. Do not enter upon private property for any purpose without first obtaining written permission from the property owner. Do not store equipment, materials, and facilities on private property outside of the designated easements without prior approval as indicated above.

C. Obtain permits and encroachment agreements as required by governing authorities for additional construction area, material lay-down yards, and equipment storage yards beyond the Construction Limits. Provide permits and encroachment agreements one week prior to encroachment upon those areas.

D. Time restrictions for performing Work:

1. Unless specified in the Supplementary Conditions, Work shall be performed Monday through Friday from 7:00 am to 6:00 pm except where further restricted for specific locations, conditions, rights-of-way, or easements. Work requiring observation by Owner or Resident Project Representative (RPR) for approval shall be performed from 8:00 am to 5:00 pm except where specifically approved in writing in advance. Submit requests a minimum of 48 hours in advance unless otherwise noted in the General or Supplemental Conditions.

2. Work shall not be performed on days designated as holidays by Owner or on days when inclement weather impacts employee attendance as defined by the Owner unless specifically approved by the Owner. Submit requests a minimum of one week in advance.

3. Work performed outside of these times will not be accepted.

4. The normal time of work for this Contract is limited to 40 hours per week. The Contractor may elect to work beyond 40 hours or on weekends if approved by the Owner, provided that all costs incurred by the Owner for additional engineering services shall be borne by the Contractor. Owner will deduct additional engineering expenses from pay amount due the Contractor.

5. If it shall become imperative to perform work at night, the Owner and Engineer shall be informed a minimum of one week in advance of the start of the Work. Provide temporary lighting and all other necessary facilities for performing and inspecting the work.

6. Stop and protect Work that is subject to damage during inclement, stormy, or freezing weather unless approved by the Owner.

E. Limit use of Site to allow:

1. Owner occupancy.

2. Work by Owner.

3. Work by Others.

F. Sound Level Restrictions: Sound pressure level measured at boundary of Site shall not exceed 60 dBA during daylight hours and 50 dBA at night or as required by local noise ordinances.

G. Limit use of Site to performance of the Work and storage of equipment and materials.

H. Confine operations to immediate vicinity of Work.

I. Schedule Work tasks to maintain site security.

J. Coordinate use of Site with Owner.

K. Assume full responsibility for the protection and safekeeping of materials under this contract stored on site, including receiving, unloading and storage.

L. Move materials under Contractor's control that interfere with operations of the Owner or Owner's representatives.

M. Do not use Owner restroom facilities. Provide portable bathroom facility for Contractor and RPR use.

1.5 FACILITY OUTAGES

A. Submit to the Engineer and Owner written notification of outages proposed for the removal and replacement of existing equipment 14 days prior to proposed outage.

B. Provide an Outage Plan:

1. Include sequence of Work to be performed, materials, equipment, and tools necessary for Work during the outage and planned duration of the outage. Include start-up time required to place the facility back into reliable service.

2. Include a contingency plan including materials and tools necessary to place affected facility back in service if complications arise during outages.

3. Coordinate Outage Plan with Temporary Bypass Pumping Plan and other temporary system requirements specified in Construction Specification Section 01 51 39.11, Temporary Bypass Pumping of Pump Stations.

C. Reliance on temporary bypass pumps and generators shall be minimized as much as possible. Outages shall be approved by Owner and shall be subject to dry weather. Owner shall maintain the authority to cancel an outage at any time. Weather-related cancellations shall be the burden of the Contractor. Cancellations by the Owner due to situations other than weather shall be treated as a changed condition.

D. Maintain "firm" pumping capabilities at pump station(s) throughout construction for all outages.

E. Firm capacity is defined as the facility's connected pumping capacity excluding the largest connected pump at each pumping location. Connected pump is defined as a pump system that is connected to the piping system, is powered, and is fully operational in automatic mode.

1.6 PIPELINE SHUTDOWNS

A. Contact Owner to request and coordinate pipeline shutdowns. If Owner agrees a shutdown is necessary, arrange shutdown to occur at such a time to cause the least disruption and minimize loss of service.

B. Schedule shutdowns with Owner and document in writing at least one week in advance of interruption.

C. Owner shall operate valves for shutdowns.

D. Shutdown Procedure:

1. Request shutdown at least one week before desired shutdown.

1.7 INTERRUPTION OF SERVICE

A. Service shall be continuously maintained to customers in the Project areas except for the minimum amount of time required to make connections to the existing system and where pipeline shutdowns are approved by the Owner.

B. Contact Owner to request and coordinate interruption of service. If Owner agrees interruption of service is necessary, the interruption shall be arranged to occur at such a time to cause the least disruption and minimize loss of service.

C. Schedule service interruptions with Owner and document in writing at least one week in advance of interruption.

D. Notify residents in writing at least 48 hours in advance of interruption.

1.8 WORK IN RIGHTS-OF-WAY

A. Owner furnished encroachment agreements are provided in the Appendices. Read and become thoroughly familiar with requirements of the agreements prior to beginning construction operations within the rights-of-way.

B. Comply with encroachment agreement requirements and requirements of authorities having jurisdiction.

1.9 WORK IN EASEMENTS

A. Owner furnished easements are depicted on the Drawings. Requirements for occupation and use of easements are provided in the Appendices. Read and become thoroughly familiar with requirements prior to occupying and beginning construction operations within easements.

B. Comply with requirements of easements, easement owner, and property owner.

PART 2– PRODUCTS –Not Used

PART 3– EXECUTION – Not Used

END OF SECTION

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Allowances.
2. Schedule of Values.
3. Application for Payment.
4. Change Procedures.
5. Unit Prices.
6. Alternates.

1.2 ALLOWANCES

A. Cash Allowances:

1. Cash allowances shall be in accordance with the Standard General Conditions of the Construction Contract, Article 11.02 B Cash Allowances, as modified by the Supplementary Conditions.
2. Contractor Responsibilities:
    a. Assist the Owner in the selection of products, suppliers, and installers.
    b. Obtain proposals from suppliers and installers and offer recommendations.
    c. Upon notification of selection by Owner, execute purchase agreement with designated supplier and installer.
    d. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery.
    e. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage to supplier.
    f. Where the provider covered under an Allowance is defined in the specifications, Contractor shall contact provider to obtain all contractual and payment terms on which the Allowance price is based, and if needed account for any other costs in the Contractor’s Base Bid.
3. Cash Allowance Schedule:
    a. Allowances are set forth on the Bid Form.

B. Testing and Inspection Allowances:

1. Costs included in Testing and Inspecting Allowances:
    a. Cost of engaging testing and inspecting agency.

b. Execution of tests and inspecting.

c. Reporting results.

2. Costs not included in Testing and Inspecting Allowance but included in Contract Sum/Price:

a. Costs of incidental labor and facilities required to assist testing or inspecting agency.

b. Costs of testing services used by Contractor separate from Contract Document requirements.

c. Costs of retesting upon failure of previous tests as determined by Engineer.

3. Payment Procedures:

a. Submit one copy of inspecting or testing firm's invoice with next Application for Payment.

b. Pay invoice upon receipt of payment by Owner.

4. Testing and Inspecting Allowance Schedule:

a. A Materials Testing Allowance is set forth on the Bid Form.

1.3 SCHEDULE OF VALUES

A. See the Standard General Conditions of the Construction Contract, Article 14.01 Schedule of Values, as modified by the Supplementary Conditions, for schedule of values requirements.

1.4 APPLICATION FOR PAYMENT

A. See the Standard General Conditions of the Construction Contract, Article 14.02 Progress Payments, as modified by the Supplementary Conditions, for payment procedures and requirements.

1.5 CHANGE PROCEDURES

A. See the Standard General Conditions of the Construction Contract, Article 12 as modified by the Supplementary Conditions, for change procedures.

1.6 UNIT PRICES

A. See the Standard General Conditions of the Construction Contract, Article 11.03 Unit Price Work, as modified by the Supplementary Conditions, for Unit Price Work requirements.

B. Unit Quantities: Quantities indicated on Bid Form are for Contract purposes only. Actual quantities provided shall determine payment.

C. Payment includes full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application, or installation of item of the Work; overhead and profit.

D. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by the unit sum/price for Work incorporated in or made necessary by the Work.

E. Measurement of Unit Price Work:

1. Measurements shall be made as necessary to allow quantification of the Work at the close of each day's construction. Measurements shall be made by the Contractor.

2. The quantities to be paid for and their respective locations shall be recorded and agreed upon at the close of each week's construction by the Owner's Project Representative or the Resident Project Representative, and the Contractor's personnel in charge. A quantity log will be maintained daily by the Contractor and agreed upon by the Owner's Project Representative or the Resident Project Representative.

3. A copy of the log, which also signifies said agreement, shall be furnished to the Engineer's Project Representative or City's Project Representative daily by the Contractor.

4. The Contractor shall furnish the Owner with a weekly statement of the agreed-upon quantities and their respective locations.

F. Summary:

1. Payments noted above shall constitute full compensation for all Work shown and required by the Drawings and Construction Specifications for this contract.

2. The cost of other auxiliary operations and/or materials required to make a completed project shall be included in the appropriate lump sum or unit price bid.

G. Sales Tax:

1. Requirements for sales tax are provided in the Supplementary Conditions.

H. Unit Price Schedule:

1. Pay Item 1 - Mobilization:

a. A lump sum payment less than or equal to 3% of the total Bid Price will be allowed for 'mobilization' as a progress payment line item. Mobilization shall include bonds, insurance, move-on expenses, and other start-up costs.

2. Pay Item 2 - Business Park Pump Station Improvements:

a. Lump sum price for the complete and proper demolition and installation as detailed in the Specifications and on the Drawings. The price shall include furnishing and installing all equipment components necessary for a complete and proper pump station. The price shall include all materials, equipment, and labor for all site work including demolition and clearing. The price shall include all materials, equipment, and labor for concrete slabs, vault excavations and construction, valves and fittings, flow meter and vault, permanent bypass/pigging station, channel grinder, site fencing, painting, temporary bypass pumping, and site related features. Price shall include equipment and labor for testing and startup.

Work for this pay item shall include all pump station improvements up to STA. 10+00 (start of FM). The following shall be paid under separate pay items below:

i. Electrical improvements
ii. SCADA integration
iii. Crane rehabilitation
iv. Odor control system

3. Pay Item 3 – Electrical Improvements:

   a. Lump sum price for the complete and proper installation as detailed in the Specifications and on the Drawings. The price shall include furnishing and installing all required electrical equipment components. The price shall include all materials, equipment, and labor for all electrical work. The unit price shall also include the furnishing and installation of a new generator and concrete generator pad.

4. Pay Item 4 – Odor Control System

   a. Lump sum price for the complete and proper installation as detailed in the Specifications and on the Drawings. The price shall include furnishing and installing all required equipment components. The price shall include all materials, equipment, and labor for all odor control system work including but not limited concrete pad, tank, media, control panel, piping from wetwell and vault to odor control unit, and associated valves, vents, and wetwell slab modifications. Price shall also include testing, startup, and training. Conduit and wire from building to odor control unit shall be included under the Electrical Improvements pay item.

5. Pay Item 5 – 16-Inch PVC Force Main:

   a. By the price per linear foot furnished and installed beginning to end, through valves, fittings, encasements, and specials. Length shall include the length of pipe, fittings, and valves laid in the main line. The unit price provided shall be the only compensation for the complete installation and includes furnishing and installing all pipe and appurtenances including clearing and grubbing, excavation, backfill, pipe bedding, compaction, concrete blocking, dewatering, shoring, sheeting and bracing, support and reconnection of existing utilities, tree protection, testing, removal and replacement of mailboxes and signs, temporary facilities, and all other incidental work necessary to provide a complete and ready-to-use system, except for those items segregated in this section.

6. Pay Item 6 – 16-Inch PVC Force Main – Restrained Joint:

   a. By the price per linear foot furnished and installed beginning to end, through valves, fittings, encasements, and specials. Length shall include the length of pipe, fittings, and valves laid in the main line. The unit price provided shall be the only compensation for the complete installation and includes furnishing and installing all pipe and appurtenances including clearing and grubbing, excavation, backfill, pipe bedding, compaction, concrete blocking, dewatering, shoring, sheeting and bracing, support and reconnection of existing utilities, tree protection, testing, removal and replacement of mailboxes and signs, temporary facilities, and all other

incidental work necessary to provide a complete and ready-to-use system, except for those items segregated in this section.

7. Pay Item 7 – 30-Inch Steel Casing Installed by Open-Cut:

   a. By the price per linear foot of steel casing pipe installed via open cut. PVC carrier pipe is included in Item 6 and is not a part of this item. The unit price provided shall be the only compensation for the complete installation and includes furnishing and installing the steel casing, spacers, end seals, and other appurtenances as well as cleaning and grubbing, backfill, compaction, dewatering, shoring, sheeting and bracing, support and reconnection of existing utilities, tree protection, and all other materials and labor necessary for a successful and complete installation.

8. Pay Item 8 – Air Release Valve and 5-ft ID Manhole:

   a. By the number furnished and installed as shown. The unit price provided for each installation shall be the only compensation for the complete installation including but not limited to a 5-foot diameter pre-cast manhole, frame and cover, air release valve, tee, stone base, and odor scrubber as shown in Town Standard Detail.

9. Pay Item 9 – Fittings:

   a. By the number of pounds furnished and installed as shown for the installation of the force main. Weight shall be based on those provided in AWWA C153 for the applicable fitting type. Note that this weight excludes accessory weights. The price shall include all materials, equipment, and labor required to install complete. Where replacing existing fitting with new fitting, the price shall also include removal and disposal of existing fittings.

10. Pay Item 10 – Select Backfill:

    a. By the number of cubic yards as authorized for placement as backfill. The price shall include removal of unsuitable soils and replacement with select backfill as measured in place to a width not to exceed the maximum authorized trench width. The authorized trench width shall be equal to the nominal pipe diameter plus 2 feet, with a 3-foot minimum width. This item is to be used only when authorized by the Resident Project Representative.

11. Pay Item 11 – Rock Excavation:

    a. By the cubic yards of rock excavated (as defined in Section 31 23 33) and removed offsite from pipe trenches when authorized by the Engineer. The unit price shall include all items required to survey, remove the rock, and dispose of it off-site. Rock excavation width measurements for payments shall be the authorized trench width. Authorized trench width in pipe trenches shall be equal to the nominal pipe diameter plus 2 feet, with a 3-foot minimum width, and to a depth of the pipe invert plus 6 inches. Authorized width for manholes shall be the manhole inside diameter plus 5 feet and to a depth of 8 inches below the manhole base. Excavation of rock beyond limits indicated shall be at the Contractor's expense. The Bid price for this item shall not be less than $25.00 per cubic yard.

12. Pay Item 12 – Stabilization Stone:

    a. By the number of tons as authorized for placement for stabilization stone. The price shall include removal of unsuitable soils and replacement with stabilization stone as measured in place to a width not to exceed the maximum authorized trench width. The authorized trench width shall be equal to the nominal pipe diameter plus 2 feet, with a 3-foot minimum width. This item is to be used only when authorized by the Resident Project Representative.

13. Pay Item 13 – Temporary Erosion Control Measures:

    a. Lump sum for installation, maintenance, and removal of temporary erosion control measures as shown on plans or otherwise required by the Specifications or permit, paid as follows. Up to 75% of price will be paid based on percent of project complete, 15% will be paid for on-going maintenance, and 10% will be paid upon removal of measures. Included in this Pay Item shall be silt fence, compost socks, wattles, temporary construction entrances, temporary stream crossings, erosion control matting, and all other measures required to deter sediment transport away from the site during construction.

14. Pay Item 14 – SCADA Allowance:

    a. An allowance set forth on the Bid Form for SCADA interface services and equipment. This allowance shall include coordination with the Owner's selected SCADA vendor for installation and integration of SCADA equipment.

15. Pay Item 15 – Crane Restoration Allowance:

    a. An allowance set forth on the Bid Form for restoration to the existing crane on the pump station site. This allowance shall include inspection of the existing crane for recommendations for rehabilitation. This allowance shall also include the expected rehabilitation including replacing the hoist and trolley system, prepping and painting the crane, and repairing or replacing rollers to allow free movement of the crane arm.

16. Pay Item 16 – Renovation Allowance:

    a. An allowance set forth on the Bid Form for unforeseen conditions which may be encountered in the work and is only to be used upon written authorization from the Engineer or Owner.

17. Pay Item 17 – Materials Testing Allowance:

    a. An allowance set forth on the Bid Form for third-party concrete, soils, and asphalt testing. Prior to testing Contractor shall submit qualifications of the testing firm to the Owner for approval. Where services are performed, Contractor shall submit invoices to show actual cost of services performed. Compensation shall be for the actual invoice for third party services plus up to 5% of cost of the services as compensation for coordination of the work.

1.7 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement. The Owner-Contractor Agreement may identify certain Alternates to remain an Owner option for a stipulated period of time.

B. Coordinate related Work and modify surrounding Work. Description for each Alternate is recognized to be abbreviated but requires that each change shall be complete for scope of Work affected.

1. Coordinate related requirements among Specification Sections as required.

2. Include as part of each Alternate: Miscellaneous devices, appurtenances, and similar items incidental to or necessary for complete installation.

3. Coordinate Alternate with adjacent Work and modify or adjust as necessary to ensure integration.

C. Schedule of Alternates:

1. Pay Item A1 – Retain Ex. ATS

a. Retain existing Automatic Transfer Switch (ATS) in lieu of replacement. Contractor shall perform all work associated with interfacing of controls between the new generator and the retained ATS.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Quality Assurance.

2. Product Options.

3. Product Substitution Procedures.

4. Additional Engineering Services Related to Substitutions and Contractor Changes.

1.2 QUALITY ASSURANCE

A. Contract is based on products and standards established in Contract Documents without consideration of proposed substitutions.

B. Products specified define standard of quality, type, function, dimension, appearance, and performance required.

C. Substitution Proposals: Permitted for specified products except where specified otherwise. Do not substitute products unless substitution has been accepted and approved in writing by Owner.

1.3 PRODUCT OPTIONS

A. See Section 01 60 00 - Product Requirements.

1.4 PRODUCT SUBSTITUTION PROCEDURES

A. See the Standard General Conditions of the Construction Contract, Article 6.05 “Substitutes and ‘Or-Equals’”, as modified by the Supplementary Conditions, for substitution procedures. This Section supplements those requirements.

B. The Instructions to Bidders specifies time restrictions for submitting requests for “Or-Equals” and substitutions during Bidding period.

C. Document each request with complete data, substantiating compliance of proposed substitution with Contract Documents, including:

1. Manufacturer's name and address, product, trade name, model, or catalog number, performance and test data, and reference standards.

2. Itemized point-by-point comparison of proposed substitution with specified product, listing variations in quality, performance, weight, and other pertinent characteristics.

3. Reference to Article and Paragraph numbers in Specification Section.

4. Cost data comparing proposed substitution with specified product and amount of net change to Contract Sum.

5. Changes required in other Work.

6. Availability and location of maintenance service and source of replacement parts as applicable.

7. Location of technical sales and support representative and service technicians.

8. Location of manufactured components and location of assembly of the product.

9. Product warranties.

10. Number of installations in the state where the project is located, in the US, and in the world. Include client name, contractor name, size or capacity description, and date of installation.

11. Number of years that the product has been in production.

12. Statement of ability to meet FM and UL product requirements.

13. Certified test data to show compliance with performance characteristics specified.

14. Samples when applicable or requested.

15. Other information as necessary to assist Engineer's evaluation.

D. A request constitutes a representation that Bidder or Contractor:

1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.

2. Will provide same warranty for substitution as for specified product.

3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.

4. Waives claims for additional costs or time extension that may subsequently become apparent.

5. Will coordinate installation of the accepted substitute, making such changes as may be required for the Work to be complete.

6. Will reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities having jurisdiction.

E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals without separate written request or when acceptance will require revision to Contract Documents.

F. See Construction Specification Section 01 33 00, Submittal Procedures for submittal procedure requirements.

1.5 ADDITIONAL ENGINEERING SERVICES RELATED TO SUBSTITUTIONS AND CONTRACTOR CHANGES

A. Reimburse Owner for additional engineering services resulting from:

1. Substitution of materials or equipment by the Contractor.

2. Changes by the Contractor in dimension, weight, power requirements, etc., of the equipment and accessories furnished.

3. Changes proposed by the Contractor for the convenience of the Contractor.

B. Structural design shown on Drawings is based upon typical weights for major items of equipment as indicated on the Contract Documents. If the equipment furnished exceeds the typical weights of equipment, reimburse Owner for additional engineering costs for redesign and additional costs resulting from construction changes required to accommodate the equipment furnished.

PART 2– PRODUCTS – Not Used

PART 3– EXECUTION – Not Used

END OF SECTION

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Coordination and Project Conditions.

2. Multiple Contract Coordination.

3. Preconstruction Meeting.

4. Progress Meetings.

5. Pre-installation Meetings.

6. Alteration Procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.

C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practical; place runs parallel with lines of building. Use spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. Coordination Drawings: Prepare as required to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important.

E. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.

F. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owner's occupancy or partial occupancy.

H. After Owner's occupancy of premises, coordinate access to Site for correction of defective Work and Work not complying with Contract Documents, to minimize disruption of Owner's activities.

1.3 PRECONSTRUCTION MEETING

A. Engineer or Owner will schedule and preside over meeting after Notice of Award but prior to starting work at the site.

B. Attendance Required: Contractor Project Manager and full-time site superintendent, major material suppliers, and Subcontractors (as requested by the Engineer).

C. Engineer will record minutes and distribute electronic copies to participants and those affected by decisions made.

1.4 PROGRESS MEETINGS

A. Engineer or Owner will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.

B. Attendance Required: Contractor Project Manager and full-time site superintendent, Subcontractors (as requested by the Engineer), and others as appropriate to agenda topics for each meeting.

C. Minimum Agenda:

1. Review minutes of previous meetings.

2. Review of submittal schedule and status of submittals.

3. Review of Work progress.

4. Maintenance of Progress Schedule.

5. Planned progress during succeeding work period.

6. Other business relating to Work.

D. Engineer will record minutes and distribute electronic copies to participants and those affected by decisions made.

1.5 PRE-INSTALLATION MEETINGS

A. When required in individual Specification Sections, convene pre-installation meetings at Project Site before starting Work of specific Section.

B. Attendance Required: Contractor Project Manager and full-time site superintendent, Subcontractor site superintendent (if applicable), and vendor representative. Require attendance of parties directly affecting, or affected by, Work of specific Section.

C. Schedule with Owner and Engineer two weeks in advance of meeting date.

D. Prepare agenda and preside over meeting:

1. Review conditions of installation, preparation, and installation procedures.

2. Review coordination with related Work.

E. Record minutes and distribute electronic copies to participants and those affected by decisions made within one week after meeting.

F. Individual Specification Sections may include additional requirements.

PART 2– PRODUCTS – Not Used

PART 3– EXECUTION – Not Used

END OF SECTION

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Construction Progress Schedule.

2. Photographic Documentation.

3. Video Documentation.

B. Related requirements:

1. See Construction Specification Section 01 33 00, Submittal Procedures.

1.2 CONSTRUCTION PROGRESS SCHEDULE

A. Submittals

1. Submit Progress Schedules under transmittal and in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

2. Within 10 days of Notice to Proceed, submit the proposed Progress Schedule in bar chart format. Revise and resubmit the updated schedule in accordance with the Submittal Procedures until it is accepted by the Engineer.

3. Submit an updated Progress Schedule, depicting progress made over the last 30 days, five work days prior to each Progress Meeting, and when requested by the Engineer. Revise and resubmit the Progress Schedule until it is accepted by the Engineer. Pay applications will not be reviewed until the Progress Schedule submitted at the previous progress meeting is accepted.

4. Schedule Updates:

a. Overall percent complete, projected and actual.

b. Completion progress by listed activity and subactivity, to within five working days prior to submittal.

c. Changes in Work scope and activities modified since submittal.

d. Delays in submittals or resubmittals, deliveries, or Work.

e. Adjusted or modified sequences of Work.

f. Other identifiable changes.

g. Revised projections of progress and completion.

5. Narrative Progress Report:

a. Provide verbal or written progress report at each progress meeting or when requested by the Engineer. Include:

i. Summary of Work completed during the past period between reports.
ii. Work planned during the next period.
iii. Explanation of differences between summary of Work completed and Work planned in previously submitted report.
iv. Current and anticipated delaying factors and estimated impact on other activities and completion milestones.
v. Corrective action taken or proposed.

B. Quality Assurance

1. Scheduler: Contractor's personnel specializing in CPM scheduling with two years' minimum experience in scheduling construction work of complexity comparable to the Project, and having use of computer facilities capable of delivering detailed graphic printout within 48 hours of request.

C. Bar Chart Schedules:

1. Format: Bar Chart Schedule, to include at least:

a. Identification and listing in chronological order of those activities reasonably required to complete the Work, including:

i. Subcontract Work.
ii. Major equipment design, fabrication, factory testing, and delivery dates including required lead times.
iii. Move-in and other preliminary activities.
iv. Equipment and equipment system test and startup activities.
v. Project closeout and cleanup.
vi. Work sequences, constraints, and milestones.

b. Listings identified by Specification Section number.

c. Identification of the following:

i. Horizontal time frame by year, month, and week.
ii. Duration, early start, and completion for each activity and subactivity.
iii. Critical activities and Project float.
iv. Subschedules to further define critical portions of Work.

D. Review and Evaluation:

1. Participate in joint review and evaluation of schedules with Engineer at each submittal.

2. Evaluate Project status to determine Work behind schedule and Work ahead of schedule.

3. After review, revise schedules incorporating results of review, and resubmit within five business days.

E. Updating Schedules:

1. Maintain schedules to record actual start and finish dates of completed activities.

2. Indicate progress of each activity to date of revision, with projected completion date of each activity. Update schedules to depict current status of Work.

3. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

4. Upon approval of a Change Order, include the change in the next schedule submittal.

5. Indicate changes required to maintain Dates of Substantial and Final Completion.

6. Prepare narrative report to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken or proposed and its effect including effects of changes on schedules of separate Contractors.

F. Distribution:

1. Following acceptance of the updated progress schedule, distribute copies of updated schedules to Contractor's Project site file, to Subcontractors, suppliers, Engineer, Owner, and other concerned parties.

2. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

1.3 PHOTOGRAPHIC DOCUMENTATION

A. Provide photographs of Site and construction throughout progress of Work produced by an experienced photographer acceptable to Engineer.

B. Throughout each week, take photographs as evidence of Project conditions:

C. Photographs shall be taken at different locations and from different perspectives to document relative progress of the Work. Photographs shall be taken at locations that work is in progress showing installation of critical items. Adjust photography as directed by the Engineer.

D. Digital Images: Deliver monthly digital image electronic files on a USB drive to Engineer. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as sensor, uncropped.

1. Digital Images: JPG format, produced by digital camera with minimum sensor size of 4.0 megapixels, and image resolution of not less than 1024 by 768 pixels.

2. Date and Time: Include date and time in filename for each image.

E. Submit photographs monthly with Application for Payment.

1.4 VIDEO DOCUMENTATION

A. Pre-construction Video:

1. Document existing conditions of areas to be disturbed or occupied by the Contractor during construction with audio-video taping so the areas affected by construction can be restored to pre-construction condition.

2. Obtain permission prior to entering private property for videoing purposes. Provide 24 hours advance notice to property owner. If permission to enter is refused, immediately notify Owner who will attempt to obtain permission.

3. Provide audio-video recordings and a brief written summary to Owner of the existing condition of surface features such as drives, sidewalks, curbs, ditches, streets, (including pavement condition for full width), landscaping, trees, culverts, headwalls, retaining walls, fences, visible utilities, poles, and buildings. Of particular concern are any existing fractures, defects, or other imperfections in the existing surface features.

4. Video during times of good visibility. Do not video during periods of visible precipitation or when more than 10 percent of ground area is covered with snow, leaves, or debris.

5. Identify houses and buildings by street number whenever possible, so the progress of the videoing and the proposed Work can be correlated to street, house, and building locations.

6. The video shall be performed in the presence of the RPR or the Owner's representative.

7. Provide video to Engineer on a USB drive prior to the start of construction and before construction materials or equipment are delivered or mobilized to the Project. Any parts of tape coverage deemed unacceptable by Engineer shall be re-videoed by Contractor to the satisfaction of the Engineer.

PART 2– PRODUCTS – Not Used

PART 3– EXECUTION – Not Used

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Regulatory Requirements.

2. References.

3. Quality Assurance.

4. Quality Control.

5. Special Inspections.

6. Additional Engineering Services.

1.2 REGULATORY REQUIREMENTS

A. Codes, Laws, and Regulations:

1. Perform Work in strict compliance with applicable Federal, State, and local codes, laws, and regulations. Comply with other authorities having jurisdiction. Where Drawings or Construction Specifications conflict with codes, laws, and regulations, notify Engineer immediately.

2. Comply with the requirements of the latest revision of the North Carolina Building Code.

3. As a prerequisite to final acceptance, provide a Certificate of Inspection from inspection agencies having jurisdiction, the local municipality, and the utility companies serving the project.

B. Permits:

1. Owner furnished permits are provided in an Appendix. Read and become thoroughly familiar with requirements of permits prior to beginning construction operations. Comply with permit requirements.

2. Obtain additional permits required by authorities having jurisdiction prior to beginning construction operations. Comply with permit requirements.

C. Fees:

1. Unless stated otherwise, pay permit application fees, licenses, and re-inspection fees resulting from failed inspections.

1.3 REFERENCES

A. General:

1. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

2. Conform to reference standard by date of issue current as of date of advertisement for Bids except where specific date is established by code or by the Contract Documents.

3. Obtain copies of standards and maintain on Site when required by Construction Specification Sections.

4. Furnish evidence satisfactory to the Engineer that materials and methods are in compliance with referenced standards. Provide copies of referenced standards when questions arise from Owner or Engineer related to the conformance with or application of the standards or codes.

5. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

6. Neither contractual relationships, duties, or responsibilities of parties in Contract, nor those of Engineer, shall be altered from Contract Documents by mention or inference in reference documents.

B. Abbreviations and Acronyms:

1. The following is a partial list of typical abbreviations and acronyms which may be used in the Construction Specifications:

AC	Asbestos Cement
CI	Cast Iron
DI	Ductile Iron
FPVC	Fusible Poly Vinyl Chloride
HDD	Horizontal Directional Drill
HDPE	High Density Polyethylene
MSDS	Material Safety Data Sheet
PE	Polyethylene
PVC	Poly Vinyl Chloride
RC	Reinforced Concrete
RPR	Resident Project Representative

2. The following is a partial list of typical abbreviations and acronyms which may be used in the Construction Specifications and the organizations to which they refer:

NASSCO	National Association of Sewer Service Companies
NASTT	North American Society for Trenchless Technology
NCDEQ	North Carolina Department of Environmental Quality
NCDOT	North Carolina Department of Transportation
OSHA	Occupational Safety and Health Administration

C. Reference Standards:

1. The following is a partial list of typical referenced standards which may be used in the Construction Specifications and the organizations to which they refer:

AASHTO	American Association of State Highway Transportation Officials
ACI	American Concrete Institute
ACIFS	American Cast Iron Flange Standards
ACPA	American Concrete Pipe Association
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
API	American Petroleum Institute
AREMA	American Railway Engineering and Maintenance-of-Way Association
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CISPI	Cast Iron Soil Pipe Institute
CRSI	Concrete Reinforcing Steel Institute
FM	Factory Mutual System
FS	Federal Specifications
HI	Hydraulic Institute
ISO	Insurance Services Offices
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NCSPA	National Corrugated Steel Pipe Association
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association

NSF	National Sanitation Federation International
PPI	Plastics Pipe Institute
UL	Underwriters Laboratories, Inc.

1.4 QUALITY ASSURANCE

A. Manufacturers Field Services:

1. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, testing, adjusting, and balancing of equipment, and commissioning as applicable, and to initiate instructions when necessary.

2. Submit qualifications of observer to Engineer 60 days in advance of required observations. Observer is subject to approval of Engineer and Owner.

3. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.

4. Refer to Construction Specification Section 01 33 00, Submittal Procedures, Article 1.10 - Manufacturer's Field Reports

1.5 QUALITY CONTROL

A. General:

1. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.

2. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

3. Perform Work using persons qualified to produce required and specified quality.

4. Products, materials, and equipment shall be subject to inspection by Engineer and Owner at place of manufacture or fabrication if requested. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.

5. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

B. Testing and Inspection Services:

1. The soil testing agency and laboratory shall be approved by Owner.

2. Geotechnical Testing Agency Qualifications: Independent testing agency qualified according to the following:

a. ASTM D 3740, Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

b. ASTM E 329, Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.

c. ASTM E 548, Standard Guide for General Criteria Used for Evaluating Laboratory Competence.

3. Employment and Payment:

a. Unless otherwise noted, Employ and pay for services of an independent testing agency or laboratory.

i. Before starting Work, submit testing laboratory name, address, telephone number, and names of full-time Professional Engineer or specialist, as required by the Construction Specifications, and responsible officer.
ii. Submit copy of report of laboratory facilities' inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.

b. When Owner will pay through an allowance, Owner will select services of an independent firm to perform testing and inspection. Contractor shall pay for services from cash allowances specified in Section 01 20 00 - Price and Payment Procedures.

c. Owner will contract with and pay for the following specified services of an independent firm:

i. None.

4. Independent firm will perform tests, inspections, and other services specified in individual Specification Sections and as required by Engineer, Owner, or authorities having jurisdiction.

a. Laboratory: Authorized to operate in State of project location.

b. Laboratory Staff: Maintain full-time Professional Engineer or specialist, as required by the Construction Specifications, on staff to review services.

c. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.

5. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Engineer or Owner.

6. Reports shall be submitted by independent firm to Engineer, Owner, Contractor, and authorities having jurisdiction, indicating observations and results of tests and compliance or noncompliance with Contract Documents.

a. Submit final report indicating correction of Work previously reported as noncompliant.

7. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

a. Notify Engineer and independent firm 48 hours before expected time for operations requiring services.

b. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.

8. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.

9. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

10. Agency Responsibilities:

a. Test Samples of mixes submitted by Contractor.

b. Provide qualified personnel at Site. Cooperate with Engineer and Contractor in performance of services.

c. Perform indicated sampling and testing of products according to specified standards.

d. Ascertain compliance of materials and mixes with requirements of Contract Documents.

e. Promptly notify Engineer and Contractor of observed irregularities or nonconformance of Work or products.

f. Perform additional tests required by Engineer.

g. Attend preconstruction meetings and progress meetings.

11. Agency Reports: After each test, promptly submit one copy of report to Engineer, Contractor, Owner, and authorities having jurisdiction. When requested by Engineer, provide interpretation of test results. Include the following:

a. Date issued.

b. Project title and number.

c. Name of inspector.

d. Date and time of sampling or inspection.

e. Identification of product and Specification Section.

f. Location in Project.

g. Type of inspection or test.

h. Date of test.

i. Results of tests.

j. Conformance with Contract Documents.

12. Limits on Testing Authority:

a. Agency or laboratory may not release, revoke, alter, or enlarge any requirements of Contract Documents.

b. Agency or laboratory may not approve or accept any portion of the Work.

c. Agency or laboratory may not assume duties of Contractor.

d. Agency or laboratory has no authority to stop the Work.

1.6 ADDITIONAL ENGINEERING SERVICES

A. Reimburse Owner for additional engineering services resulting from Contractor's errors, omissions, or failure to conform to the requirements of the Contract Documents.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary Utilities.

2. Construction Facilities.

3. Temporary Controls.

4. Removal of Utilities, Facilities, and Controls.

1.2 TEMPORARY UTILITIES

A. Provide the following as required for completion of the Work and protection of stored and installed products:

1. Electricity.

2. Lighting.

3. Heating.

4. Cooling.

5. Ventilation.

6. Communication Services.

7. Water.

B. TEMPORARY SANITARY FACILITIES

1. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of Project mobilization.

1.3 VEHICULAR ACCESS

A. Construct temporary all-weather access roads of width and load-bearing capacity to accommodate unimpeded traffic for construction purposes from public thoroughfares to serve construction area.

B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.

C. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.

D. Locate as indicated on Drawings or as approved by Engineer or Owner.

E. Provide unimpeded access for emergency vehicles.

F. Provide and maintain access to fire hydrants and control valves free of obstructions.

G. Provide means of removing mud from vehicle wheels before entering streets.

1.4 PARKING

A. Provide temporary gravel surface parking areas to accommodate construction personnel.

B. Locate as indicated on Drawings or as approved by Engineer or Owner.

C. If Site space is not adequate, provide additional off-Site parking.

D. Tracked vehicles are not allowed on paved areas.

E. Do not allow heavy vehicles or construction equipment in parking areas.

F. Maintenance:

1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, ice, and the like.

2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies to maintain paving and drainage in original condition.

1.5 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.

C. Broom and vacuum clean interior areas before starting surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from Site weekly and dispose of off-Site. Comply with Construction Specification Section 01 74 00, Cleaning and Waste Management.

1.6 TRAFFIC REGULATION – Not Used

1.7 FIRE-PREVENTION FACILITIES – Not Used

1.8 BARRIERS – Not Used

1.9 ENCLOSURES AND FENCING

A. When shown on the Drawings, provide 6-foot high chain-link fence around construction Site throughout construction. Include vehicular and pedestrian gates with locks.

1.10 SECURITY

A. Security Program:

1. Protect Work on existing premises from theft, vandalism, and unauthorized entry.

B. Entry Control:

1. Restrict entrance of persons and vehicles to Project Site.

2. Allow entrance only to authorized persons with proper identification.

C. Personnel Identification:

1. Each person shall have an official photo ID with them when working on the site.

1.11 WATER CONTROL

A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.

B. Protect Site from puddles or running water. Provide water barriers as required to protect Site from soil erosion.

1.12 DUST CONTROL

A. Execute Work by methods that minimize raising dust from construction operations.

B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into private properties.

1.13 NOISE CONTROL – Not Used

1.14 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.

B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.15 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials before substantial completion inspection.

B. Remove underground installations to minimum depth of two feet. Grade Site as indicated on Drawings.

C. Clean and repair damage caused by installation or use of temporary Work.

D. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2– PRODUCTS – Not Used

PART 3– EXECUTION – Not Used

END OF SECTION

SECTION 01 51 39.11
TEMPORARY BYPASS PUMPING OF WASTEWATER PUMP STATIONS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary bypass pumping for pump station shutdowns.

B. Related Requirements:

1. Construction Specification Section 01 14 00, Work Restrictions.

1.2 REFERENCES

A. Abbreviations and Acronyms:

1. The following is a partial list of typical abbreviations and acronyms used in this section. See Construction Specification Section 01 40 00, Quality Requirements, for additional abbreviations and acronyms used throughout the Contract Documents.

SSO Sanitary Sewer Overflow

B. Definitions:

1. Firm Capacity: The pumping capacity of a temporary bypass pumping system with the largest pump out of service.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Design and install equipment and piping in a manner that prevents disruption of pump station operation and access to areas requiring regular access (i.e. dumpsters, fuel tanks, chemical storage tanks, etc.).

2. Coordinate temporary bypass pumping system testing with Owner and RPR. Provide 72-hour notice prior to system testing. RPR or Owner representative must observe testing for it to be accepted.

3. Coordinate all system shutdowns with Owner and RPR in accordance with Construction Specification Section 01 14 00, Work Restrictions.

B. Sequencing:

1. Operate temporary bypass pumping system in accordance with the sequencing and phasing indicated on the Drawings and in Construction Specification Section 01 11 00, Summary of Work or Section 01 12 00, Multiple Contract Summary.

2. Temporary bypass pumping system shall be installed and made operational prior to performing construction tasks that require the pump stations or other critical infrastructure to be shutdown.

3. Temporary bypass pumping system shall remain in place and ready for automatic operation for at least seven calendar days once electric pump station is returned to service and operating reliably.

C. Scheduling:

1. The Project Schedule shall include the sequencing and coordination of maintaining wastewater flow during all phases of construction including, but not limited to replacement, inspection, and testing of new or rehabilitated pump stations, and connections to existing sewers.

1.4 SUBMITTALS

A. Provide in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that material and other products provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Temporary Bypass Pumping Plan:

1. The Engineering Committee of the NC Board of Examiners for Engineers and Surveyors (NCBELS) has determined that providing design plans and calculations for temporary bypass pump systems is the practice of engineering and requires licensure with NCBELS per G.S. 89C-23 and -24, meaning the design work shall be done by Professional Engineers and companies licensed to practice engineering in North Carolina.

2. Prepare and submit a project- and site-specific detailed temporary bypass pumping plan that provides detailed descriptions and layout drawings of the proposed temporary bypass pumping system(s). Outline all provisions and precautions to be taken by the Contractor to convey and maintain existing wastewater flows during construction.

3. Ensure proper protection of existing facilities, the project area, and surrounding properties from damage due to the discharge of wastewater.

4. Include the following as a minimum:

a. Manufacturer’s product data for temporary bypass pump sizes, capacities, power requirements, and number of each size to be on site including primary, secondary, and spare pumps. Provide method of operation and control, and redundancy sufficient to provide firm pumping capacity and prevent SSOs. Provide pump operation and maintenance manuals.

b. Description of pump controls including control panel output signals to be monitored by the Owner’s SCADA system.

c. Method of noise control for pumps, motors, or generators.

d. Staging areas for pumps.

e. Size and location of manholes or access points for suction and discharge hose or piping.

f. Plan indicating location of temporary bypass pumping pipe locations.

g. Number, size, material, location, and method of installation of suction and discharge piping and valves (isolation and air release).

h. For buried piping, typical sections showing suction and discharge pipe depth, embedment, select fill, and special backfill.

i. Thrust and restraint block sizes and locations. Provide details necessary to demonstrate the integrity of restraint of suction and discharge piping including piping and fittings associated with all primary and secondary pumping units.

j. Sewer plugging method and types of plugs or gates to be used.

k. Downstream discharge plan.

l. Method of protecting discharge manholes or structures from erosion and other damage.

m. Access plans to temporary bypass pumping system locations indicated on the drawings.

n. Heavy equipment required for installation of pumps and piping.

o. Temporary pipe supports and anchoring required.

p. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted). Calculations for selection of temporary bypass pumping pipe size.

q. Schedule for installation, operation, maintenance, and removal of the temporary bypass pumping system(s).

r. Emergency plan for adverse weather and flooding for various phases of the Work.

s. Contractor’s plan for providing continuous (24-hour) monitoring of the temporary bypass pumping operation as well as the monitoring person’s qualifications.

t. Plan for refueling pump sets on demand.

u. Demonstration of compliance with the requirements and permit conditions specified in these Contract Documents.

v. Incidental items necessary to insure proper protection of the facilities.

5. Obtain approval prior to mobilization of temporary bypass pumping equipment.

D. Field System Test Reports

1.5 QUALITY ASSURANCE

A. Demonstrate, or employ the services of a subcontractor who can demonstrate, specialization in the design and operation of temporary bypass pumping systems. Provide five (5) references of projects of a similar size and complexity as this project performed within the past three years.

B. Comply with North Carolina OSHA Standards, Underwriter Laboratories, and other authorities having jurisdiction. The temporary bypass pumping system shall meet the requirements of all codes and regulatory agencies having jurisdiction.

C. Materials and appurtenances shall be clearly, legibly, and appropriately marked for identification purposes. Marking shall include listing/approval stamp, label, or other marking indicating conformance with specified standards.

D. Perform temporary bypass pumping system testing in accordance with Article 3.1B.

PART 2 – PRODUCTS

2.1 TEMPORARY BYPASS PUMPING SYSTEM

A. Pumps shall be fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in the priming system. Pumps shall be diesel powered. Diesel powered pumps shall include critical grade silencing. Critical grade silencing is not required on redundant bypass pumps.

B. Pumps shall be capable of handling raw, unscreened domestic sewage consisting of water, rags, fibrous materials, and solids at heavy consistencies.

C. Provide piping, pumps, level detection equipment, drives, controls, fittings, valves, air release valves, fuel tanks, auxiliary fuel tanks, and other components necessary for a complete, reliable stand-alone temporary bypass pumping system.

D. Include 100 percent on-line pumping redundancy, fully connected and ready for immediate use. Include a redundant bypass pump, intake and discharge conduit, and other equipment necessary to provide continuous wastewater flow and prevent the backing up of sewage in the event of primary system failure. Critical grade silencing is not required on redundant bypass pump(s).

E. Program each bypass pump controller to minimize flow surges by installing adequate level sensing equipment and operating pumps at variable pumping rates to closely match influent flow rates.

F. Provide monitoring system for remote signaling of each pump run status, each pump fail status, and high-level alarm to the Owner’s key personnel.

G. All bypass system components shall be located in existing NCDOT rights-of-way or existing Owner easements.

2.2 SEWER BYPASS SYSTEM PIPING

A. General:

1. Provide either hot-dip galvanized steel, HDPE, or reinforced hose. Lay-flat hose will not be permitted.

2. Provide pipe with a DR or pressure rating sufficient to withstand working and surge pressures with a factor of safety of 2. Provide restrained joints.

B. Hot-dip Galvanized Steel Pipe:

1. Steel pipe shall be made from high tensile strength, abrasion-resistant, hot-dip galvanized (per DIN 50976) steel and have quick disconnect couplings with flexibility of deflection at each joint up to 30°. Couplings shall have a locking pin system that prevents tampering. Locking pins shall be installed before bypass system will be approved. Steel pipe and couplings shall be Bauer QD or equal.

C. High Density Polyethylene:

1. Design in accordance with AWWA M55 “PE Pipe – Design and Installation” and the “Handbook of Polyethylene Pipe” by the Plastics Pipe Institute. Pipe shall be suitable for all conditions imposed at the locations indicated on the Drawings.

2. The HDPE pipe dimension ratio shall provide a system working pressure rating which accommodates the normal operating pressure and surges.

3. HDPE pipe shall be manufactured in accordance with AWWA C906 from a PE 4710 resin. The resin material shall meet the specifications of ASTM D 3350 with a minimum cell classification of 445574C. Pipe shall be manufactured in accordance with ASTM F 714 “Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter” and be manufactured by an ISO 9001 certified manufacturer. The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, voids, or other injurious defects.

4. Pipe shall bear identification markings that will remain legible during normal handling, storage, and installation. Markings shall include nominal size and outside diameter basis, dimension ratio, AWWA pressure class, AWWA designation for standard AWWA C906, and manufacturer’s name or trademark and production-record code.

5. Butt fusion fittings shall be manufactured of the same HDPE material as the pipe and meet the requirements of ASTM D3261. Molded and fabricated fittings shall have a pressure rating equal to the pipe. Fittings shall meet the requirements of AWWA C906. Fabricated fittings shall be marked in accordance with ASTM F 2206.

D. Reinforced Hose:

1. Made from smooth bore flexible PVC with rigid PVC helix reinforcement, suitable for heavy-duty wastewater use under vacuum and working pressures.

2. Couplings shall be quick disconnect with flexibility of deflection at each joint up to 30°. Couplings shall have a locking pin system that prevents tampering. Locking pins shall be installed before bypass system will be approved. Steel pipe and couplings shall be Bauer QD or equal.

2.3 PERFORMANCE REQUIREMENTS

A. Design, install, operate, and maintain a temporary bypass pumping system to maintain continuous wastewater service to all customers of the Owner. The Contractor shall be responsible for bypass pumping of wastewater as required to prevent backing up of sewage (except as approved by the Owner) and provide appropriate conditions for proper drainage, inspection, replacement, rehabilitation, testing, and reconnections to existing sewers.

B. Temporary Bypass Pumping System Capacities:

Location/Description	Peak Flow/ Firm Capacity (GPM)
Temporary Bypass System	1,740

C. The existing 16” force main is 8,000 LF in length and manifolds into an existing 18” force main at the intersection of Green Oaks Parkway and Irving Parkway. The static head is approximately 134 feet. The original approved pumps were rated for 1,740 GPM at 154 feet TDH.

D. Operation:

1. Operators:

a. Provide on-site manual oversight (observation and operation) by a responsible operator of temporary bypass pumping operations 24 hours per day, 7 days per week when the temporary bypass pumping system(s) are in operation.

b. The monitoring operator shall be properly trained, experienced, and mechanically qualified so that they can quickly and effectively address potential emergency and non-emergency situations associated with the pumps and temporary bypass pumping system.

c. The monitoring operator shall have a pump operation and maintenance manual and a utility truck with proper tools to evaluate the cause of failures and alarms and rectify the situation including making on-site equipment repairs.

2. Controls:

a. Pumps shall operate on redundant control systems and be equipped with an auto-dialer with cellular monitoring and control. Controls shall be set so that the system does not surcharge and create an SSO in upstream manholes or a backup of wastewater into residential or commercial facilities.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Inspect Work area and verify that existing conditions match the conditions depicted on the Drawings. Notify Engineer immediately of any discrepancies.

B. System Testing:

1. Perform leakage and pressure tests of the temporary bypass pumping discharge piping using clean water prior to operation. Pressure and leakage tests shall be conducted at 1.5 times the maximum working pressure, based on the approved Temporary Bypass Pumping Plan, for a period of two hours. No leakage is permitted during this test.

2. Provide a leakage and pressure test report that documents start time and pressure, pressure at 15-minute intervals, stop time, end of test pressure, and amount of leakage. Report shall be signed by the Contractor's on-site superintendent and project manager, and the RPR or Owner's representative.

3. Demonstrate that the temporary bypass pumping system is in good working order and is sufficiently sized to successfully convey wastewater flows by operating the system in automatic mode for a period of 48 hours prior to beginning Work.

3.2 PREPARATION

A. Temporary bypass pumping operations shall not proceed until submittals have been approved.

B. Do not interrupt sewer service without prior approval of the Owner.

C. Precautions:

1. Locate existing utilities in proximity to the temporary bypass pumping system. Install temporary bypass pumping system components to minimize disturbance to existing utilities and in accordance with the Temporary Bypass Pumping System Plan. Costs associated with relocating existing utilities and obtaining approvals shall be borne by the Contractor.

2. During temporary bypass pumping system operation, protect the existing sanitary sewer facilities from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to the existing sanitary sewer facilities caused by human or mechanical failure.

D. Protect existing facilities in accordance with Construction Specification Section 02 01 00, Maintenance of Existing Conditions.

3.3 INSTALLATION

A. General:

1. Prevent damage to existing structures. Discharge piping to gravity sewer systems shall be designed in such a manner as to prevent discharge from contacting manhole walls or benching. Full discharge shall go into the downstream pipe in a manner to minimize turbulence. It may be necessary to remove manhole cones to provide sufficient space for the bypass piping. Contractor is responsible for any damage to manholes. Repair damaged manholes to preconstruction condition.

2. Make connections to the existing sewer and construct temporary bypass pumping structures only at the access locations indicated on the Drawings.

3. Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, it is to be removed in a manner that permits the sewage flow to slowly return to normal without surge and that prevents surcharging or causing other major disturbances downstream.

4. When working inside a manhole or force main in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces, the Contractor shall exercise caution and comply with OSHA requirements.

5. Installation of bypass pipelines is prohibited in all wetland areas. The pipeline must be located off streets (except where streets are shut down and detours or lane shifts are provided) and sidewalks and on shoulders of the roads or within easements. When the bypass pipeline crosses local streets and private driveways, the contractor must install temporary road ramps.

B. Install pumps per manufacturer's written instructions. Set pumps plumb and level.

C. Install pipe in accordance with manufacturer's recommendations. Locking pins shall be placed in couplings.

D. HDPE pipe shall be installed in accordance with AWWA M55 "PE Pipe – Design and Installation" and the "Handbook of Polyethylene Pipe" by the Plastics Pipe Institute. The pipe shall be joined by the butt fusion procedure outlined in ASTM F 2620 or PPI TR-33. All fusion joints shall be made in compliance with the pipe or fitting manufacturer's recommendations. Fusion joints shall be made by qualified fusion technicians per PPI TN-42.

E. Install pipe supports to prevent deflection and failure.

3.4 OPERATION

A. Maintain flows in the existing sewer interceptor and tributary collector and lateral lines at all times and under all weather conditions except for brief periods when mains are disconnected and reconnected. Take actions and precautions necessary to prevent discharge of wastewater during disconnection and reconnection of mains including performing those tasks during off peak hours or providing additional temporary bypass measures. Interruption of flows that result in the discharge of wastewater will not be permitted.

B. Maintain sewer flow at the work area in a manner that will not cause surcharging of sewers or damage to sewers, and that will protect public and private property from damage and flooding.

C. Anticipate severe weather conditions and increases in peak flows during rain events and shall design and plan for these accordingly.

D. Immediately notify the Owner should a sanitary sewer overflow (SSO) occur. Take necessary action to clean up and disinfect the spillage to the satisfaction of the Owner and other governmental agencies with jurisdiction. If sewage is spilled onto public or private property, the Contractor shall wash down, clean up, and disinfect the spillage to the satisfaction of the property owner, utility Owner, and governmental regulatory agencies.

E. Contractor shall repair, at his own expense, any damage to public or private property caused by his operations.

F. Overflows from temporary bypass operations shall not be permitted to enter streams or bodies of water. The Contractor shall be solely responsible for paying fines imposed and legal actions taken by state and federal regulatory agencies if overflows occur because of the temporary bypass pumping operations. The contractor shall reimburse the Owner for any damages, operational costs, fines, and other effects, and immediately remove and dispose of all wastewater and waste material spilled during the temporary bypass pumping at his own expense.

G. Provide pipeline plugs, temporary suction piping, pumps of adequate size to handle peak flow, and temporary discharge piping to ensure that the total flow of the sewer main can be safely diverted around the existing pump station. Do not stop or impede the main flows without prior approval by the Owner.

H. Temporary bypass pumping systems shall be operated 24 hours per day.

I. Where portions of the Work require that tributary pump stations to be taken out of service for prolonged periods, the Contractor shall construct a temporary bypass pumping system for those pump stations that discharge into either the existing piping downstream of the affected area, or to a neighboring gravity sewer (as identified by the Owner) that flows to an unaffected pump station.

J. In the event of primary pump failure, promptly repair or replace the failed equipment.

K. Temporary road ramps shall be used where necessary to maintain traffic flow in accordance with the Temporary Traffic Control Plan as required by Construction Specification Section 01 55 26, Temporary Traffic Control.

3.5 PROTECTION

A. Protect temporary bypass pumping systems from traffic in proximity to system components and vandalism. Repair or replace damaged components immediately.

3.6 MAINTENANCE

A. Ensure that temporary bypass pumping system(s) are properly maintained in accordance with the Temporary Bypass Pumping Plan and manufacturer recommendations. There shall be no leakage from the temporary bypass pumping system(s).

B. Sufficient spare parts for pumps and piping shall be kept on site to maintain operation of the redundant system. Immediately replace spare parts that are placed into service.

3.7 DISASSEMBLY AND REMOVAL

A. When bypass operations are complete, all bypass piping shall be flushed with fresh water and drained into the wastewater system prior to disassembly. Piping shall be disassembled in a manner to prevent SSOs.

B. Upon completion of the bypass pumping operations, and after the receipt of written permission from the Owner, the Contractor shall disassemble and remove piping, restore property to pre-construction condition and restore pavement.

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Products.

2. Product Delivery Requirements.

3. Product Storage and Handling Requirements.

4. Product Options.

1.2 PRODUCTS

A. The Owner maintains standard specifications and details which may also include approved manufacturers. The [name of owner's standards], as it relates to this project, shall be used in conjunction with these specifications. Products, materials, and aspects of the project construction shall conform to Owner standards unless specifically noted otherwise. It is the Contractor's responsibility to obtain this document from [owner's name]. It can be obtained on the internet at [html address].

B. In the event of a discrepancy between these specifications and the Owner's standards, notify the Engineer of the discrepancy. Use the more stringent of the two documents.

C. At minimum, comply with specified requirements and reference standards.

D. Specified products define standard of quality, type, function, dimension, appearance, and performance required.

E. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.

F. Domestic Products: Where the project's special provisions or Supplementary Conditions require "Buy American," except where specified otherwise, domestic products are required and interpreted to mean products mined, manufactured, fabricated, or produced in United States or its territories.

G. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.

H. Furnish interchangeable components from same manufacturer for replacement components.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Comply with delivery requirements in each Construction Specification Section.

B. Transport and handle products according to manufacturer's instructions.

C. Promptly inspect shipments to ensure that products comply with requirements, are undamaged, and that quantities are correct.

D. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products according to manufacturer's instructions.

B. Store products with intact and legible seals and labels.

C. Store sensitive products in weather-tight, climate-controlled enclosures in an environment suitable to product.

D. For exterior storage of fabricated products, place products on sloped supports aboveground.

E. Provide off-Site storage (bonded, if required by Owner) and protection when Site does not permit on-Site storage or protection.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Store loose, granular materials on solid, flat surfaces in well-drained areas. Prevent mixing with foreign matter.

H. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and maintained in acceptable condition.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.

B. Products Specified by Naming One or More Manufacturers and stating that no like, equivalent, or “or-equal” item or substitution is permitted: Products of one of the manufacturers named and complying with Specifications; no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers: Products of one of the manufacturers named and complying with Specifications; “or-equal” and substitutions permitted in accordance with the “or-equal” and substitutions requirements of the Contract Documents.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

Table 2 – Acceptable Manufacturer List (Town of Holly Springs)

Table 2: Equipment/Manufacturer List

SECTION	EQUIPMENT	MANUFACTURER
13.02.B	Reduced Pressure Zone (RPZ) Backflow Prevention	Watts Hersey Wilkens
13.02.C	Access Hatch	Halliday, Bilco
	Manhole/Wet Well Coatings	Duramer 1030 (SewerCote), Cor-Cote SC (Sherwin-Williams), Raven 405 (Raven Lining Systems)
	Precast Concrete Buildings	Easi Span Building
13.02.D	Magnetic Flow Meter	Badger M-3000
	Valves	American Mueller APCO swing check valve (ValMatic)
	Force Main Combination Air Release Valves (ARVs)	Val-Matic (stainless steel isolation ball valve and handle with flushing hardware, model to be determined at time of review)
13.03.A	Pumps and Pump Motors	ABS USA (Sultzer) Fairbanks Morse (Pentair Water) Flygt USA (Xylem)
13.03.B	Electrical Cabinets and Enclosures	Control Interface (pump manufacturer recommended)
	Float Switches	Roto Float (Anchor Scientific, Inc), compatible (SJE Rhombus, Conery)
13.03.C	VT SCADA	Inframark
13.03.D	Grinder	Muffin Monster w/ guide rails (JWC Environmental)
13.03.E	Odor Control System	Evoqua
13.03.F	Jib Crane/Hoisting Equipment	Acco Industries Yale Lift-Tech International
13.03.G	Generator System	Caterpillar, Inc. Cummins Power Generation Onan Division Detroit Diesel Corp. Kohler
13.06.B	Internal Pipe Lining	Protecto (401)

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END OF SECTION

SECTION 01 71 00
EXAMINATION AND PREPARATION

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Mobilization.

2. Survey and Layout.

B. Related Requirements:

1.2 MOBILIZATION

A. Prior to mobilization, complete at least the following:

1. Comply with the requirements of the Standard General Conditions of the Construction Contract Article 2 – Preliminary Matters.

2. Provide list of principal subcontractors.

3. Execute Agreement and provide Bonds, Insurance Certificates, and supporting documents.

4. Obtain Notice to Proceed.

5. Provide preliminary Project Schedule.

6. Provide Schedule of Values.

7. Attend preconstruction conference.

8. Provide preconstruction video.

1.3 SURVEY AND LAYOUT

A. General:

1. Provide a site layout survey for the proposed facilities so that the Work can be constructed to the lines and grades shown on the Drawings.

2. Acquire the services of a Registered Land Surveyor, experienced in providing site layout surveys (also known as construction staking) for the construction of infrastructure facilities. Provide the name and qualifications of the proposed Registered Land Surveyor prior to commencing work.

B. Information Provided to the Contractor:

1. Project Drawings:

a. Engineer will furnish the Contractor-dimensioned Drawings delineating the location of the proposed facilities, pipelines, and appurtenances to be constructed. Drawings will provide distances and offsets from features that are identifiable in the field or that can be established by survey. State Plane Grid Coordinates will be provided for established

benchmarks and control points. Some control points will be referenced and dimensioned with respect to existing landmarks. Some of the original control points may be in place, but the accuracy of those points is unknown. Base site layout survey on the benchmarks provided and re-establish control points as necessary for layout of the Work.

b. Elevations of existing ground, structures, and appurtenances are believed to be reasonably correct, but not guaranteed to be absolute, and therefore are presented only as an approximation. Notify Engineer immediately of any errors or apparent discrepancies in the data shown or omissions of data required for accurately accomplishing the site layout survey.

2. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:

a. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Engineer of discrepancy and use information in hard-copy Drawings and Specifications.

b. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.

c. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.

d. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.

e. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Architect/Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

f. Receiver shall agree not to use Drawings and Data, in whole or in part, for any other purpose other than the referenced project. Use of the Data for modification, extension, or expansion of the project or any other project, unless under the direction of Engineer shall be without liability to Engineer and Engineer subconsultants. Field verify dimensions critical to Work.

C. Site Layout Survey:

1. Furnish personnel, materials, and equipment necessary for layout of the Work.

2. Establish base lines for the location of the principal component parts of the Work together with a suitable number of benchmarks adjacent to the work. Based upon the information provided by the Drawings, develop and make detail surveys necessary for construction including: permanent and temporary construction easements, boundary staking and flagging at 50 feet on-center maximum spacing, slope stakes, stakes for working points, alignment and elevations.

3. Carefully preserve bench marks, reference points, and stakes.

4. Existing or new control points, bench marks, property markers, and monuments destroyed during construction shall be reestablished.

5. Make minor adjustments to the proposed pipeline alignment, far enough in advance to allow enough room to install valve manholes or other structures adjacent to existing parallel utilities. Notify Engineer of adjustments prior to the work for approval.

6. Exercise care establishing the pipe alignment where future connections are indicated to ensure accurate location.

D. Checking by the Engineer:

1. Engineer may check a portion or all of the layout work at any time during construction. Afford necessary assistance to Engineer in carrying out such checks. Immediately make corrections to the Work. Checking by Engineer shall not relieve the Contractor of any responsibilities for the accuracy or completeness of the work.

PART 2– PRODUCTS – Not Used

PART 3– EXECUTION – Not Used

END OF SECTION

SECTION 01 74 00
CLEANING AND WASTE MANAGEMENT

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Progress Cleaning and Waste Removal.

2. Site Maintenance.

3. Construction Waste Management and Disposal.

4. Restoration.

5. Failure to Clean, Maintain, and Restore Site.

6. Final Cleaning.

B. Related Requirements:

1. Construction Specification Section 02 41 13 Selective Site Demolition.

1.2 PROGRESS CLEANING AND WASTE REMOVAL

A. Clean the Project Site daily. Collect waste materials, debris, and rubbish and store in designated locations out of sight of the public.

B. Remove waste materials, debris, and rubbish from the Site weekly and legally dispose off-site. Clean and manage waste to the satisfaction of the Engineer.

C. Regularly (and before enclosing spaces) remove waste, debris, and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces.

1.3 SITE MAINTENANCE

A. Maintain areas free of waste materials, debris, surplus materials, and rubbish. Maintain Site in clean and orderly condition.

B. Propose locations for various construction materials and debris to the Owner and Engineer for approval. Materials shall be kept in their storage locations, except as needed for the Work. Material debris shall be promptly and regularly collected and deposited in the specified location.

C. Mounds of unusable soil, large stones, boulders, and debris shall be removed from the Site or relocated to areas designated for temporary storage of construction debris so that the site presents a neat appearance.

D. Store construction waste materials to prevent environmental pollution, fire hazards, hazards to persons and property, and contamination of stored materials.

E. When working on the shoulders of paved roads, keep the pavement clean of loose earth, dust, mud, gravel, and other debris. Restore roadway shoulders and ditches as required by Owner and owner of right-of-way.

F. Remove spillage of excavated materials, debris, and dust from public roads daily by methods approved by the Owner and roadway owner. Provide a broom tractor and a water truck to remove debris and dust. Sprinkle water at locations, in sufficient quantity and frequency, to control dust and prevent it from becoming a nuisance as determined by the Engineer.

G. Broom streets, sidewalks, driveways, parking lots, and other paved or concrete areas on the last day of the week that Work is performed to provide clean surfaces prior to weekends and periods of no work.

H. Keep the surface over and along roadways and other graded areas in a safe and satisfactory condition during the progress of the Work. Contractor will be held responsible for accidents that occur resulting from the deteriorated condition of roadway surfaces.

I. Where temporary pavement cuts are not required to be restored with asphalt pavement daily, maintain stone daily so that the surface is flush with the existing pavement and ruts and potholes do not develop. Pavement cuts will be reviewed with the Engineer and restored on the last day of the week that Work is performed to provide flush surfaces prior to weekends and periods of no work. Continue to maintain these areas as necessary during weekends and periods of no work. Review pavement cuts after storm events that erode or damage stone, including weekends, to prevent hazardous driving conditions.

J. Store unused equipment and tools at the Contractor's yard or base of operations.

1.4 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

A. Separate recyclable materials from non-recyclable trash and place in bins prior to disposal. Deliver recyclable construction waste to waste recycling facilities.

B. Dispose of construction waste not capable of being recycled by delivery to landfill, incinerator, or another legal disposal facility. Obtain receipt for deliveries.

C. When the Contract includes requirements for recycling and adaptively reusing construction waste as an alternative to landfill disposal, provide a Construction Waste Management Plan.

1.5 RESTORATION

A. When the work involves installation of pipelines, manholes, underground structures, or other disturbance of existing features in or across streets, rights-of-way, easements, or private property, Contractor shall (as the work progresses) promptly backfill, compact, grade, and otherwise restore the disturbed area to the basic condition which will permit resumption of pedestrian or vehicular traffic and any other critical activity or functions consistent with the original use of the property. Follow requirements for temporary paving of streets, walks, and driveways, specified elsewhere.

B. Restore disturbed areas immediately following the installation or completion of the utilities and facilities. Where partially completed utilities and facilities must remain incomplete for some time due to unforeseen circumstances, restore as directed by the Engineer.

C. Upon completion of grading operations, fine grade the site to drain, removing surplus excavated material, leaving the area free from surface irregularities. Dispose of surplus material, dirt, and rubbish from the site and keep the site free of mud and dust to the satisfaction of the Engineer.

D. Restore Work Site in accordance with the Drawings, this Section, and other Construction Specification Sections.

E. Restore Work Site to a condition and appearance equal or superior to that which existed just prior to construction.

1.6 FAILURE TO CLEAN, MAINTAIN, AND RESTORE SITE

A. If Contractor fails to cleanup, maintain, and restore of the Site in accordance with this Section to the satisfaction of the Engineer, the Owner may, upon five (5) days prior written notice to Contractor, retain the services of a contractor to cleanup, maintain, and restore of the Site. Costs incurred by the Owner to retain the contractor and pay for the cleanup and restoration will be charged to the Contractor and deducted from the payments due to Contractor.

1.7 FINAL CLEANING

A. After Work is complete, remove remaining waste, debris, rubbish, and surplus materials which resulted from construction operations, including construction facilities, equipment, tools, sheds, sanitary enclosures, and other equipment, leaving the site free of these items, clean, and in good condition.

B. Execute final cleaning prior to final completion review.

C. Final Cleaning of Facilities:

1. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains, and foreign substances; polish transparent and glossy surfaces.

2. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.

3. Clean debris from roofs, gutters, downspouts, and drainage systems.

PART 2– PRODUCTS – Not Used

PART 3– EXECUTION – Not Used

END OF SECTION

SECTION 01 75 00
STARTING AND ADJUSTING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Starting of Equipment and Systems.

2. Adjusting.

1.2 STARTING OF EQUIPMENT AND SYSTEMS

A. Coordinate schedule for startup of various equipment and systems.

B. Schedule with Engineer and Owner 14 days prior to startup of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Test equipment and systems for proper function as specified in individual Specification Sections.

G. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.

H. When specified in individual Specification Sections, require manufacturer to provide an authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and supervise placing equipment or system in operation.

I. Submit a written report according to Section 01 33 00 - Submittal Procedures verifying that equipment or system has been properly installed and is functioning correctly.

J. Generator Fuel:

1. Furnish fuel for startup, testing, and adjusting. Pay fuel, delivery, and labor costs.

2. Upon successful completion of testing, startup, and adjusting, the Owner will furnish fuel to fill generator fuel tank for normal operation.

1.3 ADJUSTING

A. Adjust equipment and systems to function as specified in individual Specification Sections prior to startup. Make final adjustments as necessary during startup.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Substantial Completion.

2. Final Completion.

B. Related Requirements:

1. See Construction Specification Section 01 78 00, Closeout Submittals.

1.2 SUBSTANTIAL COMPLETION

A. Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work. This is a partial list of items. It shall be the Contractor's responsibility to submit other items which are required for substantial completion in the Contract Documents.

1. Correct or replace defective work, either known by the Contractor or identified by the Engineer, including completion of items previously overlooked or work which remains incomplete.

2. Submit maintenance manuals, Project record documents, digital images of construction photographs, and other similar final record data in compliance with this Section.

3. CCTV of new, rehabilitated, or replaced pipelines.

4. Test results of project components.

5. Performance Affidavits for equipment.

6. Certification of equipment or materials in compliance with Contract Documents.

7. Any special guarantees or bonds (submit to Owner).

8. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to operating standards of Owner and maintenance personnel as specified in this and other Specification Sections.

9. Notify other Contractors of completion of work such that connections and/or coordination between different projects can be made.

10. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for incompletion, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.

11. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating

certificates, and similar releases from authorities having jurisdiction and utility companies.

12. Deliver tools, spare parts, extra stock of materials, and similar physical items to Owner.

13. Make final change-over of locks, eliminating construction master-key system, and transmit keys directly to Owner. Advise Owner's personnel of change-over in security provisions.

14. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools and similar elements.

15. Perform final cleaning in accordance with Construction Specification Section 01 74 00, Cleaning and Waste Management.

B. Request Certification of Substantial Completion in accordance with the Standard General Conditions of the Construction Contract Article 14.04, Substantial Completion.

1.3 FINAL COMPLETION

A. Complete following items before requesting final acceptance and final payment. This is a partial list of items. It shall be the Contractor's responsibility to submit other items which are required for final completion in the Contract Documents.

1. When Contractor considers Work to be complete, submit written certification that:

a. Contract Documents have been reviewed.

b. Work has been examined for compliance with Contract Documents.

c. Work has been completed according to Contract Documents.

d. Work is completed and ready for final inspection.

2. Submit the following:

a. Final punch list indicating all items have been completed or corrected.

b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.

d. Accounting statement for final changes to Contract Sum.

e. Contractor's affidavit of payment of debts and claims on AIA G706 - Contractor's Affidavit of Payment of Debts and Claims.

f. Contractor affidavit of release of liens on AIA G706A - Contractor's Affidavit of Release of Liens.

g. Contractor affidavit of release of liens on AIA G706A - Contractor's Affidavit of Release of Liens from subcontractors.

h. Consent of surety to final payment on AIA G707 - Consent of Surety to Final Payment Form.

3. Perform final cleaning in accordance with Construction Specification Section 01 74 00, Cleaning and Waste Management.

B. Request Final Acceptance and Final Payment in accordance with the Standard General Conditions of the Construction Contract Article 15.05, Final Inspection and Article 15.06, Final Payment.

PART 2– PRODUCTS – Not Used

PART 3– EXECUTION – Not Used

END OF SECTION

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Operation and Maintenance Manuals and Equipment Record Sheets.

2. Field Wiring Diagrams.

3. Record Drawings.

4. PLC Program Code.

5. Spare Parts and Maintenance Products.

6. Extended Product Warranties and Bonds.

7. Items Required for Substantial Completion and Final Completion.

B. Related Requirements:

1. See Construction Specification Section 01 77 00, Closeout Procedures.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical Samples that require Engineer's responsive action.

B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action.

1.3 OPERATION AND MAINTENANCE MANUALS AND EQUIPMENT RECORD SHEETS

A. Transmittal Mechanics:

1. Provide transmittal form for Operation and Maintenance Manual with original number of the approved item plus a suffix "O-M."

2. Submit one hard copy and one PDF electronic copy (5 MB maximum file size) until approval is received.

3. Acceptable submittals will be retained and the transmittal form returned with a request for five additional copies.

4. Deficient submittals will be returned along with the transmittal form, which will be marked to indicate deficient areas.

5. Identify re-submittals with the original number plus a suffix letter starting with "A."

6. Submit 6 copies of Operation and Maintenance Manuals printed on 8-1/2” x 11” first-quality, heavyweight paper with standard three-hole punching and bound in stiff metal-hinged binder constructed as a three-post style. Provide binders with titles. Tab each section of manuals for easy reference with plastic-coated

dividers. Provide index for each manual. When readily available, submit O&M Manuals in electronic format in addition to the hard copies.

7. Reduce drawings or diagrams bound in manuals to an 8-1/2” x 11” or 11” x 17” size. However, where reduction is not practical to ensure readability, fold larger drawings separately and place in vinyl envelopes which are bound into the binder. Identify vinyl envelopes with drawing numbers.

8. Submit one final PDF electronic file (5 MB maximum file size) if changes are required on original submittal.

B. Transmittal Content:

1. Submission of Operation and Maintenance Manuals is applicable, but not necessarily limited to:

   a. Major equipment.

   b. Equipment used with electrical motor loads of 1/6 HP nameplate or greater.

   c. Valves.

2. Prepare operation and maintenance manuals which include, but are not necessarily limited to, the following detailed information, as applicable:

   a. Equipment function, normal operating characteristics, and limiting operations.

   b. Assembly, disassembly, installation, alignment, adjustment, and checking instructions.

   c. Operating instructions for start-up, routine and normal operation, regulation and control, shutdown, and emergency conditions.

   d. Lubrication and maintenance instructions.

   e. Guide to "troubleshooting."

   f. Parts list and predicted life of parts subject to wear. Parts list shall include make and model of parts.

   g. Outline, cross-section, and assembly drawings, engineering data, and electrical diagrams, including elementary diagrams, wiring diagrams, connection diagrams, word description of wiring diagrams, and interconnection diagrams.

   h. Test data and performance curves.

   i. A list of recommended spare parts with a price list and a list of spare parts provided under these specifications. Include name, address, and telephone number of the nearest authorized parts and technical service representative.

   j. Copies of installation instructions, parts lists, or other documents packed with equipment when delivered.

k. Instrumentation or tag numbers relating the equipment back to the Contract Documents.

l. Include a filled-out copy of the Equipment Record Sheet as the first page of each Operation and Maintenance Manual. Complete maintenance requirements in detail. Simple reference to the Manual is not acceptable.

m. For equipment items involving components or subunits, an Equipment Record Sheet for each operating component or subunit is required.

1.4 FIELD WIRING DIAGRAMS

A. Submittals shall include a diagram of wiring interconnections between equipment, panels, junction boxes, and field mounted devices. Diagram shall identify each cable and conductor by size and type (i.e. gauge, THHN, twisted, shielded, coaxial, etc.), color code, and numbering. Termination details shall be included at the panel, at the field device termination point, and any intermediate connections made.

1.5 RECORD DRAWINGS

A. Maintain a complete set of full size contract drawings for mark-up purposes throughout the project. Mark up drawings in red during the work to show changes made, clarifications, and existing conditions that differ from what is shown to sufficiently form a complete record of construction. Give particular attention to work which will be concealed and difficult to measure and record at a later time.

1.6 PLC PROGRAM CODE

A. Following startup, submit final edited PLC program code on CD or portable drive. PLC programs shall include imbedded programmer remarks and be fully documented and approved by Owner.

1.7 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Construction Specification Sections.

B. As soon as is practicable after approval of the list of equipment, furnish spare parts data for each different item of equipment listed. Include a complete list of parts and supplies, with current unit prices, and source or sources of supply.

C. Furnish a list of parts and supplies that are either normally furnished at no extra cost with the purchase of the equipment, or specified to be furnished as part of the Construction Specifications. Additionally, furnish a list of additional items recommended by the manufacturer to assure efficient operation for a period of 120 days for the particular installation.

D. Parts shall be securely placed in a clearly marked box and tagged individually for identification with the name of manufacturer or supplier, applicable equipment, part number, description, and location in the equipment. Parts shall be protected and packaged for a shelf life of at least ten years.

E. Furnish, at no additional cost to the Owner, with each piece of equipment as a minimum, one (1) complete set (or the number of sets called for in the Construction Specifications) of suitably marked special tools and appliances which may be needed to adjust, operate, maintain, or repair the equipment.

F. Submit a complete list of the special tools and appliances to be furnished. Furnish tools and appliances in approved, properly labeled, and painted steel cases, equipped with good grade cylinder locks and duplicate keys.

G. Deliver to Project Site and place in location as directed by Owner; obtain receipt prior to final payment.

1.8 EXTENDED PRODUCT WARRANTIES AND BONDS

A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of Work.

B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Include table of contents and assemble in three-inch D ring binder with durable plastic cover.

F. Submit prior to final Application for Payment.

G. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.

2. Make other submittals within ten days after date of Substantial Completion, prior to final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

1.9 ITEMS REQUIRED FOR SUBSTANTIAL COMPLETION AND FINAL COMPLETION

A. Provide items required for Substantial and Final Completion in accordance with Construction Specification Section 01 77 00, Closeout Requirements.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demonstration.

2. Training.

1.2 DEMONSTRATION

A. Demonstrate startup, operation, control, adjustment, calibration, troubleshooting, servicing, maintenance, and shutdown of each item of equipment.

B. Coordinate demonstrations with Owner. Schedule demonstrations not less than 14 days in advance.

1.3 TRAINING

A. A Manufacturer's representative, who is knowledgeable about the Project, shall instruct Owner's designated operating and maintenance personnel in correct operation and maintenance procedures for equipment and systems that are specified in individual Specification Sections.

B. Coordinate training with Owner. Schedule training not less than 14 days in advance of each training session.

C. Provide training when equipment is fully operational.

D. Provide training of Owner's personnel between the hours of 8:00 AM and 4:00 PM and accommodate Owner's personnel schedule. All training shall occur on a single day except where greater than six hours of training is specified. Coordinate equipment suppliers and trainers to meet this requirement.

E. Required instruction time for each item of equipment and system is specified in individual Specification Sections.

F. On-site instruction shall be provided by qualified persons who have been made familiar in advance with the equipment and systems at Owner's facility.

G. Operation and Maintenance Data shall be submitted and accepted at a minimum of four weeks prior to commencement of training. Use accepted Operation and Maintenance Data as the basis for training.

H. Review content of Operation and Maintenance Manual in detail with personnel.

I. Explain all aspects of operation and maintenance.

J. Prepare and insert additional data in Operation and Maintenance Manuals when needed for data that becomes apparent during instruction.

PART 2– PRODUCTS – Not Used

PART 3– EXECUTION – Not Used

END OF SECTION

SECTION 02 01 00
MAINTENANCE OF EXISTING CONDITIONS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Protection of existing utilities and structures.

2. Protection of surface features.

3. Protection of persons and property.

4. Protection of benchmarks and monuments.

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements, for a list of abbreviations and acronyms used throughout the Contract Documents.

B. Definitions:

1. Existing utilities: Publicly and privately-owned utilities including, but not limited to, electric power and lighting, telephone, cable TV, water, wastewater force mains, sanitary sewer, gas, storm drains, and appurtenant lines and structures.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements, for a list of reference standards used throughout the Contract Documents.

1.3 COORDINATION

A. Notify utility companies when working in the vicinity of their utilities.

B. Work within one-half mile of an NCDOT traffic signal requires the notification of the NCDOT Traffic Services Division.

1.4 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that existing site conditions are as indicated on Drawings. Notify Engineer immediately of changed conditions.

3.2 GENERAL

A. Plan construction to minimize disturbance to properties adjacent to the project site. Conduct work to insure the least possible inconvenience to the residents in the vicinity of the work and to the general public.

B. Provide full access to public and private premises, fire hydrants, street crossings, sidewalks, and other points as designated by the Owner to prevent interruption of travel.

C. Repair fences disturbed by Contractor with new materials to a condition equal to or better than original condition or to the satisfaction of the Owner at Contractor's expense.

D. Provide barricades, fences, coverings, or other types of protection necessary to prevent damage to existing facilities, structures, and other items not indicated to be removed, as well as to facilities, structures, and other items on adjoining property. Facilities, structures, and items damaged by Contractor shall be restored to their original condition or to a condition acceptable to the Owner, the property owner, or other parties or authorities having jurisdiction.

3.3 PROTECTION OF EXISTING UTILITIES AND STRUCTURES

A. Engineer has attempted to locate and indicate existing utilities and facilities on the Drawings; however, locations shown on the Drawings are approximate and based on available information. This information is shown only for the convenience of Contractor. Engineer and Owner assume no responsibility for the locations of utilities shown or not shown. Omission of utilities on the Drawings does not constitute non-existence of utilities. Inclusion of located utilities on the Drawings does not constitute definite location or presence.

B. Contact North Carolina 811 by calling 811 or 1-800-632-4949 two business days before digging for locates of existing utilities. Confirm utilities have been located prior to excavating.

C. Determine the size, depth, material, and exact location of existing underground utilities prior to construction. Protect existing utilities and structures from damage resulting from construction activities.

D. Field verify the location and elevation of existing utilities and structures which cross the Work site or which are affected by Contractor's operations. Excavate to verify exact locations or elevations of utilities or other interferences to assure proper protection of existing utilities or structures. No extra payment will be made for such field verification or excavations, or for other work or expense incurred by Contractor in properly locating and protecting utilities or other interferences.

E. Anticipate and locate underground utilities and obstructions. When construction appears to be in proximity to existing utilities, test pits shall be placed a sufficient distance ahead of the work to verify the exact locations and inverts of the utilities to avoid damage and allow for changes in grade or relocation of the utility if deemed necessary by the Engineer.

F. If existing utilities are encountered which are not shown on the Drawings, immediately notify the Engineer and Owner and take necessary precautions to protect the utility and maintain service.

G. If existing utilities are found to interfere with the facilities under construction, immediately notify the Engineer and Owner and obtain instructions for resolving the interference. Do not proceed with temporary or permanent relocation of utilities until instructions are received from the Engineer or Owner.

H. Take necessary precautions to protect existing structures from damage due to construction activity. Locate existing structures (above or below ground) before excavation starts and coordinate the work with structure owners.

I. Existing gas pipes, water pipes, steam pipes, telephone lines, cable TV lines, electrical conduits, sewers, drains, fire hydrants, and other structures which, in the opinion of the utility owner, do not require relocation, shall be carefully supported and shored up. Flow shall be maintained, if applicable, and the main protected from damage by Contractor. Protect existing septic systems located outside the construction limits.

J. Repairing Damaged Utilities:

1. Give immediate notice to the owner and to proper authorities when utilities are damaged.

2. It is the sole responsibility of Contractor to repair or replace existing utilities damaged by Contractor during construction operations at Contractor's expense.

3. For private utilities, the utility shall be restored by the utility owner to original or better condition, at Contractor's expense.

4. Repair damaged water and sewer utility services immediately in accordance with Construction Specification Section 33 14 17, Water Utility Service Connections, or Construction Specification Section 33 31 11, Sanitary Sewerage Gravity Piping, as appropriate at Contractor's expense. If in the opinion of the Owner, Contractor does not take appropriate action to repair existing water and sewer services, Owner may elect to repair damaged services without prior notice to Contractor and bill Contractor for those services.

K. Where excavations for the Work require utility lines or appurtenant structures to be temporarily supported and protected during the Work, support and protection shall be provided directly by Contractor or through coordination with the utility owner. Support and protection shall be performed in a manner satisfactory to the Engineer and the respective authority having jurisdiction over the Work. If Contractor fails to provide proper support or protection to an existing utility, the Engineer may, at his discretion, have the respective authority provide such support or protection as necessary to protect the utility. The cost for supporting and protecting utility lines and appurtenant structures shall be paid by Contractor.

L. Work shall be carried out in a manner to prevent disruption of existing services and to avoid damage to existing utilities. Provide temporary connections, as required, to prevent interruption of service.

M. Contractor shall be responsible for damage to persons or property caused by damaged utilities.

N. Keep fire hydrants on or adjacent to the work accessible to fire-fighting equipment at all times. Fire hydrants that either are abandoned or are not in service shall be bagged by the Owner.

3.4 PROTECTION OF SURFACE FEATURES

A. Whenever construction is planned in the vicinity of a paved street, provide pads or take necessary precautions to protect the pavement from damage by the construction equipment. Pavement damaged by cleated or tracked equipment, or by other means, shall be repaired by Contractor at his expense to the satisfaction of the street owner.

B. Where joining existing pavements, use care to cut the existing pavement in straight, sharp, neat lines. Coordinate repair and replacement with roadway owner and comply with owner requirements.

C. Make temporary provisions to ensure the proper functioning of gutters, sewer inlets, drainage ditches, and irrigation ditches, which shall not be obstructed except as approved by the governing authority.

D. Protect creeks and streams located outside the construction limits.

3.5 PROTECTION OF PERSONS AND PROPERTY

A. Preserve and protect property adjacent to the work site against damage or injury as a result of construction operations including pipes, poles, conduits, walls, trees, buildings and other structures, utilities, and property in the vicinity of his work. Preserve and protect as required by the Company or party owning the structure or agency controlling it. Contractor shall be responsible for damage to property whether shown on the Drawings or not, and for injury to persons caused by his operations.

B. Promptly comply with safety regulations as directed by the Owner or local authorities having jurisdiction. Properly correct unsafe conditions or unsafe practices. If Contractor fails to comply, Owner may take the necessary measures to correct the conditions or practices of concern. Costs for these measures shall be deducted from payment due Contractor. Failure of the Owner to direct the correction of unsafe conditions or practices shall not relieve Contractor of his responsibility hereunder.

C. In the event of claims for damage or alleged damage to property as a result of Contractor's operations and performance of the Work, Contractor shall be responsible for costs in connection with the settlement of or defense against such claims.

D. Prior to commencing work in the vicinity of property adjacent to the project site, take surveys as necessary to establish the existing condition of the property. Before final payment can be made, furnish satisfactory evidence that claims for damage have been legally settled, that sufficient funds to cover such claims have been placed in escrow, or that an adequate bond to cover such claims has been obtained.

E. Protect trees, shrubs, hedges, or other ornamental plantings located outside of the construction limits, easements, or public rights-of-way. Owner reserves the right to designate certain trees located within the construction limits for protection.

F. Barricade open holes and depressions occurring as part of the Work and post warning lights on property adjacent to or part of public access. Operate warning lights from dusk to dawn each day and as otherwise required for inclement weather and visibility.

G. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by construction-related operations.

H. Contractor shall be responsible for damage or injury to property of any character resulting from any act, omission, neglect, or misconduct in his manner or method of executing said Work, from his non-execution of work, or from defective work or materials. He shall not be released from said responsibility until the work has been completed and accepted.

I. Where direct or indirect damage or injury is inflicted on public or private property by or because of any act, omission, neglect, or misconduct in the execution of the Work, Contractor shall restore such property, at his own expense, by repairing, rebuilding, or otherwise restoring, to a condition equal to or better than that which existed before such damage or injury was done. Contractor may also be directed to make reparations for such damage or injury in an acceptable manner.

3.6 PROTECTION OF BENCHMARKS AND MONUMENTS

A. Protect and maintain benchmarks, monuments or other established reference points and property corners. If disturbed or destroyed, benchmarks, monuments, reference points, property corners, etc. shall be replaced at Contractor's expense by a Professional Land Surveyor licensed in the State of North Carolina to the satisfaction of owner and City.

B. No monuments or property markers shall be intentionally removed without the approval of the local jurisdiction and until an authorized agent has witnessed or otherwise referenced their locations and provided direction for removal and restoration.

END OF SECTION

SECTION 02 41 13
SELECTIVE SITE DEMOLITION

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Protection.

2. Demolition and Removal.

3. Removal and Reinstallation.

4. Abandon Utilities.

5. Salvage.

6. Disposal.

B. Related Requirements:

1. See Construction Specification Section 31 10 00, Site Clearing.

2. See Construction Specification Section 01 74 00, Cleaning and Waste Management.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Attend preconstruction meeting with appropriate authorities having jurisdiction and the Owner prior to mobilization or beginning demolition. Owner may require tree protection fencing in sensitive areas, where specifically identified trees are desired to be protected, and when required by the landscape ordinance.

2. Contact North Carolina 811 by calling 811 or 1-800-632-4949 two business days before digging for locates of existing utilities. Confirm utilities have been located prior to excavation.

3. When cutting ceilings, walls, or floors, take necessary means to identify hidden utilities prior to cutting.

B. Sequence and Schedule:

1. Submit proposed, detailed sequence and schedule of demolition and disposal to Engineer for review prior to start of work. Provide a detailed description of methods and equipment to be used for each operation for review by the Engineer.

2. Proceed with demolition in a manner most suitable to the expeditious execution of the Work, subject to Engineer’s review and the requirements listed in Construction Specification Section 01 11 00, Summary of Work; Section 01 12 00, Multiple Contract Summary of Work; and Section 01 14 00, Work Restrictions.

1.3 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Provide Record Documentation:

1. Identify the location of capped utilities and indicate unforeseen structural, electrical, or mechanical conditions.

1.4 SITE CONDITIONS

A. Condition of Buildings, Structures, and Equipment:

1. The Owner assumes no responsibility for actual condition of structures to be demolished.

2. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner so far as is practicable.

3. The information regarding the existing structures and equipment shown on the Drawings is based on visual inspection and a walkthrough survey only. Neither the Engineer nor the Owner will be responsible for interpretations or conclusions drawn therefrom by Contractor.

4. Owner assumes no responsibility for the actual condition of existing manholes and piping. The information regarding the existing manholes and piping shown on the Drawings is based on visual inspection and a walkthrough survey only. Neither the Engineer nor the Owner will be responsible for interpretations or conclusions drawn therefrom by Contractor.

B. Environmental:

1. Crossing, disturbing, and encroaching into wetlands and other jurisdictional waters shall be subject to the approval, permitting requirements, and permit conditions of the agencies with jurisdictional oversight, which are USACE, DWR, and in Areas of Environmental Concern, DCM.

2. Before crossing or entering a jurisdictional wetland, verify that a wetlands permit has been obtained and review and comply with the conditions of the permit. Prevent draining or modifying wetlands beyond permitting limits. For permitted disturbances, restore the disturbed areas as indicated in the Contract Documents and permit(s).

3. Before crossing streams or ditches, or working within 50 feet of streams, rivers, ponds, lakes, or Class SA waters, verify that a permit has been obtained and review and comply with the conditions of the permit. Unless otherwise permitted, shown on the Drawings, or exempted by NCDENR, roadways and utilities crossing streams, rivers, ponds, lake buffers, or Class SA water shall be as near perpendicular as possible (the crossing is considered to be perpendicular if it intersects the stream or surface water between an angle of 75 and 105 degrees). Do not disturb more than 50 linear feet (longitudinal) of riparian buffer without approval from NCDENR. Review the NCDENR permit for specific requirements.

C. Burning of any debris resulting from the demolition will not be permitted at the site.

PART 2– PRODUCTS – Not Used

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify existing conditions match conditions shown on the Drawings. Notify Engineer immediately if existing conditions have changed.

3.2 LIMITATIONS

A. Do not cut-and-patch structural work in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio.

B. Do not cut-and-patch operational elements and safety components in a manner resulting in decreased performance, shortened useful life, or increased maintenance.

C. Do not cut-and-patch work exposed to view (exterior and interior) in a manner resulting in noticeable reduction of aesthetic qualities, as judged by Engineer. Engage qualified personnel skilled in cutting, patching, removal, and replacement of specialized equipment and finish surfaces. Patch with materials that match existing adjacent surfaces to the fullest extent possible.

3.3 PREPARATION

A. Contractor, Owner, and Engineer shall jointly survey the condition of the adjoining and nearby structures prior to beginning demolition, for the purpose of documenting the condition of pavements and structures in proximity to the Work. Document the existing conditions with video, photography, and written records focusing on prior settlement or cracking of structures, pavements, and damage to other items that may become the subject of possible damage claims.

B. Establish temporary sewer bypass pumping in accordance with Construction Specification Section 01 51 39.10, Temporary Bypass Pumping of Wastewater Pipelines and Section 01 51 39.11, Temporary Bypass Pumping of Wastewater Pump Stations.

3.4 PROTECTION

A. Protect and maintain existing conditions in accordance with Construction Specification Section 02 01 00, Maintenance of Existing Conditions and Section 31 10 00, Site Clearing.

B. The Work shall comply with the applicable provisions and recommendation of ANSI A10.2, Safety Code for Building Construction, governing codes, and as hereinafter specified.

C. Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.

D. Demolition and removal work shall be performed by competent, experienced workmen for the various types of demolition and removal work and shall be carried out to completion with due regard to the safety of the public, Owner’s employees, and the workmen on site. The work shall be performed with as little nuisance as possible.

E. Make such investigations, explorations, and probes as necessary to ascertain any required protective measures before proceeding with demolition and removal. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structures or movement of piping systems to be demolished and adjacent facilities to remain.

F. Provide, erect, and maintain, lights, barriers, weather protection, warning signs, and other items as required for proper protection of the public, workmen engaged in demolition operations, and adjacent construction. Ensure safe passage of persons around areas of demolition.

G. Provide and maintain weather protection at exterior openings so as to fully protect the interior premises against damage from the elements until such openings are closed by new construction.

H. Provide and maintain temporary protection of the existing structures designated to remain where demolition, removal and new work is being done, connections made, materials handled or equipment moved.

I. Do not close or obstruct walkways or driveways and shall not store or place materials in walkways or driveways or other means of egress. Conduct operations with minimum traffic interference.

J. Contractor is responsible for any damage to existing structures or contents caused by his construction operations.

3.5 WORKMANSHIP

A. Execute the work in a careful and orderly manner, with the least possible disturbance to the public and to the existing interceptor system.

B. Where alterations occur, or new and old work join, cut, remove, plug, repair, or remove the adjacent materials to the extent required by the construction conditions, leave the altered work in as good a condition as practical.

C. Confine cutting of existing pipe in designated areas to remain within required limits for the proper installation of the Work as shown on the Drawings.

D. Remove temporary work, such as enclosures, signs, guards, and other items when temporary work is no longer required.

3.6 TRAFFIC CONTROL

A. Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent, occupied, or used facilities.

B. Do not close or obstruct streets or walks without permission from the Owner.

C. Comply with the Traffic Control requirements of Construction Specification Section 01 55 26, Temporary Traffic Control. Provide an additional Traffic Control Plan where the current plan does not adequately address demolition activities.

3.7 DEMOLITION AND REMOVAL

A. Asphalt, Concrete, and Miscellaneous Yard Structures:

1. Existing concrete and asphaltic paving, curbs, sidewalk, and miscellaneous yard structures within the areas designated for new construction work shall be demolished. Remove resulting debris from the site.

2. Excavation caused by demolition shall be backfilled in accordance with Construction Specification Section 31 23 00, Excavation and Fill or Section 31 23 33, Trenching and Backfilling.

3. Perform demolition and removal in a manner does not endanger the safety of the workmen or the public or cause damage to adjacent pavement, concrete, and structures.

4. Provide barriers and precautionary measures in accordance with Owner's requirements and other authorities having jurisdiction.

5. Where parts of existing structures will remain in service, demolish the portions to be removed, repair damage, and leave the structure in proper condition for the intended use.

6. Remove concrete and masonry to the lines designated by drilling, chipping, or using other suitable methods. Leave the resulting surfaces reasonably true and even, with sharp, straight corners that will result in neat joints with new construction and be satisfactory for the purpose intended. Where existing reinforcing rods are to extend into new construction, remove the concrete so that the reinforcing is clean and undamaged. Cut off other reinforcing 1/2" below the surface and fill with epoxy resin binder flush with the surface.

B. Pipe and Manholes:

1. Demolition and Removals:

a. Proceed with the demolition and removal of manholes, piping, and appurtenances when released by the Owner and Engineer. Sequence Work to maintain continuous wastewater flow except where temporary sewer bypass pumping is established and in use.

b. Demolish manholes and piping in small sections. Install temporary shores, struts, and bracing where necessary to prevent collapse of any structure.

c. Where piping is to be removed for disposition, the piping shall be drained and the contents properly disposed of. The adjacent pipe that will remain in service shall be blanked off or plugged, then filled with grout or concrete as indicated on the Drawings.

d. Remove materials from the demolition of manholes, piping, and appurtenances. Materials become the property of Contractor unless otherwise noted. Remove materials from the site to the Contractor's location for disposal weekly. Pay disposal fees.

e. Manholes, piping, and appurtenances removed without proper authorization, which are necessary for the operation of the existing wastewater collection facilities, shall be replaced to the satisfaction of the Engineer at no cost to the Owner.

f. All excavation resulting from demolition shall be backfilled in accordance with Section 31 23 33, Trenching and Backfilling.

2. Remove and Dispose of Existing Sewer Pipe:

a. Locate, excavate, plug the existing interceptor, and remove the length of the existing interceptor as indicated on the Drawings or as directed by the Engineer. Excavation and backfilling of the trench for this work shall be considered incidental to the Work and no additional payment will be made.

3. Remove and Dispose of Existing Manholes:

    a. Locate, excavate, remove and dispose of the existing manhole in its entirety as indicated on the Drawings or as directed by the Engineer. The removal and disposal of existing manholes will generally occur in a location where a new manhole will be put in its place. Excavation and backfilling of the trench for this work shall be considered incidental to the work and no additional payment will be made.

4. Remove and Dispose of Existing Sewage Pressure Air Release Valve Assemblies:

    a. Remove and dispose of the existing air release valve assembly in its entirety as indicated on the Drawings or as directed by the Engineer. The assembly to be removed shall include the air release valve, gate valve, nipples, tapped blind flanges, bolts, and other related appurtenances. The removal and disposal of existing air release valve vaults will generally occur in a location where a new air and vacuum/pressure air release valve vault will be put in its place.

    b. All bolts connecting the tapped flange to the tee shall be removed and replaced one at a time with stainless steel bolts until all have been replaced. This shall be done prior to removal of the air release valve assembly to minimize the amount of time require for shut down of the force main.

5. Remove and Dispose of Existing Sewage Pressure Air Release Valve Vault:

    a. Locate, excavate, remove, and dispose of the existing air release valve vault in its entirety as indicated on the Drawings or as directed by the Engineer. The removal and disposal of existing air release valve vaults will generally occur in a location where a new air and vacuum/pressure air release valve vault will be put in its place.

C. Buildings, Structures, and Equipment:

1. Title to Materials:

    a. Contractor shall have no right or title to equipment, materials, or other items to be removed from the existing buildings or structures until the equipment, materials, and other items have been removed from the premises. Do not sell or assign, or attempt to sell or assign any interest in the equipment, materials, or other items that have been removed.

    b. Contractor shall have no claim against the Owner because of the absence of equipment, fixtures, and materials.

2. Remove equipment and materials from the demolition of buildings and structures. Equipment and materials become the property of Contractor unless otherwise noted. Remove equipment and materials from the site to the Contractor's location for disposal weekly. Pay disposal fees.

3. De-energize panel boards, lighting fixtures, switches, circuit breakers, electrical conduits, motors, limit switches, pressure switches, instrumentation such as flow, level, and/or other meters, wiring, and similar power equipment prior to removal. Electric panels and equipment to be retained shall be relocated or isolated prior to the removal of the equipment.

4. Proceed with the removal of the equipment, piping, and appurtenances in a sequence designed to maintain the plant in continuous operation. Proceed only after approval of the Engineer.

5. Equipment, piping, and appurtenances removed without proper authorization, which are necessary for the operation of the existing facilities, shall be replaced to the satisfaction of the Engineer at no cost to the Owner.

6. Supports, pedestals, and anchors shall be removed with the equipment and piping unless otherwise specified or required. Concrete bases, anchor bolts, and other supports shall be removed to approximately 1 inch below the surrounding finished area and the recesses shall be patched to match the adjacent areas. Superstructure wall and roof openings shall be closed, and damaged surfaces shall be patched to match the adjacent areas as specified under applicable Sections of these Specifications, as shown on the Drawings, and as directed by the Engineer. Wall sleeves and castings shall be plugged or blanked off, and openings in concrete shall be closed in a manner meeting the requirements of the appropriate Sections of these Specifications, as shown on the Drawings, and as directed by the Engineer.

7. Materials or items designated to remain the property of the Owner shall be tabulated below. These items shall be removed with care and stored at a location at the site to be designated by the Owner.

8. Where equipment is shown or specified to be removed and relocated, do not proceed with removal of this equipment without specific prior approval of the Engineer. Prior to removal, the equipment shall be operated in the presence of representatives of the Contractor, Owner, and Engineer. Remove these items with care, under the supervision of the trade responsible for reinstallation, and protect and store until required. Material or items damaged during removal shall be replaced with similar new material or items. Equipment that is removed without proper authorization and is required for plant operation shall be replaced at no cost to the Owner.

9. Materials or items demolished and not designated to become the property of the Owner or to be reinstalled shall become the property of the Contractor and shall be removed from the property and legally disposed of.

10. In general, masonry shall be demolished in small sections. Where necessary to prevent collapse of any construction, install temporary shores, struts, and bracing.

11. Finish adjacent existing surfaces to new work to match the specified finish for new work. Clean existing surfaces of dirt, grease, loose paint, etc., before refinishing.

12. Cut out embedded anchorage and attachment items as required to properly provide for patching and repair of the respective finishes.

3.8 REMOVAL AND REINSTALLATION

A. Items such as culverts, storm drains, headwalls, retaining walls, signs, fences, mailboxes and ornamental structures, irrigation, power, electric, and light poles, temporary items, and miscellaneous structures and items in conflict with the Work, shall be removed, stored, protected, and reinstalled upon installation of the Work near those items. These items shall be restored to a condition equal to that which existed prior to the Work.

B. Remove roadway signs subject to, and in accordance with, NCDOT or roadway owner requirements. Furnish temporary signs as required by the NCDOT or roadway owner. All signs shall be replaced immediately following backfill or at the end of each day, whichever comes first.

C. Restore culverts and storm drains to their original function and capacity.

3.9 ABANDON UTILTIES

A. Pipe:

1. Abandon pipelines identified on the Drawings to be abandoned and where directed by the Engineer.

2. Empty the pipe contents, fill with flowable fill, and plug pipe ends with grout or flowable fill for the following:

a. Pipe larger than 24 inches.

b. Pipe located within the roadway typical section or the 1:1 slope off the edge of pavement and one of the following:

i. Pipe 12-inch to 24-inch diameter located less than 20 feet below finished grade.
ii. Pipe 6-inch to 12-inch diameter located less than 12 feet below finished grade and not made of cast iron, ductile iron, HDPE, or PVC.
iii. Located below groundwater table that could become a conduit for water movement.

3. Discharge flowable fill material directly from the truck into the space to be filled or by other approved methods. The mix may be placed full depth or in lifts as site conditions warrant.

4. Backfill the excavation in accordance with Construction Specification Section 31 23 33, Trenching and Backfilling.

5. Comply with NCDOT requirements where pipelines are within the NCDOT Right-of-way.

B. Manholes:

1. Abandon manholes identified on the Drawings to be abandoned and where directed by the Engineer.

2. Locate, excavate, remove, and dispose of the cone section, grade adjustment rings, and frame and cover. Remove manhole sections to a minimum of 3 feet below grade.

3. Plug all inverts with concrete and fill manhole to the top of the remaining manhole section with 150 psi maximum flowable fill.

4. Discharge flowable fill material directly from the truck into the space to be filled or by other approved methods. The mix may be placed full depth or in lifts as site conditions warrant.

5. Backfill the excavation in accordance with Construction Specification Section 31 23 33, Trenching and Backfilling.

6. Comply with NCDOT requirements where manholes are within the NCDOT Right-of-way.

3.10 REPAIR

A. Contractor shall be responsible for any damage which may be caused by demolition and removal work to any part or parts of existing structures or items designated for reuse or to remain in service. Perform patching, restoration, and new work in accordance with applicable Construction Specifications Sections and in accordance with the details shown on the Drawings.

B. Repair damages caused to adjacent equipment, finish surfaces, or other facilities by demolition operations within ten (10) days, or as otherwise approved by the Engineer at no cost to Owner.

3.11 MAINTENANCE

A. Maintain buildings, structures, and public properties, preventing accumulations of waste, debris, and rubbish caused by demolition and removal operations.

B. Provide on-site dump containers for collection of waste materials, debris, and rubbish. Wet down dry materials to lay down and prevent blowing dust.

C. Clean the site and properties and dispose of demolition waste materials, debris, and rubbish weekly, or as directed by the Engineer.

3.12 EQUIPMENT AND MATERIALS RETAINED BY OWNER

A. The following equipment and materials will be retained by the Owner:

1. None.

B. Move the equipment and materials to a location as designated by the Owner.

3.13 DISPOSAL OF MATERIAL

A. Remove and dispose of debris, rubbish, and other materials resulting from demolition operations on a weekly basis. Dispose off-site at Contractor expense.

B. Burning of materials removed from demolished structures will not be permitted on site.

C. Storage or sale of removed items will not be permitted on site.

D. Comply with Construction Specification Section 01 74 00, Cleaning and Waste Management.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Forming and Placing.

2. Concrete Finishes.

B. Related Requirements:

1. Additional specifications may be shown on the Drawings. In the case of conflicts, the Drawing notes shall take precedence.

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions – Not Used.

C. Reference Standards:

1. The following is a partial list of referenced standards and acronyms used in this section. See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

ACI 301	Specifications for Structural Concrete for Buildings
ACI 304	Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete
ACI 305	Guide to Hot Weather Concreting/Standard Specification for Hot Weather Concreting
ACI 306	Guide to Cold Weather Concreting/Standard Specification for Cold Weather Concreting
ACI 315	Details and Detailing of Concrete Reinforcement
ACI 318	Building Code Requirements for Structural Concrete and Commentary
ACI 347	Recommended Practice for Concrete Formwork
ASCE 7-05	Minimum Design Loads for Buildings and Other Structures

1.3 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation meetings: held with roadway owner, Owner, and Engineer prior to installation.

B. Coordinate sequencing and scheduling of Work with Owner and Engineer.

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that all materials and products provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings:

1. Submit product data/shop drawings for cement, aggregates, admixtures, and appurtenances. Include manufacturer’s installation instructions.

2. Submit reinforcement materials, form materials, joint materials, anchor bolts, epoxy grouted dowels, and waterstops.

3. Submit reinforcement detailing shop drawings.

D. Design Data: Concrete Mix Designs.

E. Test and Evaluation Reports.

F. Source Quality Control Submittals.

G. Field Quality Control Submittals.

1.5 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Construct and erect concrete formwork in accordance with ACI 301, ACI 318, and ACI 347.

C. Perform concrete reinforcing work in accordance with ACI 301, ACI 315, ACI 318, and CRSI Manual of Practice.

D. Perform cast-in-place concrete work in accordance with ACI 301, ACI 318, ACI 305, and ACI 306.1.

E. Perform Work in accordance with the North Carolina Building Code.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with Section 01 60 00 - Product Requirements for transporting, handling, storing, and protecting products.

B. Delivery and Acceptance Requirements: measure, mix, and transport concrete in accordance with ACI 304, ACI 305, and ACI 306.

PART 2 – PRODUCTS

2.1 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type 1, unless otherwise acceptable to the Engineer.

B. Aggregates: ASTM C 33, except local aggregates of proven durability may be used when acceptable to the Engineer.

C. Water: clean, drinkable.

D. Air-Entraining Admixture: ASTM C 260. Only use admixtures having neutralized vensol resins. Use MB-VR by Master Builders, SIKA AER by Sika Chemical Company, CASTLE VR by Castle Chemical Company, or approved equal. Use air-entraining admixture in all concrete, providing not less than 4% nor more than 8% entrained air for concrete exposed to freezing and thawing, and from 2% to 4% for other concrete.

E. Water-Reducing Admixture: ASTM C 494, Type A, D, and E. Only use admixtures which have been tested and accepted in mix designs, unless otherwise acceptable. A high range water reducer (HRWR) is required for all slabs and walls.

F. Design Strength: 4,500 psi compressive strength at 28 days minimum, 3-inch maximum slump prior to addition of HRWR, unless otherwise shown on the Drawings and outlined in details

G. No admixtures containing calcium chloride may be used. Use Pozzolith by Master Builders, Plastiment or Platicrete by Sika, Chemstrong A, R, or W by Castle Chemical Company, or approved equal.

2.2 REINFORCEMENT MATERIALS

A. Reinforcing Steel: New billit steel meeting ASTM A615, Grade 60, deformed.

B. Chairs, Bolsters, Bar Supports, Spacers: sized and shaped for reinforcement support, plastic tipped or non-corroding for supports in slabs forming finished ceilings or where supports are exposed to weather.

C. Detail and fabricate concrete reinforcement in accordance with CRSI Manual of Practice, ACI 301, ACI 315, ACI 318, and the North Carolina Building Code.

D. Weld reinforcement in accordance with AWS D1.4.

E. All bar splices shall be Class “B” tension splices per ACI 318, unless otherwise shown.

2.3 FORM MATERIALS

A. Provide form materials with sufficient stability to withstand pressure of placed concrete without bow or deflection.

B. Exposed Concrete Surfaces: acceptable panel-type to provide continuous, straight, smooth, as-cast surfaces. Use largest practical sizes to minimize form joints.

C. Unexposed Concrete Surfaces: Suitable material for project conditions.

2.4 JOINT MATERIALS

A. Concrete Control - Expansion Joint Fillers:

1. Self-Expanding Cork Joint Filler: Provide resilient and non-extruding type pre-molded cork units complying with ASTM D 1752, Type III; FS-HH-F-341, Type II, Class C; and AASHTO M153, Type III.

2.5 ANCHOR BOLTS

A. Carbon Steel: ASTM A36 or A307. Minimum diameter in concrete is 3/4-inch in concrete and 1/2-inch in masonry, unless otherwise shown.

B. Stainless Steel: ASTM F593, Alloy Group 1 or 2. Minimum diameter in concrete is 3/4-inch and 1/2-inch in masonry, unless otherwise shown.

C. Adhesive Anchors for concrete and grout-filled masonry: two-component, dual-chambered cartridge liquid, moisture-insensitive epoxy adhesive. Hilti HIT-HY 200, ITW Ramset/Read Head Epcon Ceramic 6 system, Simpson SET-XP system, or approved equal.

D. Expansion Anchors for concrete: Hilti Kwik-bolt TZ, ITW Ramset/Red Head Trubolt Wedge Anchor, Simpson Strong-Bolt 2, or approved equal.

2.6 EXPOXY GROUTED DOWELS

A. All dowels which are to be drilled and grouted into existing concrete shall be done with an epoxy grout. Drill hole with diameter 1/8-inch larger than dowel or as recommended by grout supplier. Use HIT 500 RE by Hilti or approved equal.

2.7 WATERSTOP

A. Preformed expandable hydrophilic waterstop. MC-2010M by Adeka Ultra Seal with P-201 paste or Hydrotite CJ-0725 by Greenstreak with Leakmaster paste.

PART 3– EXECUTION

3.1 EXAMINATION

A. Verify existing conditions match conditions shown on the Drawings. Notify Engineer immediately if existing conditions have changed.

B. Verify suitability of grading, elevations, and existing conditions prior to installing formwork. Examine the areas and conditions under which concrete shall be cast-in-place and notify the Engineer, in writing, of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in an acceptable manner.

3.2 PREPARATION

A. Protect and maintain existing conditions in accordance with Construction Specification Section 02 01 00, Maintenance of Existing Conditions.

B. Subgrade:

1. Prepare in accordance with the requirements of Construction Specification Section 31 23 00, Excavation and Fill and Section 31 23 33, Trenching and Backfilling.

2. The surface of the subgrade shall be dry and clean of all foreign substances. Ruts, soft yielding materials, and areas that do not meet compaction requirements shall be corrected by removing and replacing the material and properly compacting to the lines and grades shown on the Drawings.

3. Subgrade shall be approved by Engineer prior to placement of concrete.

3.3 FORMING AND PLACING CONCRETE

A. Ready Mixed Concrete: ASTM C 94.

B. Formwork: Construct so that concrete members and structures are of correct size, shape, alignment, elevation, and position, complying with ACI 347.

C. Chamfer all exposed external corners of concrete with 3/4-inch, 45-degree chamfer, unless otherwise noted.

D. Provide openings in formwork to accommodate work of other trades. Accurately place and securely support items built into forms.

E. Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Retighten forms during and after concrete placement if required to eliminate mortar leaks.

F. Installation of Embedded Items: set and build into the work anchorage devices and embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting diagrams, templates, and instructions provided by others for locating and setting.

G. Reinforcement Placement: conform to ACI 315. Place reinforcement, supported and secured against displacement. Ensure reinforcement is clean, free of loose scale, dirt, or other foreign coatings. Where bars are indicated in multiple layers, place upper bars directly above lower bars. Maintain concrete cover around reinforcement.

H. Concrete Placement: comply with ACI 304, placing concrete in a continuous operation within planed joints or sections. Do not begin placement until work of other trades affecting concrete is completed.

I. Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping, so that concrete is worked into all part of forms.

J. All concrete shall be moist cured per ACI 301 or cured with an approved curing compound. Contractor shall verify when using a curing compound that it is compatible with the floor coverings, adhesives, coatings, or toppings to be used. Concrete shall be cured for a minimum of 7 days. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement, and curing.

1. In cold weather, comply with ACI 306.

2. In hot weather, comply with ACI 305.

K. Install waterstop in all cold joints of water-bearing structures between rows of reinforcing bars, with minimum concrete coverage required by manufacturer, and in accordance with manufacturer’s instructions.

3.4 CONCRETE FINISHES

A. Finish of Formed Surfaces:

1. Rough Form Finish: for formed concrete surfaces not exposed to view in the finish work or by other construction, unless otherwise indicated. This concrete surface has the texture imparted by the form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4-inch in height rubbed down or chipped off.

2. Smooth Form Finish: for formed concrete surfaces exposed to view in the finish work or by other construction, unless otherwise indicated. This is the as-cast concrete surface as obtained by selected form-facing material, arranged in order and symmetrically with a minimum of seams. Repair and patch defective areas with all fins or other projections completely removed and smoothed.

3. Smooth Rubbed Finish: Provide smooth rubbed finish to exposed surfaces of structures which have received smooth form finish treatment, not later than the day after form removal. Moisten concrete surfaces and rub with carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.

4. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise shown.

3.5 QUALITY CONTROL TESTING

A. Sampling and testing for quality control during placement of concrete shall include the following or as directed by Engineer:

B. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

1. Slump: ASTM C 143; one test at point of truck discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.

2. Air Content: ASTM C 173; volumetric method for lightweight or normal weight concrete; ASTM C 231; pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.

3. Concrete Temperature: Test hourly when air temperature is 40 degrees F and below, and when 80 degrees F and above; and each time a set of compression test specimens is made.

4. Compression Test Specimen: ASTM C 31; one set of four standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cure test specimens are required. The Contractor shall provide the testing laboratory with an approved container to store test cylinders on site for 24 hours.

5. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding five cubic yards plus additional sets for each 100 cubic yards over and above the first 50 cubic yards of each concrete class placed in any one day and not less

than one for each 5,000 square feet of surface areas for slabs or walls; one specimen tested at seven days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

6. When frequency of testing will provide less than five strength tests over the life of the project for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.

C. Test results will be reported in writing to the Engineer and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.

D. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Engineer. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

E. Substandard Concrete: Any concrete furnished under this Specification that fails to reach the required design compressive strength after 28 days as evidenced by the compressive strength test specified herein shall be considered substandard.

1. The procedure specified in ACI 318 for the Evaluation and Acceptance of Concrete shall be used to determine if the substandard concrete is to be removed and replaced. The Engineer shall make the final decision. Any substandard concrete which is removed and replaced shall be done so at the Contractor’s expense.

F. Non-Conforming Work:

1. Contractor is responsible for correction of concrete work which does not conform to the specified requirements, including strength, tolerances, and finishes. Correct deficient concrete as directed by the Engineer.

3.6 CLEANING

A. See Construction Specification Section 01 74 00, Cleaning and Waste Management.

3.7 PROTECTION

A. Protect finished concrete from damage from construction activities. Repair or replace damaged concrete in a manner acceptable to the Engineer.

END OF SECTION

SECTION 09 90 00
PAINTING AND COATING

PART 1 – GENERAL

1.1 SUMMARY

A. Description of Work

1. Furnish labor, materials, equipment and appliances required for complete execution of Work shown on Drawings and Specified herein. The following shall be painted:

a. All new equipment and materials per Table 09 90 00 – A (Painting Schedule)

b. Paint all exposed piping, valves, fittings, and appurtenances.

B. Section Includes

1. Paint Materials

2. Shop Painting

3. Field Painting

a. Surface Preparation

b. Schedule of Colors

c. OSHA Safety Colors

1.2 REFERENCES

A. Reference Standards: The work shall comply with the most recent standards which are listed below.

1. American National Standard Institute/National Sanitation Foundation (ANSI/NSF):

a. Standard 61 Drinking Water Systems Components-Health Effects

2. American Water Works Association (AWWA):

a. D 100 Welded Steel Tanks for Water Storage

b. D 102 Coating Steel Water Storage Tanks

c. C 652 Disinfection of Water Storage Facilities

d. M 42 Steel Water-Storage Tanks

3. American Society for Testing and Materials (ASTM):

a. ASTM D3359 - Standard Test Methods for Measuring Adhesion by Tape Test

b. ASTM D4285 - Blotter Test”

c. ASTM D4417 Method C - Field Measurement of Surface Profile of Blast Cleaned Steel

d. ASTM D1737 - Test Method of Elongation of Attached Organic Coatings wit Cylindrical Mandrel Apparatus

e. ASTM B117 - Method of Salt Spray (Fog) Testing

f. ASTM D4060 - Test Method for Abrasion Resistance of Organic Coating by the Taber Abraser

4. Steel Structures Painting Council (SSPC) with reference to National Association of Corrosion Engineers (NACE):

a. Volume 1 Steel Structure Painting Council “Good Painting Practices”

b. Volume 2 Steel Structures Painting Manual “Systems and Specifications”

c. SSPC-PA-1 – Shop, Field, and Maintenance Painting of Steel

d. SSPC-PA-2 – Measurement of Dry Film Thickness with Magnetic Gages

e. SSPC-SP1 – Solvent Cleaning

f. SSPC-SP2 – Hand Tool Cleaning

g. SSPC-SP3 – Power Tool Cleaning

h. SSPC-SP5/NACE 1 – White Metal Blast Cleaning

i. SSPC-SP6/NACE 3 – Commercial Blast Cleaning

j. SSPC-SP10/NACE 2 – Near-White Metal Blast

k. SSPC-SP11 – Power Tool Cleaning to Bare Metal

l. SSPC-Vis-1 – Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning

m. SSPC-Vis-2 – Standard Method of Evaluating Degree of Rusting on Painted Steel Surfaces

1.3 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00

B. Product Data: Manufacturer’s literature and Material Safety Data Sheets for each product.

C. Samples: Standard Color Charts

D. Work Schedule: Submit a painting schedule identifying surface preparation and paint systems proposed. Provide the name of the paint manufacturer, and name, address, and telephone number of manufacturer’s representative who will inspect the work. Submit schedule as soon as possible following the Award of Contract so schedule may be used to identify colors and specify shop paint systems for fabricated items.

1.4 QUALITY ASSURANCE

A. Contractor Qualifications

1. If requested, provide a letter indicating that the painting applicator has five years of experience, and 5 references which show previously successful application of the specified or comparable painting systems. Include the name, address, and the telephone number of the Owner of each installation for which the painting applicator provided services.

2. Provide a competent Supervisor, who shall be subject to Owner approval. The Supervisor shall be present at all times during the work with full authority to act on the company's behalf. The on-site Supervisor shall not be replaced without prior written notification to the Owner/Engineer. The Contractor shall also provide adequate staffing for the proper coordination and execution of the work.

3. The Contractor shall have the resources to successfully complete the work as called for in the specifications. Resources shall be defined as personnel, equipment, and materials.

4. An in-house quality control program shall be provided to insure compliance with this specification.

5. VOC Compliance: All coating systems shall meet USEPA VOC limits

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Acceptance Requirements

1. All coating and coating-related materials shall be new and delivered to the job site in the original sealed containers with labels clearly identifying the following information:

a. Manufacturer's name

b. Type of Materials

c. Manufacturer's batch numbers

d. Date of manufacture

e. Color name and number

f. Instructions for storage, application, mixing, thickness, and reducing (where applicable).

g. MSDS sheets (maintain at the site for Owner)

B. Storage and Handling Requirements

1. Store materials in accordance with manufacturer's recommendation and comply with fire and health regulations

2. Store materials in designated area made available to the Contractor by the Owner.

3. Maintaining proper storage temperature is the responsibility of the Contractor. All costs associated with the storage of materials will be the responsibility of Contractor. No materials may be left unsecured in any storage area.

1.6 WARRANTY

A. Manufacturer Warranty

1. Elevated Steel Tank Interior - Coatings Manufacturer shall provide a coating system warranty that is effective for a period of ten (10) years beginning on the substantial completion date. The Coatings identified in this warranty shall not:

a. Check, crack, blister or delaminate from the substrate.

b. Allow the substrate to corrode in excess of 1% of the surface area being coated as measured in accordance with ASTM D 610-95 “Standard Test Method for Evaluating Degree of Rusting on Painted Surfaces” for a period of five (5) years from substantial completion date or corrode in excess of additional 0.5% per year for balance of the warranty coverage period.

2. Elevated Steel Tank Exterior - Coatings Manufacturer shall provide a coating system warranty that is effective for a period of fifteen (15) years beginning on the substantial completion date. The Coatings identified in this warranty shall not:

a. Check, crack, blister or delaminate from the substrate.

b. Allow the substrate to corrode in excess of 1% of the surface area being coated as measured in accordance with ASTM D 610-95 “Standard Test Method for Evaluating Degree of Rusting on Painted Surfaces” for a period of five (5) years from substantial completion date or corrode in excess of additional 0.5% per year for balance of the warranty coverage period.

c. Change color more than 5 DE Hunter units as determined in accordance with ASTM 2244 by comparing the affected exposed coating cleaned with water and a soft cloth with unexposed Original Project Color Standards.

d. Exhibit loss of gloss in excess of 24 units as measured by a gloss meter in accordance with ASTM D523-89 with 60 degree geometry.

e. Chalk in excess of a rating of 8 as measured in accordance with ASTM D4214, Method A.

B. Anniversary Inspection

1. For tank coatings an anniversary inspection will be performed jointly by the Engineer and the Contractor one-year after completion of the work. The purpose of the inspection is to visually identify any areas that have experienced deterioration (flaking, peeling, blistering, or rusting). The Engineer will prepare a report documenting any visually identified areas of deterioration.

2. The Contractor will repair any areas of deterioration identified in a manner consistent with these specifications at no cost to the Owner.

3. The Owner will drain the tank for the inspection and all interior repairs are to be made during this site visit. The Contractor shall washout sediments and disinfect the tank in accordance with these specifications at the completion of the work.

PART 2– PRODUCTS

2.1 MATERIALS

A. Manufacturers: Subject to compliance with the Specifications, provide products from one of the following manufacturers:

1. Tnemec Company Inc.

2. Ameron

3. ICI Devoe

4. CARBOLINE

5. Sherwin-Williams

B. Coating Materials

1. The term “paint” is defined as both paints and coatings including emulsions, enamels, stains, varnishes, sealers, and other coatings whether organic or inorganic and whether used as prime, intermediate, or finish coats.

2. Purchase paint from an approved manufacturer. For projects involving application of more than 15 gallons of each type of paint, the Manufacturer shall: 1. Assign a representative to inspect application of their product both in the shop and field. 2. Submit a report to the Engineer at the completion of the Work identifying products used and verifying the surfaces were properly prepared, products were properly applied, and the paint systems were proper for the exposure and service.

3. Provide primers and intermediate coats produced by same manufacturer as finish coat. Use only thinners approved by paint manufacturer, and only within manufacturer’s recommended limits.

4. Ensure compatibility of total paint system for each substrate. Test shop primed equipment delivered to site for compatibility with final paint system. Provide an acceptable barrier coat, or totally remove shop applied paint system when incompatible with system specified, and repaint with specified paint system.

5. Use painting materials suitable for the intended use and recommended by paint manufacturer for the intended use.

6. Require that personnel perform work in strict accordance with the latest requirement of OSHA Safety and Health Standards for construction. Meet or exceed requirements of regulatory agencies having jurisdiction and the manufacturer’s published instructions and recommendations. Maintain a copy of all Material Safety Data Sheets at the job site of each product being used prior to commencement of work. Provide and require that personnel use protective and safety equipment in or about the project site. Provide respiratory devices, eye and face protection, ventilation, ear protection, illumination and other safety devices required to provide a safe work environment.

C. Abrasives

1. All abrasive material shall be free of contaminants

2. The lasting abrasive shall be of the type and size to establish an angular anchor profile within the guidelines of the coating manufacture's product data sheet as measured by ASTM D4417 Method C "Field Measurement of Surface Profile of Blast Cleaned Steel."

D. Solvent Cleaning Materials

1. Potable Water

2. Compatible Solvents for coatings being used.

PART 3– EXECUTION

3.1 SHOP PAINTING

A. Shop prime fabricated steel and equipment with at least one shop coat of prime paint compatible with finish paint system specified. Prepare surface to be shop painted in strict accordance with paint manufacturer's recommendations and as specified. Finish coats may be shop applied, if approved by the Engineer. Package, store and protect shop painted items until they are incorporated into Work. Repair painted surfaces damaged during handling, transporting, storage, or installation to provide a painting system equal to the original painting received at the shop.

B. Identify surface preparation and shop paints on Shop Drawings. Verify compatibility with field applied paints. Shop Drawings indicating shop painting will not be approved until project paint system has been submitted to and approved by the Engineer.

3.2 SURFACE PREPARATION

A. General

1. Surfaces to be painted shall be clean and dry, and free of dust, rust, scale, and foreign matter. No solvent cleaning, power or hand tool cleaning shall be permitted unless approved by the Engineer.

2. During painting operations and prior to cleaning and painting, protect or remove hardware, accessories, machined surfaces, nameplates, lighting fixtures, and similar items not intended to be painted. Reposition items that were removed upon completion of painting operations.

3. Examine surfaces to be coated to determine that surfaces are suitable for specified surface preparation and painting. Report to Engineer in writing any surfaces found to be unsuitable. Do not start surface preparation until unsuitable surfaces have been corrected. Starting surface preparation precludes any subsequent claim that such surfaces were unsuitable for the specified surface preparation or painting.

4. Surface preparation shall be in accordance with specifications and manufacturer's recommendations. Provide additional surface preparation and fill coats where manufacturer recommends additional surface preparation in addition to the requirements of the specification.

5. Touch-up shop- or field-applied paint that is damaged by surface preparation with same type of shop- or field-applied paint, even to the extent of applying an entire coat. Touch-up coats are in addition to and not considered to be the first field coat.

6. Protect motors and other equipment during blasting operation to ensure blasting material is not blown into motors or other equipment. Inspect motors and other equipment after blasting operations and certify that no damage occurred, or where damage occurred, the proper remedial action was taken.

7. Field paint shop-painted equipment in compliance with Schedule of Colors and as approved by Engineer.

B. Metal Surface Preparation

1. Conform to current Steel Structures Painting Council (SSPC) Specifications for metal surface preparation. Use SSPC-Vis-1 pictorial standards or NACE visual standards TM-01-70 or TM-01-75 to determine cleanliness of abrasive blast-cleaned steel.

2. Perform blast cleaning operations for metal when the following conditions exist:

   a. Moisture is not present on the surface.

   b. Relative humidity is below 80%.

   c. Ambient and surface temperatures are 5° or greater than the dew point temperature.

   d. Painting or drying of paint is not being performed in the area.

   e. Equipment is in good operating condition.

   f. Proper ventilation, illumination, and other safety procedures and equipment are being provided and followed.

3. Sandblast ferrous metals to be shop primed, or component mechanical equipment in accordance with SSPC-SP5, White Metal Blast.

4. Sandblast field-prepared ferrous metals in accordance with SSPC-SP10, Near White Metal Blast, where metal is to be submerged, subject to headspace vapors, in a corrosive environment, or in severe service.

5. Sandblast field-prepared ferrous metals in accordance with SSPC-SP6 Commercial Blast, where metal is to be used in mild or moderate service, or non-corrosive environment.

6. Clean nonferrous metals, copper, or galvanized metal surfaces in accordance to SSPC-SP1, Solvent Cleaning, or give one coat of metal passivator or metal conditioner compatible with the complete paint system.

7. Prime cleaned metals immediately after cleaning to prevent rusting.

8. Clean rusted metals down to bright metal by sandblasting and immediately field prime to prevent oxidation.

C. Concrete Surface Preparation

1. Cure concrete a minimum of 30 days before surface preparation and painting begins.

2. Test concrete for moisture content using test method recommended by the paint manufacturer. Do not begin surface preparation or painting until moisture content is acceptable to manufacturer.

3. Brush-off blast (Reference ASTM D 4259) concrete to remove contaminants, open bugholes, surface voids, air pockets, and other subsurface irregularities. Do not expose underlying aggregate. Use dry, oil-free air for blasting operations. Surface texture after blasting shall be similar to that of medium grit sandpaper. Remove residual abrasives, dust, and loose particles by vacuuming or blowing with high pressure air.

4. Acid etch (Reference ASTM D 260) concrete floors to receive paint. Following method is a minimum requirement. Remove residual dust and dirt. Wet surface of concrete until surface is damp. Etch surface with 15% to 20% muriatic acid solution to produce a “medium sandpaper” texture. Do not allow acid solution to dry on concrete. Rinse concrete when bubbling action of the acid begins to subside. Continue rinsing process until pH is 7 or higher. Remove excess water and allow concrete to thoroughly dry before coating. Other methods may be used, if approved by Engineer.

5. Surface defects, such as hollow areas, bugholes, honeycombs, and voids shall be filled with polymeric filler compatible with painting system. Complete fill coats may be used in addition to specified painting system and as approved by the Engineer. Fins, form marks, and all protrusions or rough edges shall be removed.

6. Repair existing concrete surfaces which are deteriorated to the point that surface preparation exposes aggregate with fill coats or patching mortar as recommended by paint manufacturer and as directed by the Engineer.

7. Clean concrete of all dust, form oils, curing compounds, oil, tar, laitance, efflorescence, loose mortar, and other foreign materials before paints are applied.

D. Wood Surface Preparation

1. Clean wood surfaces free of all foreign matter, with cracks and nail holes and other defects properly filled and smoothed. Remove sap and resin by scraping and wipe clean with rags dampened with mineral spirits.

2. Saturate end grain, cut wood, knots, and pitch pockets with an appropriate sealer before priming.

3. Prime and backprime wood trim before setting in place.

4. After prime coat has dried, fill nailholes, cracks, open joints, and other small holes with approved spackling putty. Lightly sand wood trim prior to applying second coat of paint.

E. Castings Surface Preparation

1. Prepare castings for painting by applying a brush or a knife-applied filler. Fillers are not to be used to conceal cracks, gasholes, or excessive porosity.

2. Apply one coat of primer with a minimum thickness of 1.2 mils in addition to coats specified. Allow sufficient drying time before further handling.

F. Masonry

1. Cure for a minimum of 30 days prior to paint application.

2. Clean masonry surfaces free from all dust, dirt, oil, grease, loose mortar, chalky deposits, efflorescence, and other foreign materials.

3. Test masonry for moisture content. Use test method recommended by paint manufacturer. Do not begin painting until moisture content is acceptable to manufacturer.

4. Hand Tool Clean (SSPC-SP2) existing walls prior to painting.

G. Gypsum Drywall Surface Preparation

1. Sand joint compound with sandpaper to provide a smooth flat surface. Avoid sanding of adjacent drywall paper.

2. Remove dust, dirt, and other contaminants.

H. Previously Painted Surfaces

1. Totally remove existing paint when the surface is to be submerged in a severe environment or when any of the following conditions applies: paint is less than 75% intact, brittle, eroded, or has underfilm rusting.

2. For surfaces that are greater than 75% intact, remove failed paints and then spot prime. Spot priming is in addition to coats specified.

3. Remove surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers.

4. Clean and dull glossy surfaces prior to painting in accordance with the manufacturer’s recommendations.

5. Check existing paints for compatibility with new paint system. If incompatible, totally remove existing paint system or apply a barrier coat recommended by the paint manufacturer. Remove existing paints of undetermined origin. Prepare a test patch of approximately 3 square feet over existing paint. Allow test patch to dry thoroughly and test for adhesion. If proper adhesion is not achieved remove existing paint and repaint.

3.3 APPLICATION OF PAINT

A. Apply paint by experienced painters with brushes or other applicators approved by the Engineer and paint manufacturer.

B. Apply paint without runs, sags, thin spots, or unacceptable marks.

C. Apply at rate specified by the manufacturer to achieve at least the minimum dry mil thickness specified. Apply additional coats, if necessary, to obtain thickness and/or coverage of under coatings.

D. Special attention shall be given to nuts, bolts, edges, angles, flanges, etc., where insufficient film thicknesses are likely. Stripe paint prior to applying prime coat. Stripe painting shall be in addition to the specified number of coats.

E. Perform thinning in strict accordance with the manufacturer's instructions, and with the full knowledge and approval of the Engineer and paint manufacturer.

F. Allow paint to dry a minimum of twenty-four hours between applications of any two coats of paint on a particular surface, unless shorter time periods are a requirement by the manufacturer. Longer drying times may be required for abnormal conditions as defined by the Engineer and paint manufacturer.

G. Suspend painting when any of the following conditions exist:

1. Rainy or excessively damp weather.

2. Relative humidity exceeds 85%.

3. General air temperature cannot be maintained at 50°F or above through the drying period, except on approval by the Engineer and paint manufacturer.

4. Relative humidity will exceed 85% or air temperature will drop below 40°F within 18 hours after application of paint.

5. Dew or moisture condensation are anticipated.

6. Surface temperature exceeds the manufacturer's recommendations.

3.4 QUALITY CONTROL

A. Contractor daily environmental conditions log:

1. At the beginning and end and at five hour increments throughout the day when painting is performed, the contractor shall measure and record the following data and make it available to the Engineer: weather conditions, relative humidity, air temperature, surface temperature.

B. Tests and Inspections

1. Each field coat of paint will be inspected and approved by the Engineer or his authorized representative before the succeeding coat is applied. Tint successive coats so that no two coats for a given surface are exactly the same color. Tick-mark surfaces to receive black paint in white between coats.

2. Use magnetic dry film thickness gauges and wet fiber thickness gauges for quality control. Furnish magnetic dry film thickness gauge for use by the Engineer.

3. Determination of Film Thickness: Comply with SSPC-PA 2. Randomly selected areas, each of at least 100 square feet totaling at least 5% of the entire control area shall be tested. Within this area, at least 5 squares, each of 7.75 square inches, shall be randomly selected. Three readings shall be taken in each square, from which the mean film thickness shall be calculated. No more than 20 percent of the mean film thickness measurements shall be below the specified thickness. No single measurement shall be below 80 percent of the specified film thickness. Total dry film thickness greater than twice the specified film thickness shall not be acceptable. Areas where the measured dry film thickness exceeds

twice that specified shall be completely redone unless otherwise approved by the Engineer. When measured dry film thickness is less than that specified additional coats shall be applied as required.

4. Holiday Testing: Holiday test painted ferrous metal surfaces which will be submerged in water or other liquids, or surfaces which are enclosed in a vapor space in such structures. Mark areas which contain holidays. Repair or repaint in accordance with paint manufacturer's printed instructions and retest.

   a. Dry Film Thickness Exceeding 20 Mils: For surfaces having a total dry film thickness exceeding 20 mils: Pulse-type holiday detector such as Tinker & Rasor Model AP-W, D.E. Stearns Co. Model 14/20, shall be used. The unit shall be adjusted to operate at the voltage required to cause a spark jump across an air gap equal to twice the specified coating thickness.

   b. Dry Film Thickness of 20 mils or less: For surfaces having a total dry film thickness of 20 mils or less: Tinker & Rasor Model M1 non-destructive type holiday detector, K-D Bird Dog, shall be used. The unit shall operate at less than 75-volts. For thicknesses between 10 and 20 mils, a non-sudsing type wetting agent, such as Kodak Photo-Flow, shall be added to the water prior to wetting the detector sponge.

C. Manufacturer Services

1. Paint manufacturer or his representative shall provide their services as required by the Engineer. Services shall include, but not be limited to, inspecting existing paint, determination of best means of surface preparation, inspection of completed work, and final inspection of painted work within 1 year after the job is completed.

3.5 PROTECTION OF ADJACENT PAINT AND FINISHED SURFACES

A. Use covers, masking tape, or other method when protection is necessary, or requested by Owner or Engineer. Remove unwanted paint carefully without damage to finished paint or surface. If damage does occur, repair the entire surface adjacent to and including the damaged area without visible lapmarks and without additional cost to the Owner.

B. Take all necessary precautions to contain dispersion of sandblasting debris and paint to the limits of the work. Take into account the effect of wind and other factors which may cause dispersion of the sandblasting debris and paint. Suspend painting operations when sanding debris or paint cannot be properly confined. Assume all responsibilities and cost associated with damage to adjacent structures, vehicles, or surfaces caused by the surface preparation and painting operations.

3.6 SCHEDULE OF COLORS

A. Colors that are not indicated shall be selected from the manufacturer's full range of colors by the Engineer. No variation shall be made in colors without the Engineer's approval. Color names and numbers shall be identified according to the appropriate color chart issued by the manufacturer of the particular product in question. Color of new work shall match existing similar units unless otherwise listed by service type below:

1. Wastewater: Green

3.7 WORK IN CONFINED SPACES

A. Provide and maintain safe working conditions for all employees. Supply fresh air continuously to confined spaces through the combined use of existing openings, forced-draft fans and temporary ducts to the outside, or direct air supply to individual workers. Exhaust paint fumes to the outside from the lowest level in the contained space. Provide explosion-proof electrical fans, if in contact with fumes. No smoking or open fires will be permitted in, or near, confined spaces where painting is being done. Follow OSHA, state and local regulations at all times.

3.8 OSHA SAFETY COLORS

A. Paint wall around wall-mounted breathing or fire apparatus with the appropriate safety red color; area not to exceed 2-feet wide by 3-feet high, unless apparatus covers the area. Fire apparatus includes fire hoses, extinguisher, and hydrants.

B. Paint hazardous areas and objects in accordance with OSHA regulations.

C. Paint bollards OSHA safety yellow or a reflective safety yellow.

TABLE 09 90 00 - A (PAINTING SCHEDULE)

SURFACE	NO. COATS & SYSTEM	PRODUCT REFERENCE (TABLE 09900-B)	TOTAL DRY MILS (per coat)
A. CONCRETE BLOCK – INTERIOR WALLS	1 – Coat Sealer (for new)	A	75-85 sf/gal
	2 – Acrylic Epoxy	O	4-6
B. METAL – NON-SUBMERGED INTERIOR AND EXTERIOR (EXCEPT STEEL TANKS)	1 – Epoxy Polyamide Primer	D	4-6
	1 – Epoxy Polyamide	B	4-6
	1 – Aliphatic Polyurethane	N	3-5
C. METAL –EXTERIOR FOR STEEL TANKS	1 – Zinc-Rich Polyurethane	U	2.5-3.5
	1 – Epoxy Polyamide	B	3-4
	1 – Aliphatic Polyurethane	N	2-3
	1 – Fluoropolymer	V	2-3
D. METAL – SUBMERGED AND VAPOR ZONE FOR POTABLE WATER CONTACT	1 – Zinc-Rich Polyurethane	U	2.5-3.5
	2 – NSF Epoxy Polyamide	T	6-8
E. METAL – SUBMERGED AND VAPOR ZONE FOR NON-POTABLE WATER CONTACT	3 – Epoxy Polyamide	B	6-8
F. METAL – ALUMINUM SURFACES IN CONTACT WITH CONCRETE OR GROUT	1 – Coal Tar	G	12
	1 – Coal Tar	G	12
G. METAL – ALUMINUM NOT IN CONTACT WITH CONCRETE OR GROUT	Do Not Paint		
H. METAL – STAINLESS STEEL	Do Not Paint		
I. GYPSUM WALLBOARD	1 – Acrylic Latex	C	2-3
	1 – Acrylic Latex	C	2-3
J. PLASTIC AND FIBERGLASS	Do Not Paint		
K. INSULATED PIPING	1 – Acrylic Latex	C	2-3
	1 – Acrylic Latex	C	2-3
L. WOOD INTERIOR	1 – Acrylic Latex	C	2-3
	1 – Acrylic Latex	C	2-3
M. WOOD EXTERIOR	1 – Acrylic Latex	C	2-3
	1 – Acrylic Latex	C	2-3
N. CONCRETE FLOOR AND CEILING	Do Not Paint		

TABLE 09 90 00-B (PRODUCT CROSS REFERENCE)

REF	SYSTEM	PURPOSE	Tnemec Series	CARBOLINE	Sherwin-Williams
A	Epoxy filler	Primer-sealer	130-6601	Sanitile 100 Block Filler	Cement-Plex 875
B	Epoxy polyamide	Finish coat semi-gloss or gloss	66	Carboguard 893SG	Macropoxy 646
C	Acrylic latex	Sealer	6	Carbolcrylic 3359	DTM Acrylic Primer/Finish
D	Epoxy Polyamide – metal	Primer	66	Carboguard 890	Macropoxy 646
E	Epoxy	Primer/Finish	20	Carboguard 891	--
F	Coal tar epoxy	Finish high-coat build	46H-41 3	Bitumastic 300M	Hi-Mil Sher Tar Epoxy
G	Coal tar	Sealer	46-465	Bitumastic 300M	Hi-Mil Sher Tar Epoxy
H	Alkyd-medium oil	Finish coat	2H	Carbocoat 139	Alkyd-medium oil
I	Alkyd-long oil	Finish coat	23	Carbocoat 139	Industrial Enamel
J	Epoxy polyamide	Primer	66-1211	Carboguard 890	Macropoxy 646
K	Epoxy polyamide	Sealer	66-1211	Rustbond Penetrating Sealer	Macropoxy 920 Pre-Prime
L	Urethane	Barrier coat	530	--	--
M	Polyamine Epoxy	Intermediate coat	27	--	--
N	Aliphatic Polyurethane	Finish coat	73 Endura-Shield	Carbothane 134HS	Acrolon 218HS
O	Acrylic epoxy	Finish coat	113 or 114	Sanitile 255	Water-Based Catalyzed Epoxy
P	Epoxy block filler	Sealer	54-562	Sanitile 100 Block Filler	117
Q	Catalyzed epoxy	Finish coat	84	Carboguard 890	Macropoxy 646
R	High solids epoxy	Finish coat	104	Carboguard 890	Tank Clad HS
S	Epoxy	Top coat	N69	--	-
T	NSF Epoxy Polyamide	Primer/finish	N140 Pota-Pox Plus	Carboguard 891	Macropoxy 646PW
U	Zinc-Rich Polyurethane	Primer	91-H20 Hydro-Zinc	Carboguard 859	Corothane Galvapac Zinc
V	Fluoropolymer	Top coat	700 Hyrdo-Flon	Carboxane	Flourokem

END OF SECTION

SECTION 16000

BASIC ELECTRICAL REQUIREMENTS

PART 1 – GENERAL

1.1 THE REQUIREMENT

A. Furnish all labor, materials, tools, and equipment, and perform all work and services necessary for, or incidental to, the furnishing and installation of all electrical work as shown on the Drawings and as specified, in accordance with the provisions of the Contract Documents. Coordinate with the work of other trades involved in the general construction.

B. Although such work may not be specifically shown or specified, provide as part of the work all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, and complete installation.

C. Provide approved Shop Drawings showing wiring diagrams, connection diagrams, roughing-in and hook up details for all equipment, as well as Shop Drawings required by the drawings, and comply therewith.

D. Electrical work shall be complete and left in operating condition in accordance with the intent of the Drawings and the Specifications.

E. The contractor shall be responsible for all interconnecting devices, conduit, wire, and appurtenances not furnished by others but required for the operation of equipment as described in the functional descriptions whether specifically shown on the drawings or not.

F. All electrical equipment shall conform to the applicable NEMA specifications. All electrical equipment shall be properly identified in accordance with these Specifications and Contract Drawings. Nameplates shall be engraved high pressure plastic laminate, black with white lettering. The nameplates shall be attached to the equipment cabinets with two (2) stainless steel sheet metal screws for nameplates up to 2-inch wide. For nameplates over 2-inch wide, four (4) stainless steel sheet metal screws shall be used, one (1) in each corner of the nameplate. All panelboards, starters, control panels, cabinet enclosures, and equipment switches shall be labeled in the manner described, or in an equally approved manner.

G. All materials, equipment, sizes and capacities of electrical equipment incorporated in the project shall conform to the latest requirements of the current National Electric Code, the National Electrical Manufacturer's Association, the State and local electrical codes, and to applicable rules and regulations of the local electrical utility serving the project.

H. All material and equipment must be the product of an established and reputable manufacturer; must be new and of first class construction; must be designed and guaranteed to perform the service required; and must bear the label of approval of a nationally recognized testing laboratory (NRTL) such as the Underwriters Laboratories, Inc. (UL), where such approval is available for the product of the listed manufacturer as approved by the Engineer.

I. When a specified or indicated item has been superseded or is no longer available, the manufacturer's latest equivalent type or model of material or equipment as approved by the Engineer shall be furnished and installed at no additional cost to the Owner.

J. Where the Contractor's selection of equipment of specified manufacturers or additionally approved manufacturers requires changes or additions to the system design, the

Contractor shall be responsible in all respects for the modifications to all system designs, subject to approval of the Engineer. The Contractor's bid shall include all costs for all work of the Contract for all trades made necessary by such changes, additions or modifications or resulting from any approved substitution.

K. Furnish and install controls for each piece of equipment requiring controls under this Contract. The controls shall be the size and type recommended by the manufacturer for the application and as otherwise specified or indicated on the Drawings.

L. Furnish and install all stands, racks, brackets, supports, and similar equipment required to properly serve the equipment which is furnished under this Contract, or equipment otherwise specified or indicated on the Drawings.

1.2 DRAWINGS

A. Conduits and wiring are shown diagrammatically or conceptually only, and the layout does not necessarily show the total number of conduits for the circuits required, nor are the locations of indicated runs intended to show the actual routing of conduits. Furnish, install, and place in satisfactory condition ready for operation, all conduits, cables, and all other material needed for the complete lighting, power, and other electrical systems shown or indicated in the Contract Documents. Additional conduits and the required wiring shall be installed by the Contractor for wherever needed to complete the installation of the specific equipment furnished, at no additional cost to the Owner.

1.3 EQUIPMENT LOCATION

A. The Drawings show the general location of feeders, transformers, equipment, outlets, conduits, and circuit arrangements. Because of the small scale of the Drawings, it is not possible to indicate all of the details involved. The Contractor shall carefully investigate the structural and finish conditions affecting all of his work and shall arrange such work accordingly; furnishing such fittings, junction boxes, and accessories as may be required to meet such conditions. The Contractor shall refer to the entire Drawing set to verify openings, special surfaces, and location of other equipment, or other special equipment prior to roughing-in for panels, switches, and other outlets. The Contractor shall verify all equipment dimensions to ensure that proposed equipment will fit properly in spaces indicated.

1.4 LOCAL CONDITIONS

A. Contractor shall examine the site and become familiar with conditions affecting the work. Investigate, determine, and verify locations of any overhead or buried utilities on or near the site, and determine such locations in conjunction with all public and/or private utility companies and with all authorities having jurisdiction. All costs, both temporary and permanent to connect all utilities, shall be included in the Bid. The Contractor shall be responsible for scheduling and coordinating with the local utility for temporary and permanent services.

1.5 SUBMITTALS

A. The Contractor shall submit to the Engineer Shop Drawings of all electrical materials, apparatus, appliances, equipment and miscellaneous devices shown or specified and shall be in accordance with the requirements of the General Conditions and Section 01340, Submittals.

B. Shop Drawings shall be sufficiently complete in detail to enable the Engineer to determine compliance with Contract requirements. Details and information shown shall include but are not necessarily limited to the following:

1. Performance characteristics.

2. Physical sizes.

3. Material and equipment specifications, and construction and methods of fabrication details.

4. Compliance with standards (e.g. UL, NEMA), rules, regulations, and codes.

5. Accessories.

6. Complete wiring diagrams showing circuit designations as shown on the Drawings. A complete wiring diagram and ladder logic diagram shall be submitted for each controller furnished.

7. Complete product data sheets for all components of the specified equipment.

8. Electrical ratings (voltage, current, KVA, phase, etc.)

9. Weights of components parts and assembled unit weights.

10. Complete assembly, layout, and installation drawings with clearly marked dimensions.

C. Partial, incomplete or illegible submittals will be returned to the Contractor without review for resubmittal.

D. Shop Drawings will be approved only to the extent of the information shown. Approval of an item of equipment shall not be construed to mean approval for components of that item for which Contractor has provided no information.

E. Each submittal shall be complete in all respects, incorporating all information and data listed herein and all additional information required for evaluation of the proposed equipment's specification section.

F. Each submittal shall be identified by the applicable specification section.

1.6 APPLICABLE CODES AND REQUIREMENTS

A. Conformance

1. All work, equipment and materials furnished shall conform with the existing rules, requirements and specifications of the Insurance Rating Organization having jurisdiction, the serving electrical utility company, the current approved edition of the National Electrical Code (NEC), the National Electric Manufacturers Association (NEMA), the Institute of Electrical and Electronic Engineers (IEEE), the Insulated Cable Engineers Association (ICEA), the ASTM International (ASTM), the American National Standards Institute (ANSI), the requirements of the Occupational Safety Hazards Act (OSHA), National Electrical Contractor's Association (NECA) and all other applicable Federal, State and local laws and ordinances.

2. All material and equipment shall bear the inspection labels of a nationally recognized testing laboratory such as Underwriters Laboratories, Inc., if the material and equipment is of the class inspected by said laboratories.

3. All work shall be in accordance with local codes.

B. Nonconformance

1. Any paragraph of requirements in these Specifications, or Drawings, deviating from the rules, requirements and Specifications of the above organizations shall be invalid and their (the above organizations) requirements shall hold precedent thereto. The Contractor shall be held responsible for adherence to all rules, requirements and specifications as set forth above. Any additional work or material necessary for adherence shall be included in the Bid Price. Ignorance of any rule, requirement, or Specification shall not be allowed as an excuse for nonconformity. Acceptance by the Engineer does not relieve the Contractor from the expense involved for the correction of any errors which may exist in the drawings submitted, or in the satisfactory operation of any equipment.

1.7 PERMITS AND INSPECTIONS

A. Reference the General Conditions and Summary of Work.

1.8 TESTS

A. Upon completion of the installation, Contractor shall perform tests for operation, load (Phase) balance, overloads, and short circuits. Tests shall be made with and to the satisfaction of the Engineer.

B. Perform all field tests; provide all labor, equipment, and incidentals required for testing; and pay for electric power required for the tests. All defective material and workmanship disclosed shall be corrected by the Contractor at no cost to the Owner. The Contractor shall show by demonstration in service that all circuits and devices are in good operating condition. Test shall be such that each item of control equipment will function not less than five (5) times.

C. Test (Insulation Resistance Test) all incoming and outgoing cables for switchgears, distribution and power panels, motor control centers, and similar equipment after the cables are in place and just prior to final terminations. All data shall be recorded, as per Exhibit "A", attached to the end of this Section.

D. The Contractor shall furnish all equipment and personnel as required.

E. Feeder circuits shall be insulation resistance tested with the feeder conductors disconnected from the supplied equipment. Each individual power circuit shall be tested at the panel or motor control center with the power equipment connected for proper operation.

F. Conduct Megohmmeter tests of the insulation resistance of rotating machines and power feeders. The results will be accepted when the megger shows the insulation resistance to be not less than one (1) megohm per 100 volts at 10 ºC using a 1,000-volt megger.

1.10 DOCUMENTATION

A. Required Documentation

The work requirements of this Section are in addition to and do not supersede testing and adjusting specified in other portions of the Contract Documents. The Contractor shall submit to the Engineer test records and reports for all testing.

1.11 FIELD TEST OF EQUIPMENT

A. Equipment to be tested shall include, but not be limited to, the following:

1. Automatic Transfer Switch

2. Motor Controllers

3. Station controllers

4. Refer to drawings and specific specification sections for detailed field tests.

1.12 FINAL FIELD TEST OF SYSTEM

A. Complete the installation and testing of the electrical installation prior to the start-up and testing of all other equipment. During the period between the completion of electrical installation and the startup and testing of all other equipment, make all components of the Work available as it is completed for their use in performing Preliminary and Final Field Tests.

B. Perform infrared inspection per NETA Acceptance Test Specifications. Correct any deficiencies. The infrared inspection shall apply to any equipment within or affected by the scope of work.

1.13 PROTECTIVE DEVICE SETTING AND TESTING

A. All protective devices in the electrical equipment shall be set, adjusted, calibrated and tested in accordance with the manufacturers' recommendations and best industry practice.

B. Proper operation of all equipment associated with the device under test and its compartment shall be verified, as well as complete resistance, continuity, and polarity tests of power, protective and metering circuits. Any minor adjustments, repairs and/or lubrication necessary to achieve proper operation shall be considered part of this Contract.

C. Solid-state trip devices shall be checked and tested for setting and operation using manufacturers' recommended test devices and procedures.

D. Circuit breakers and contactors associated with the above devices shall be tested for trip and close functions with their protective device.

E. When completed, provide a comprehensive report on all equipment tested indicating condition, readings, faults and deficiencies in same. Inoperative or defective equipment shall be brought immediately to the attention of the Engineer.

1.14 MATERIALS HANDLING

A. Materials arriving on the job site shall be stored in such a manner as to keep material free of rust and dirt, and so as to keep material properly aligned and true to shape. Rusty, dirty, or misaligned material shall be rejected. Electrical conduit shall be stored to provide protection from the weather and accidental damage. Rigid non-metallic conduit shall be stored on even supports and in locations not subject to direct sun rays or excessive heat. Cables shall be sealed, stored, and handled carefully to avoid damage to the outer covering or insulation and damage from moisture and weather. Adequate protection shall be required at all times for electrical equipment and accessories until installed and accepted. Materials damaged during shipment, storage, installation, or testing shall be replaced or repaired in a manner meeting with the approval of the Engineer.

PART 2 -- PRODUCTS

2.1 PRODUCT REQUIREMENTS

A. Unless otherwise indicated, the materials to be provided under this Specification shall be the products of manufacturers regularly engaged in the production of all such items and shall be the manufacturer's latest design. The products shall conform to the applicable standards of UL and NEMA, unless specified otherwise. International Electrotechnical Commission (IEC) standards are not recognized. Equipment designed, manufactured, and labeled solely in compliance with IEC standards is not acceptable.

B. All items of the same type or ratings shall be identical. This shall be further understood to include products with the accessories indicated.

C. All equipment and materials shall be new, unless indicated or specified otherwise.

D. Submit proof if requested by the Engineer that the materials, appliances, equipment, or devices that he provides under this Contract meet the requirements of Underwriters Laboratories, Inc., in regard to fire and casualty hazards. The label of or listing by the Underwriters Laboratories, Inc., will be accepted as conforming with this requirement.

2.2 SUBSTITUTIONS

A. Any proposed substitution shall be submitted to the Engineer a minimum of 14 days prior to the bid for review and evaluation.

2.3 CONCRETE

A. Furnish all concrete required for the installation of all electrical work. Exposed concrete shall be Class A unless otherwise specified, and in complete conformance with the applicable requirements of Division 3 of the Specifications.

B. Provide concrete equipment pads for all free standing electrical apparatus and equipment located on floors or slabs. Provide all necessary anchor bolts, channel iron sills, reinforcing or bonding. The exact location and dimensions shall be coordinated for each piece of equipment well in advance of the scheduled placing of these pads. Equipment pads shall be 4 inches high unless otherwise indicated on the Drawings. Pads shall be reinforced with steel wire mesh and shall have dowel rods inserted into the floor for anchorage.

C. Provide concrete foundations for all free standing electrical apparatus and equipment located outdoors or where floors or slabs are not existing or provided by others. Provide all necessary anchor bolts, channel iron sills, reinforcing or bonding. The location and dimensions shall be coordinated for each piece of equipment well in advance of the scheduled placing of the foundations.

D. Concrete and reinforcing steel shall meet the appropriate requirements of applicable Divisions of these Specifications.

PART 3 -- EXECUTION

3.1 CUTTING AND PATCHING

A. Coordination

1. Coordinate work between trades to avoid delays and unnecessary cutting, channeling and drilling. Sleeves shall be placed in concrete for passage of conduit wherever possible.

B. Damage

1. Perform all chasing, channeling, drilling and patching necessary to the proper execution of his Contract. Any damage to the building or any equipment shall be repaired by qualified mechanics of the trades involved at the Contractor's expense. If, in the Engineer's judgment, the repair of damaged equipment would not be satisfactory, then the Contractor shall replace damaged equipment at Contractor expense.

3.2 EXCAVATION AND BACKFILLING

A. Perform all excavation and backfill required for the installation of all electrical work. All excavation and backfilling shall be in complete accordance with the applicable requirements of Division 2.

3.3 CORROSION PROTECTION

A. Wherever dissimilar metals, except conduit and conduit fittings, come into contact, the Contractor shall isolate these metals as required with neoprene washers, nine (9) mil polyethylene tape, or gaskets.

(EXHIBIT A)
TEST DATA - MEGOHMS
TEST NO. ____

Date:			Company:				
Time:			Location:				
Circuit:	Circuit Length:	Aerial:	Duct:	Buried:	No. of Conduc-tors	Size:	AMG kCMIL Shld:
Insulation Material:			Insulation Thickness:		Voltage Rating:		Age:
Type: _____Pothead _____Terminal					Location: Indoors_____ Outdoors_____		
Number and Type of Joints:							
Recent Operating History:							
Manufacturer:							
State if Potheads or Terminals were grounded during test:							
List associated equipment included in test:							
Miscellaneous Information:							

(EXHIBIT A)
TEST DATA - MEGOHMS
TEST NO. ____

Part Tested:Test Made:_____
Hours/Days:_____
After Shutdown:_____

Grounding Time:Dry Bulb Temperature:_____
Wet Bulb Temperature:_____

Test Voltage:

Equipment Temperature: _____
How Obtained: _____
Relative Humidity: _____
Absolute Humidity: _____
Dew Point: _____

Megohmmeter: Serial Number: _____ Range: _____
Voltage: _____ Calibration Date_____

Test Connections	To Line To Earth To Ground	To Line To Earth To Ground	To Line To Earth To Ground	Test Connections	To Line To Earth To Ground	To Line To Earth To Ground	To Line To Earth To Ground
3 Minute				5 Minutes			
2 Minute				6 Minutes			
3/4 Minute				7 Minutes			
1 Minute				8 Minutes			
2 Minutes				9 Minutes			
3 Minutes				10 Minutes			
4 Minutes				10/1 Minutes			
				Ratio			

Remarks:

END OF SECTION 16000

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SECTION 16054

SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sleeves for raceway and cable penetration of non-fire-rated construction walls and floors.
2. Sleeve-seal systems.
3. Sleeve-seal fittings.
4. Grout.
5. Silicone sealants.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 SLEEVES

A. Wall Sleeves:

1. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, plain ends.
2. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.

2.2 SLEEVE-SEAL SYSTEMS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
1. Sealing Elements: EPDM rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
2. Pressure Plates: Plastic.
3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.3 SLEEVE-SEAL FITTINGS

A. Description: Manufactured plastic, sleeve-type, waterstop assembly made for embedding in concrete slab or wall. Unit shall have plastic or rubber waterstop collar with center opening to match piping OD.

2.4 GROUT

A. Description: Nonshrink; recommended for interior and exterior sealing openings in non-fire-rated walls or floors.

B. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

2.5 SILICONE SEALANTS

A. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below.

1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces that are not fire rated.

B. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

A. Comply with NECA 1.

B. Comply with NEMA VE 2 for cable tray and cable penetrations.

C. Sleeves for Conduits Penetrating Above-Grade Non-Fire-Rated Concrete and Masonry-Unit Floors and Walls:

1. Interior Penetrations of Non-Fire-Rated Walls and Floors:

a. Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint.
b. Seal space outside of sleeves with mortar or grout. Pack sealing material solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect material while curing.

2. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
3. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed.
4. Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
5. Install sleeves for floor penetrations. Extend sleeves installed in floors 2 inches above finished floor level. Install sleeves during erection of floors.

D. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel or cast-iron pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

E. Underground, Exterior-Wall and Floor Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing sleeve-seal system.

3.2 SLEEVE-SEAL-SYSTEM INSTALLATION

A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at raceway entries into building.

B. Install type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.3 SLEEVE-SEAL-FITTING INSTALLATION

A. Install sleeve-seal fittings in new walls and slabs as they are constructed.

B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.

C. Secure nailing flanges to concrete forms.

D. Using grout, seal the space around outside of sleeve-seal fittings.

END OF SECTION 16054

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SECTION 16123

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper building wire rated 600 V or less.
2. Aluminum building wire rated 600 V or less.
3. Connectors, splices, and terminations rated 600 V and less.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Product Schedule: Indicate type, use, location, and termination locations.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

B. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. RoHS compliant.
3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

C. Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8 for stranded conductors.

D. Conductor Insulation:
1. Type THHN and Type THWN-2: Comply with UL 83.
2. Type XHHW-2: Comply with UL 44.

2.2 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

C. Control: Stranded.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN/THWN-2, single conductors in raceway or Type XHHW-2, single conductors in raceway.

B. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway or Type XHHW-2, single conductors in raceway.

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN/THWN-2, single conductors in raceway or Type XHHW-2, single conductors in raceway.

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway or Type XHHW-2, single conductors in raceway.

E. Exposed Branch Circuits, Including in Crawlspaces: Type THHN/THWN-2, single conductors in raceway or Type XHHW-2, single conductors in raceway.

F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway or Type XHHW-2, single conductors in raceway.

G. Control-Voltage Conductors: Unless noted otherwise, Type THHN/THWN-2, single conductors in raceway or Type XHHW-2, single conductors in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Complete raceway installation between conductor and cable termination points according to Section 16130 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.

D. Support cables according to Section 16190 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.5 IDENTIFICATION

A. Identify and color-code conductors and cables as specified on drawings.

B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.6 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 16054 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

EEND OF SECTION 16123

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SECTION 16130

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal conduits, tubing, and fittings.
2. Nonmetallic conduits, tubing, and fittings.
3. Metal wireways and auxiliary gutters.
4. Nonmetal wireways and auxiliary gutters.
5. Surface raceways.
6. Boxes, enclosures, and cabinets.
7. Handholes and boxes for exterior underground cabling.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: as indicated on drawings

PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

A. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. GRC: Comply with ANSI C80.1 and UL 6.

C. ARC: Comply with ANSI C80.5 and UL 6A.

D. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.

1. Comply with NEMA RN 1.
2. Coating Thickness: 0.040 inch , minimum.

E. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.

F. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.

1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 1203 and NFPA 70.
2. Fittings for EMT:

    a. Material: Steel.
    b. Type: compression.

G. Joint Compound for GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 NONMETALLIC CONDUITS AND FITTINGS

A. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.

C. LFNC: Comply with UL 1660.

D. Fittings for ENT and RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.

E. Fittings for LFNC: Comply with UL 514B.

F. Solvents and Adhesives: As recommended by conduit manufacturer.

2.3 METAL WIREWAYS AND AUXILIARY GUTTERS

A. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 unless otherwise indicated, and sized according to NFPA 70.

1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.4 BOXES, ENCLOSURES, AND CABINETS

A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

B. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

C. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy or aluminum, Type FD, with gasketed cover.

D. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb . Outlet boxes designed for attachment of luminaires weighing more than 50 lb shall be listed and marked for the maximum allowable weight.

E. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

F. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum orgalvanized, cast iron with gasketed cover.

G. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type as indicated on drawings or as required by NEC.Enclosures shall have quarter-turn or similar latches; clamp-down type latches will not be accepted.

H. Cabinets:

1. NEMA 250, Type as indicated on drawings or required by NEC.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.
6. Nonmetallic cabinets shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed Conduit: ARC .
2. Underground Conduit: RNC, Type EPC-80-PVC direct buried unless otherwise indicated on drawings.
3. Risers (transition between underground and aboveground, including elbows: GRC.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 4X.

B. Indoors: Apply raceway products as specified below unless otherwise indicated.

1. Exposed, Not Subject to Physical Damage: GRC. Raceway locations include the following:
   a. Within the electrical building.
2. Exposed and Subject to Physical Damage: GRC . Raceway locations include the following:
   a. Within the electrical building
3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
4. Damp or Wet Locations: ARC. Raceway locations include the following:
   a. Within the dry well.
5. Boxes and Enclosures: NEMA 250, Type 1.
6. Subject to severe corrosion: PVC-Coated Rigid Galvanized Steel. Raceway locations include the following:
   a. Wet well and bar screen room.

C. Minimum Raceway Size: 1/2-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

E. Do not install aluminum conduits, boxes, or fittings in contact with earth or encased in concrete or grout.

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

B. Comply with requirements in Section 16190 "Hangers and Supports for Electrical Systems" for hangers and supports.

C. Arrange stub-ups so curved portions of bends are not visible above finished slab.

D. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.

E. Support conduit within 12 inchesof enclosures to which attached.

F. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

G. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.

H. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

I. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits. Outdoor enclosure conduit connections shall be waterproof.

J. Install pull wires in empty raceways and in each control wire raceway. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

K. Surface Raceways:

1. Install surface raceway with a minimum 2-inch radius control at bend points.
2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.

L. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound.

M. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of LFMC for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

N. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 2 for pipe less than 6 inches in nominal diameter.
2. Install backfill as specified in Division 2.
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Section 312000 "Earth Moving."
4. Install manufactured duct elbows for stub-up at poles and equipment and at building entrances through floor unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.

    a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete for a minimum of 12 inches on each side of the coupling.
    b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.

6. Underground Warning Tape: For all underground raceways, provide metallic warning tape, min 6” wide, min 6” above raceway.

3.4 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 16130

SECTION 16141

WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Straight-blade convenience receptacles.
2. GFCI receptacles.
3. Explosion proof receptacles.
4. Toggle switches.
5. Wall plates.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 GENERAL WIRING-DEVICE REQUIREMENTS

A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

2.2 STRAIGHT-BLADE RECEPTACLES

A. Duplex Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.

2.3 GFCI RECEPTACLES

A. General Description:

1. 125 V, 20 A, straight blade, feed-through type.
2. Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, UL 943 Class A, and FS W-C-596.
3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.

2.4 EXPLOSION PROOF RECEPTACLES

A. General Description:
   1. 125V, 20A
   2. Listed for use in Class I, Division 2, Group D hazardous atmospheres.

2.5 TOGGLE SWITCHES

A. Comply with NEMA WD 1, UL 20, and FS W-S-896.

B. Switches, 120/277 V, 20 A:

2.6 WALL PLATES

A. Single and combination types shall match corresponding wiring devices.

   1. Plate-Securing Screws: Metal with head color to match plate finish.
   2. Material for Unfinished Spaces: Stainless steel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.

B. Conductors:

   1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
   2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
   3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.

C. Device Installation:
   1. Use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
   2. Use a torque screwdriver when a torque is recommended or required by manufacturer.
   3. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
   4. Tighten unused terminal screws on the device.
   5. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

D. Receptacle Orientation:

   1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the left.

E. GFCI Receptacles: Install non-feed-through-type GFCI receptacles where protection of downstream receptacles is not required.

F. Explosion Proof Receptacles: Comply with manufacturer's written instructions and NEC requirements.

3.2 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Tests for Convenience Receptacles:

a. Line Voltage: Acceptable range is 105 to 132 V.
b. Percent Voltage Drop under 15-A Load: A value of 4 percent or higher is unacceptable.
c. Ground Impedance: Values of up to 2 ohms are acceptable.
d. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
e. Using the test plug, verify that the device and its outlet box are securely mounted.
f. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

B. Wiring device will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 16141

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SECTION 16170

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes grounding and bonding systems and equipment.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

2.2 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.

2.3 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

C. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

D. Bus-Bar Connectors: Compression type, copper or copper alloy, with two wire terminals.

E. Beam Clamps: Mechanical type, terminal, ground wire access from four directions, with dual, tin-plated or silicon bronze bolts.

F. Cable-to-Cable Connectors: Compression type, copper or copper alloy.

G. Conduit Hubs: Mechanical type, terminal with threaded hub.

H. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.

I. Straps: Solid copper. Rated for 600 A.

J. Water Pipe Clamps:

1. Mechanical type, two pieces with stainless-steel bolts.

a. Material: Die-cast zinc alloy.
b. Listed for direct burial.

2. U-bolt type with malleable-iron clamp and copper ground connector.

2.4 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel; 3/4 inch by 10 feet.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No. 10 AWG and smaller, and stranded conductors for No. 8 AWG and larger unless otherwise indicated.

B. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING AT THE SERVICE

A. Equipment grounding conductors and grounding electrode conductors shall be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses.

3.3 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

B. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

3.4 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.

C. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.

D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

E. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

3.5 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
3. Test completed grounding system at each location at service disconnect enclosure grounding terminal. Make tests at ground rods before any conductors are connected.

    a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    b. Perform tests by fall-of-potential method according to IEEE 81.

B. Grounding system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

D. Report measured ground resistances that exceed 10 ohms.

E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Engineer promptly and include recommendations to reduce ground resistance.

END OF SECTION 16170

SECTION 16190

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel slotted support systems.
2. Conduit and cable support devices.
3. Support for conductors in vertical conduit.
4. Structural steel for fabricated supports and restraints.
5. Mounting, anchoring, and attachment components, including powder-actuated fasteners, mechanical expansion anchors, concrete inserts, clamps, through bolts, toggle bolts, and hanger rods.
6. Fabricated metal equipment support assemblies.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For fabrication and installation details for electrical hangers and support systems.

1. Hangers. Include product data for components.
2. Slotted support systems.
3. Equipment supports.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32-inch-diameter holes at a maximum of 8 inches o.c. in at least one surface.
1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
2. Material for Channel, Fittings, and Accessories: Stainless steel.
3. Channel Width: Selected for applicable load criteria.

B. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

C. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be made of malleable iron.

D. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

2. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
3. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
4. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
5. Toggle Bolts: All-steel springhead type.
6. Hanger Rods: Threaded steel.

E. Support, anchorage, and attachment components within wet well or bar screen room, or in any wet or damp location:
1. Shall be as above, but of stainless steel only.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with the following standards for application and installation requirements of hangers and supports, except where requirements on Drawings or in this Section are stricter:

1. NECA 1.
2. NECA 101

B. Comply with requirements for raceways and boxes specified in Section 16130 "Raceways and Boxes for Electrical Systems."

C. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

D. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this article.

B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
2. To Existing Concrete: Expansion anchor fasteners.
3. To Steel: Beam clamps (MSS SP-58,Type 19, 21, 23, 25, or 27), complying with MSS SP-69.
4. To Light Steel: Sheet metal screws.
5. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

D. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

END OF SECTION 16190

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SECTION 16321

DIESEL EMERGENCY ENGINE GENERATORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes packaged diesel engine generators for emergency use with the following features:

1. Diesel engine.
2. Diesel fuel-oil system.
3. Control and monitoring.
4. Generator overcurrent and fault protection.
5. Generator, exciter, and voltage regulator.
6. Vibration isolation devices.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Include plans and elevations for engine generator and other components specified. Indicate access requirements affected by height of subbase fuel tank.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Identify fluid drain ports and clearance requirements for proper fluid drain.
4. Design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
5. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and supported equipment. Include base weights.
6. Include diagrams for power, signal, and control wiring. Complete schematic, wiring, and interconnection diagrams showing terminal markings for EPS equipment and functional relationship between all electrical components.

1.3 INFORMATIONAL SUBMITTALS

A. Source quality-control reports.

B. Certified test reports.

C. Field quality-control reports.

D. Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data, three copies.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.6 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain packaged engine generators and auxiliary components from single source from single manufacturer. Supplier shall be located within a 100-mile radius of the site and shall be available for 24-hour emergency service of the generator set.

2.2 PERFORMANCE REQUIREMENTS

A. B11 Compliance: Comply with ANSI B11.19.

B. NFPA Compliance:

1. Comply with NFPA 37.
2. Comply with NFPA 70.
3. Comply with NFPA 110 requirements for Level 2 EPSS.

C. Engine Exhaust Emissions: Comply with applicable state and local government requirements.

D. Noise Emission: Maximum 75 dB noise level at 25 ft due to sound emitted by engine generator, including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

E. Environmental Conditions: Engine generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Ambient Temperature: 5 to 104 deg F.
2. Relative Humidity: Zero to 95 percent.
3. Altitude: Sea level to 1000 feet.

2.3 ENGINE GENERATOR ASSEMBLY DESCRIPTION

A. Factory-assembled and -tested, water-cooled engine, with brushless generator and accessories.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. EPSS Class: Engine generator shall be classified as a Class 24 according to NFPA 110.

D. Service Load: as indicated on drawings.

E. Power Factor: 0.8, lagging.

F. Frequency: 60 Hz.

G. Voltage: 480 V ac.

H. Phase: Three-phase, four-wire wye.

I. Governor: Adjustable isochronous, with speed sensing.

J. Mounting Frame: Structural steel framework to maintain alignment of mounted components without depending on concrete foundation. Provide lifting attachments sized and spaced to prevent deflection of base during lifting and moving.

1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and engine generator center of gravity.

K. Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated at 0.8 power factor excluding power required for the continued and repeated operation of the unit and auxiliaries.
2. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

L. Engine Generator Performance:

1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage, from no load to full load.
2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency, from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.

7. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time: Comply with NFPA 110, Type 10 system requirements.

2.4 DIESEL ENGINE

A. Fuel: ASTM D 975 diesel fuel oil, Grade 2-D S15.

B. Rated Engine Speed: 1800 rpm.

C. Lubrication System: Engine or skid mounted.

1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

D. Jacket Coolant Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity and with UL 499.

E. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine generator mounting frame and integral engine-driven coolant pump.

1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Size of Radiator: Adequate to contain expansion of total system coolant, from cold start to 110 percent load condition.
3. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
4. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, UV-, and abrasion-resistant fabric.

    a. Rating: 50-psig maximum working pressure with coolant at 180 deg F, and noncollapsible under vacuum.
    b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

F. Muffler/Silencer: Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.

1. Minimum sound attenuation of 25 dB at 500 Hz.
2. Sound level measured at a distance of 25 feet from exhaust discharge after installation is complete shall be 75 dBA or less.
3. 304 stainless steel (including all internal components), equipped with rain cap. All connections, pipes, nuts, bolts, etc. shall be 316 stainless steel.

G. Air-Intake Filter: Standard-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

H. Starting System: 24 V electric, with negative ground.

1. Components: Sized so they are not damaged during a full engine-cranking cycle, with ambient temperature at maximum specified in "Performance Requirements" Article.
2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: As required by NFPA 110 for system level specified.
4. Battery: Lead acid, with capacity within ambient temperature range specified in "Performance Requirements" Article to provide specified cranking cycle at least twice without recharging.
5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery Stand: Factory-fabricated, two-tier metal with acid-resistant finish designed to hold the quantity of battery cells required and to maintain the arrangement to minimize lengths of battery interconnections.
7. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
8. Battery Charger: Current-limiting, automatic-equalizing, and float-charging type designed for lead-acid batteries. Unit shall comply with UL 1236 and include the following features:

a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 deg F to 140 deg F to prevent overcharging at high temperatures and undercharging at low temperatures.
c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
f. Enclosure and Mounting: NEMA 250, Type 1 wall-mounted cabinet.

2.5 DIESEL FUEL-OIL SYSTEM

A. Comply with NFPA 30.

B. Sub-Base Tank: Double-wall with leak detection; comply with UL 142.

C. Main Fuel Pump: Mounted on engine to provide primary fuel flow under starting and load conditions.

D. Fuel Filtering: Remove water and contaminants larger than 1 micron.

E. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.

F. Fuel Tank Capacity: Minimum 133 percent of total fuel required for periodic maintenance operations between fuel refills plus fuel for the hours of continuous operation required for the indicated EPSS Class. Tank shall store at minimum 72 hours of fuel for generator operating at 100% load.

2.6 CONTROL AND MONITORING

A. Automatic-Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of engine generator. When mode-selector switch is switched to the on position, engine generator starts. The off position of same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.

B. Provide minimum run time control set for 15 minutes, with override only by operation of a remote emergency-stop switch.

C. Comply with UL 508A.

D. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the engine generator. Mounting method shall isolate the control panel from engine generator vibration. Panel shall be powered from the engine generator battery.

E. Control and Monitoring Panel:

1. Digital controller with integrated LCD display, controls, and microprocessor, capable of local and remote control, monitoring, and programming, with battery backup.
2. Instruments: Located on the control and monitoring panel and viewable during operation.

    a. Engine lubricating-oil pressure gage.
    b. Engine-coolant temperature gage.
    c. DC voltmeter (alternator battery charging).
    d. Running-time meter.
    e. AC voltmeter, for each phase or connected to a phase selector switch.
    f. AC ammeter, for each phase or connected to a phase selector switch.
    g. AC frequency meter.
    h. Generator-voltage-adjusting rheostat.

3. Controls and Protective Devices: Controls, shutdown devices, and common visual alarm indication as required by NFPA 110 for Level 1 system, including the following:

    a. Cranking control equipment.
    b. Lockable Run-Off-Auto switch.
    c. Control switch not in automatic position alarm.
    d. Overcrank alarm.
    e. Overcrank shutdown device.
    f. Low water temperature alarm.
    g. High engine temperature pre-alarm.
    h. High engine temperature.
    i. High engine temperature shutdown device.
    j. Overspeed alarm.
    k. Overspeed shutdown device.

l. Low-fuel main tank.

1) Low-fuel-level alarm shall be initiated when the level falls below that required for operation for the duration required for the indicated EPSS class.

m. Coolant low-level alarm.
n. Coolant high-temperature prealarm.
o. Coolant high-temperature alarm.
p. Coolant low-temperature alarm.
q. Coolant high-temperature shutdown device.
r. EPS load indicator.
s. Battery high-voltage alarm.
t. Low-cranking voltage alarm.
u. Battery-charger malfunction alarm.
v. Battery low-voltage alarm.
w. Lamp test (push-to-test lamps).
x. Contacts for local and remote common alarm.

F. Remote Alarm Annunciator: Comply with NFPA 99. An LED indicator light labeled with proper alarm conditions or LCD digital display shall identify each alarm event, and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

1. Overcrank alarm.
2. Coolant low-temperature alarm.
3. High engine temperature prealarm.
4. High engine temperature alarm.
5. Low lube oil pressure alarm.
6. Overspeed alarm.
7. Low-fuel main tank alarm.
8. Low-cranking voltage alarm.
9. Contacts for local and remote common alarm.
10. Audible-alarm silencing button.
11. Run-Off-Auto switch.
12. Control switch not in automatic position alarm.
13. Fuel tank leak alarm.
14. Lamp test (push-to-test lamps).
15. Low-cranking voltage alarm.

G. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator unless otherwise indicated.

2.7 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Overcurrent protective devices for the entire EPSS shall be coordinated to optimize selective tripping when a short circuit occurs. Coordination of protective devices shall consider both utility and EPSS as the voltage source.

1. Overcurrent protective devices for the EPSS shall be accessible only to authorized personnel.

2. Overcurrent protective devices for the generator shall be separately-enclosed from the generator skid; located as shown on drawings.

2.8 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: Class H or Class F.

D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required. Provide six-lead alternator.

E. Range: Provide extended range of output voltage by adjusting the excitation level.

F. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

G. Enclosure: Drip proof.

H. Instrument Transformers: Mounted within generator enclosure.

I. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified and as required by NFPA 110.

J. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.

2.9 ACCESSIBILITY

A. No generator control, operating mechanism, display or maintenance item shall be higher than 6’-6” from grade. Should any control, operating mechanism, display, or maintenance item be higher than specified, provide a standing platform with handrails around the entire circumference of the generator with a minimum depth of 48” and minimum height such controls are within reach from specified height. The standing platform shall be aluminum with a non-slip grip-type walking surface. Nuts, bolts, clips, and all other hardware shall be aluminum or stainless steel. The standing platform system shall meet OSHA requirements.

2.10 VIBRATION ISOLATION DEVICES

A. As recommended by manufacturer.

2.11 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine generator using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with NFPA 110, Level 1 Energy Converters and with IEEE 115.

2.12 SPARE PARTS

A. Provide one complete set of spare air, oil, and fuel filters and accessory belts.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1 and NECA 404.

B. Comply with packaged engine generator manufacturers' written installation and alignment instructions and with NFPA 110.

C. Equipment Mounting:

1. Install packaged engine generators on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified by the Civil drawings.
2. Coordinate size and location of concrete bases for packaged engine generators. Cast anchor-bolt inserts into bases.

D. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

E. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

F. Fuel: The fuel tank shall be completely filled by the contractor at closeout.

3.2 CONNECTIONS

A. Ground equipment according to Section 16170 "Grounding and Bonding for Electrical Systems."

B. Connect wiring according to Section 16123 "Low-Voltage Electrical Power Conductors and Cables."

C. Balance single-phase loads to obtain a maximum of 10 percent unbalance between any two phases.

3.3 IDENTIFICATION

A. Install a sign indicating the generator neutral is bonded to the main service neutral at the main service location.

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections with the assistance of a factory-authorized service representative.

B. Tests and Inspections:

1. Perform tests recommended by manufacturer and in "Visual and Mechanical Inspection" and "Electrical and Mechanical Tests" subparagraphs below, as specified in the NETA ATS. Certify compliance with test parameters.

    a. Visual and Mechanical Inspection:

        1) Compare equipment nameplate data with Drawings and the Specifications.
        2) Inspect physical and mechanical condition.
        3) Inspect anchorage, alignment, and grounding.
        4) Verify that the unit is clean.

    b. Electrical and Mechanical Tests:

        1) Perform insulation-resistance tests according to IEEE 43. Submit test results according to Section 16000 Basic Electrical Requirements.

            a) Machines Larger Than 200 hp: Test duration shall be 10 minutes. Calculate polarization index.
            b) Machines 200 hp or Less: Test duration shall be one minute. Calculate the dielectric-absorption ratio.

        2) Test protective relay devices.
        3) Verify phase rotation, phasing, and synchronized operation as required by the application.
        4) Functionally test engine shutdown for low oil pressure, overtemperature, overspeed, and other protection features as applicable.
        5) Conduct performance test according to NFPA 110.
        6) Verify correct functioning of the governor and regulator.

2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here, including, but not limited to, single-step full-load pickup test.
3. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.

    a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
    b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
    c. Verify acceptance of charge for each element of the battery after discharge.
    d. Verify that measurements are within manufacturer's specifications.

4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine generator system before and during system operation. Check for air, exhaust, and fluid leaks.
6. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.

C. Coordinate tests with tests for transfer switches, and run them concurrently.

D. Test instruments shall have been calibrated within the past 12 months, traceable to NIST Calibration Services, and adequate for making positive observation of test results. Make calibration records available for examination on request.

E. Leak Test: After installation, charge exhaust, coolant, and fuel systems and test for leaks. Repair leaks and retest until no leaks exist.

F. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation for generator and associated equipment.

G. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

H. Remove and replace malfunctioning units and retest as specified above.

I. Retest: Correct deficiencies identified by tests and observations, and retest until specified requirements are met.

J. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component, indicating satisfactory completion of tests.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators.

END OF SECTION 16321

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SECTION 16410

AUTOMATIC TRANSFER SWITCHES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies the furnishing, installation, connection, and testing of open-transition automatic transfer switches, indicated as automatic transfer switches or ATS in this section.

1.2 QUALITY ASSURANCE

A. Manufacturer’s Qualifications: The manufacturer shall regularly and currently produce, as one of the manufacturer's principal products, the materials and equipment specified for this project, and shall have manufactured the materials and equipment for at least three years.

B. Automatic transfer switch and generator shall be products of the same manufacturer.

1.3 FACTORY TESTS

A. All materials and equipment shall be listed, labeled, or certified by a Nationally Recognized Testing Laboratory (NRTL) to meet Underwriters Laboratories, Inc. (UL), standards where test standards have been established. Materials and equipment which are not covered by UL standards will be accepted, providing that materials and equipment are listed, labeled, certified or otherwise determined to meet the safety requirements of a NRTL. Materials and equipment which no NRTL accepts, certifies, lists, labels, or determines to be safe, will be considered if inspected or tested in accordance with national industrial standards, such as ANSI, NEMA, and NETA. Evidence of compliance shall include certified test reports and definitive shop drawings.

B. ATS shall be thoroughly tested at the factory to assure that there are no electrical or mechanical defects.

C. Factory Tests shall be in accordance with the following requirements:

1. Perform visual inspection to verify that each ATS is as specified.
2. Perform mechanical test to verify that ATS sections are free of mechanical defects.
3. Perform insulation resistance test to ensure electrical integrity and continuity of entire system.
4. Perform main switch contact resistance test.
5. Perform electrical tests to verify complete system electrical operation.

1.4 SUBMITTALS

A. Submit the following requirements:

1. Shop Drawings:
    a. Submit sufficient information to demonstrate compliance with drawings and specifications.
    b. Include voltage rating, continuous current rating, number of phases, withstand and closing rating, dimensions, weights, mounting details, conduit entry provisions, front

view, side view, equipment and device arrangement, elementary and interconnection wiring diagrams, factory relay settings, and accessories.

c. For automatic transfer switches that are networked together to a common means of annunciation and/or control, submit interconnection diagrams as well as site and mounting plans, showing connections for normal and emergency sources of power, load, control and annunciation components, and interconnecting communications paths. Equipment locations on the diagrams and plans shall match the site, building, and room designations on the drawings.

d. Complete nameplate data, including manufacturer's name and catalog number.

e. A copy of the markings that are to appear on the automatic transfer switches when installed.

f. Information that confirms compliance with contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, manuals, pictures, nameplate data, and test reports as required.

g. Elementary and interconnection wiring diagrams for communication and signal systems, control systems, and equipment assemblies. All terminal points and wiring shall be identified on wiring diagrams.

h. Parts list which shall include information for replacement parts and ordering instructions, as recommended by the equipment manufacturer.

2. Manuals:

a. Submit, simultaneously with the shop drawings, companion copies of complete maintenance and operating manuals, including technical data sheets, wiring diagrams, and information for ordering replacement parts.

1) Schematic signal and control diagrams, with all terminals identified, matching terminal identification in the automatic transfer switches.

2) Include information for testing, repair, troubleshooting, assembly, disassembly, and factory recommended/required periodic maintenance procedures and frequency.

3) Provide a replacement and spare parts list. Include a list of tools and instruments for testing and maintenance purposes.

b. If changes have been made to the maintenance and operating manuals originally submitted, submit updated maintenance and operating manuals two weeks prior to the final inspection.

1) Include complete "As Installed" diagrams that indicate all pieces of equipment and their interconnecting wiring.

2) Include complete diagrams of the internal wiring for each piece of equipment, including "As Installed" revisions of the diagrams.

3) The wiring diagrams shall identify the terminals to facilitate installation, maintenance, operation, and testing.

3. Certifications:
   a. When submitting the shop drawings, submit a certified test report from a recognized independent testing laboratory that a representative sample has passed UL 1008 prototype testing.

1.5 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.

B. Institute of Electrical and Electronic Engineers (IEEE):

446-95	Emergency and Standby Power Systems for Industrial and Commercial Applications
C37.90.1-12	Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus
C62.41.1-02	Guide on the Surges Environment in Low-Voltage (1000 V and Less) AC Power Circuits
C62.41.2-02	Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits

C. International Code Council (ICC):

IBC-18	International Building Code

D. National Electrical Manufacturers Association (NEMA):

250-20	Enclosures for Electrical Equipment (1000 Volts Maximum)
ICS 6-93	Enclosures
ICS 4-15	Application Guideline for Terminal Blocks
MG 1-21	Motors and Generators

E. National Fire Protection Association (NFPA):

70–23	National Electrical Code (NEC)
110-22	Emergency and Standby Power Systems

F. Underwriters Laboratories, Inc. (UL):

50-15	Enclosures for Electrical Equipment
508-18	Industrial Control Equipment
1008-14	Transfer Switch Equipment

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Automatic transfer switches shall comply with IEEE, NEMA, NFPA, UL, and have the following features:

1. Automatic transfer switches shall be open transition switches, 3-pole, draw-out construction, electrically operated, mechanically held open contact type, without integral overcurrent protection. Automatic transfer switches utilizing automatic or non-automatic molded case circuit breakers, insulated case circuit breakers, or power circuit breakers as switching mechanisms are not acceptable.
2. Automatic transfer switches shall be completely factory-assembled and wired such that only external circuit connections are required in the field.
3. Ratings:
    a. Phases, voltage, continuous current, poles, and withstand and closing ratings shall be as shown on the one-lines on the drawings.
    b. Transfer switches are to be rated for continuous duty at specified continuous current rating on 60Hz systems.
    c. Maximum automatic transfer switch rating: 1000 A.
4. Markings:
    a. Markings shall be in accordance with UL 1008.
5. Tests:
    a. Automatic transfer switches shall be tested in accordance with UL 1008. The contacts of the transfer switch shall not weld during the performance of withstand and closing tests when used with the upstream overcurrent device and available fault current specified.
6. Surge Withstand Test:
    a. Automatic transfer switches utilizing solid-state devices in sensing, relaying, operating, or communication equipment or circuits shall comply with IEEE C37.90.1.
7. Housing:
    a. Enclose automatic transfer switches in wall- or floor-mounted steel cabinets, with metal gauge not less than No. 14, in accordance with UL 508, as shown on the drawings.
    b. Automatic transfer switch components shall be removable without disconnecting external source or load power conductors.
    c. Enclosure shall be NEMA rated as indicated on drawings.
    d. Finish: Cabinets shall be given a phosphate treatment, painted with rust-inhibiting primer, and finish-painted with the manufacturer's standard enamel or lacquer finish.
    e. Viewing Ports: Provide viewing ports so that contacts may be inspected without disassembly.
8. Operating Mechanism:

a. Actuated by an electrical operator.
b. Electrically and mechanically interlocked so that the main contact cannot be closed simultaneously in either normal and emergency position.
c. Normal and emergency main contacts shall be mechanically locked in position by the operating linkage upon completion of transfer. Release of the locking mechanism shall be possible only by normal operating action.
d. Operating mechanism components and mechanical interlocks shall be insulated or grounded.

9. Contacts:
   a. Main contacts: Silver alloy.
   b. Current carrying capacity of arcing contacts shall not be used in the determination of the automatic transfer switch rating and shall be separate from the main contacts.
10. Manual Operator:
   a. Capable of operation by one person in either direction under no load.
11. Replaceable Parts:
   a. Include the main and arcing contacts individually or as units, as well as relays, and control devices.
   b. Automatic transfer switch contacts and accessories shall be replaceable from the front without removing the switch from the cabinet and without removing main conductors.
12. Sensing Features:
   a. Undervoltage Sensing for Each Phase of Normal Source: Sense low phase-to-ground voltage on each phase. Pickup voltage shall be adjustable from 85 to 100% of nominal, and dropout voltage is adjustable from 75 to 98% of pickup value. Factory set for pickup at 90% and dropout at 85%.
   b. Adjustable Time Delay: For override of normal-source voltage sensing to delay transfer and engine start signals. Adjustable from zero to six seconds, and factory set for one second.
   c. Voltage/Frequency Lockout Relay: Prevent premature transfer to the engine-generator. Pickup voltage shall be adjustable from 85 to 100% of nominal. Factory set for pickup at 90%. Pickup frequency shall be adjustable from 90 to 100% of nominal. Factory set for pickup at 95%.
   d. Time Delay for Retransfer to Normal Source: Adjustable from 0 to 30 minutes, and factory set for 10 minutes to automatically defeat delay on loss of voltage or sustained undervoltage of emergency source, provided normal supply has been restored.
   e. Test Switch: Simulate normal-source failure.
   f. Switch-Position Indication: Indicate source to which load is connected.

g. Source-Available Indication: Supervise sources via transfer switch normal- and emergency-source sensing circuits.
h. Normal Power Indication: Indicate "Normal Source Available."
i. Emergency Power Indication: Indicate "Emergency Source Available."
j. Transfer Override Control: Overrides automatic retransfer control so that automatic transfer switch shall remain connected to emergency power source regardless of condition of normal source. Control panel shall indicate override status.
k. Engine Starting Contacts: One isolated and normally closed and one isolated and normally open; rated 5 A at 30 V DC minimum.
l. Engine Shutdown Contacts: Time delay adjustable from zero to 15 minutes, and factory set for 5 minutes. Contacts shall initiate shutdown at remote engine-generator controls after retransfer of load to normal source.
m. Engine-Generator Exerciser: Programmable exerciser starts engine-generator(s) and transfers load to them from normal source for a preset time, then retransfers and shuts down engine-generator(s) after a preset cool-down period. Initiates exercise cycle at preset intervals adjustable from 7 to 30 days. Running periods are adjustable from 10 to 30 minutes. Factory settings shall be for 7-day exercise cycle, 20-minute running period, and 5-minute cool-down period.

13. Controls:
    a. Controls shall provide indication of switch status and be equipped with alarm diagnostics.
    b. Controls shall control operation of the automatic transfer switches.
14. Factory Wiring: Train and bundle factory wiring and label either by color-code or by numbered/lettered wire markers. Labels shall match those on the shop drawings.
15. Annunciation, Control, and Programming Interface Components: Devices for communicating with remote programming devices, annunciators, or control panels shall have open-protocol communication capability matched with remote device. Controls shall be compatible with the utilized SCADA equipment.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install automatic transfer switches and associated remote components in accordance with the NEC, as shown on the drawings, and manufacturer’s instructions. Working clearances shall not be less than specified in the NEC.
B. Anchor automatic transfer switches with rustproof bolts, nuts, and washers not less than 12 mm (1/2 inch) diameter, in accordance with manufacturer’s instructions, and as shown on drawings.

C. Mount floor mount automatic transfer switches on concrete slab. Unless otherwise indicated, the slab shall be at least 100 mm (4 inches) thick. The top of the concrete slab shall be approximately 100 mm (4 inches) above finished floor. Edges above floor shall have 12.5 mm (1/2 inch) chamfer. The slab shall be of adequate size for the equipment, projecting at least 4 inches on all sides, but no more than 6 inches beyond the front of the equipment, or as shown on the drawings. Provide conduit turnups and cable entrance space required by the equipment to be mounted. Seal voids around conduit openings in slab with water- and oil-resistant caulking or sealant. Cut off and bush conduits 75 mm (3 inches) above slab surface.

3.2 ACCEPTANCE CHECKS AND TESTS

A. An authorized representative of the automatic transfer switch manufacturer shall technically supervise and participate during all of the field adjustments and tests. The manufacturer's representative shall certify in writing that the equipment has been installed, adjusted and tested in accordance with the manufacturer's recommendations.

B. Perform manufacturer's required field tests in accordance with the manufacturer's recommendations. In addition, include the following:

1. Visual Inspection and Tests:
    a. Compare equipment nameplate data with specifications and approved shop drawings.
    b. Inspect physical, electrical, and mechanical condition.
    c. Confirm correct application of manufacturer's recommended lubricants.
    d. Verify appropriate anchorage, required area clearances, and correct alignment.
    e. Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method or performing thermographic survey after energization.
    f. Verify grounding connections.
    g. Verify ratings of sensors.
    h. Vacuum-clean enclosure interior. Clean enclosure exterior.
    i. Exercise all active components.
    j. Verify that manual transfer warning signs are properly placed.
    k. Verify the correct operation of all sensing devices, alarms, and indicating devices.
2. Electrical tests:
    a. Perform insulation-resistance tests.
    b. After energizing circuits, demonstrate the interlocking sequence and operational function for each automatic transfer switch at least three times.
        1) Power failure of normal source shall be simulated by opening upstream protective device. This test shall be performed a minimum of five times.
        2) Power failure of emergency source with normal source available shall be simulated by opening upstream protective device for emergency source. This test shall be performed a minimum of five times.

3) Low phase-to-ground voltage shall be simulated for each phase of normal source.
4) Operation and settings shall be verified for specified automatic transfer switch operational feature, such as override time delay, transfer time delay, return time delay, engine shutdown time delay, exerciser, auxiliary contacts, and supplemental features.
5) Verify pickup and dropout voltages by data readout or inspection of control settings.

c. Ground-fault tests: Verify that operation of automatic transfer switches shall not cause nuisance tripping or alarms of ground fault protection on either source.
d. When any defects are detected, correct the defects and repeat the tests as requested at no additional cost to the client.

3.3 FIELD SETTINGS VERIFICATION

A. The automatic transfer switch settings shall be verified in the field by an authorized representative of the manufacturer.

3.4 FOLLOW-UP VERIFICATION

A. Upon completion of acceptance checks and tests, the Contractor shall show by demonstration in service that the automatic transfer switches are in good operating condition and properly performing the intended function.

---END---

SECTION 16440

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Nonfusible switches.
3. Molded-case circuit breakers (MCCBs).
4. Enclosures.

1.2 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated.

B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

A. Type HD, Heavy Duty, Single Throw, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate indicated fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

B. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
4. Lugs: Suitable for number, size, and conductor material.
5. Service-Rated Switches: Labeled for use as service equipment.

2.2 NONFUSIBLE SWITCHES

A. Type HD, Heavy Duty, Single Throw, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

B. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Lugs: Suitable for number, size, and conductor material.

2.3 MOLDED-CASE CIRCUIT BREAKERS

A. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

B. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

C. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.
2. Lugs: Suitable for number, size, trip ratings, and conductor material.

2.4 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location and as indicated on plans.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1.

3.2 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.

B. Label each enclosure with an engraved phenolic nameplate with identification, voltage, and source.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 16440

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SECTION 16461

LOW-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Distribution, dry-type transformers rated 600 V and less, with capacities up to 1500 kVA.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment.
3. Include diagrams for power, signal, and control wiring.

1.3 INFORMATIONAL SUBMITTALS

A. Source quality-control reports.

B. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Temporary Heating: Apply temporary heat according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following: Eaton, Schneider Square D, GE, Dongan, and Siemens.

2.2 GENERAL TRANSFORMER REQUIREMENTS

A. Description: Factory-assembled and -tested, air-cooled units for 60-Hz service.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Transformers Rated 15 kVA and Larger: Comply with DOE 2016 efficiency levels as verified by testing according to NEMA TP 2.

1. Coil Material: Aluminum.

D. Encapsulation: Transformers smaller than 30 kVA shall have core and coils completely resin encapsulated.

2.3 DISTRIBUTION TRANSFORMERS

A. Comply with NFPA 70, and list and label as complying with UL 1561.

B. Cores: One leg per phase.

C. Enclosure: Ventilated.

D. Taps for Transformers 3 kVA and Smaller: None.

E. Taps for Transformers 7.5 to 24 kVA: One 5 percent tap above and one 5 percent tap below normal full capacity.

F. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and two 2.5 percent taps below normal full capacity.

G. Insulation Class, Smaller than 30 kVA: 185 deg C, UL-component-recognized insulation system with a maximum of 115-deg C rise above 40-deg C ambient temperature.

H. Insulation Class, 30 kVA and Larger: 220 deg C, UL-component-recognized insulation system with a maximum of 150-deg C rise above 40-deg C ambient temperature.

I. Wall Brackets: Manufacturer's standard brackets.

2.4 IDENTIFICATION DEVICES

A. Nameplates: Engraved, laminated-plastic or metal nameplate for each distribution transformer, mounted with corrosion-resistant screws.

2.5 SOURCE QUALITY CONTROL

A. Test and inspect transformers according to IEEE C57.12.01 and IEEE C57.12.91.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Verify that ground connections are in place and requirements in Section 16170 "Grounding and Bonding for Electrical Systems" have been met. Maximum ground resistance shall be 5 ohms at location of transformer.

B. Environment: Enclosures shall be rated for the environment in which they are located. Covers for NEMA 250, Type 4X enclosures shall not cause accessibility problems.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Install transformers level and plumb on a concrete base with vibration-dampening supports. Locate transformers away from corners and not parallel to adjacent wall surface.

E. Construct concrete bases and anchor floor-mounted transformers according to manufacturer's written instructions and requirements in Section 16190 "Hangers and Supports for Electrical Systems."

1. Coordinate size and location of concrete bases with actual transformer provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

F. Secure transformer to concrete base according to manufacturer's written instructions.

G. Secure covers to enclosure and tighten all bolts to manufacturer-recommended torques to reduce noise generation.

H. Remove shipping bolts, blocking, and wedges.

3.2 CONNECTIONS

A. Ground equipment according to Section 16170 "Grounding and Bonding for Electrical Systems."

B. Connect wiring according to Section 16123 "Low-Voltage Electrical Power Conductors and Cables."

C. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

D. Provide flexible connections at all conduit and conductor terminations and supports to eliminate sound and vibration transmission to the building structure.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Perform each visual and mechanical inspection and electrical test stated in NETA ATS for dry-type, air-cooled, low-voltage transformers. Certify compliance with test parameters.

B. Remove and replace units that do not pass tests or inspections and retest as specified above.

C. Infrared Scanning: Two months after Substantial Completion, perform an infrared scan of transformer connections.

1. Use an infrared-scanning device designed to measure temperature or detect significant deviations from normal values. Provide documentation of device calibration.
2. Perform two follow-up infrared scans of transformers, one at four months and the other at 11 months after Substantial Completion.
3. Prepare a certified report identifying transformer checked and describing results of scanning. Include notation of deficiencies detected, remedial action taken, and scanning observations after remedial action.

3.4 ADJUSTING

A. Record transformer secondary voltage at each unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 5 percent and not being lower than nameplate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.

B. Connect buck-boost transformers to provide nameplate voltage of equipment being served, plus or minus 5 percent, at secondary terminals.

C. Output Settings Report: Prepare a written report recording output voltages and tap settings.

END OF SECTION 16461

SECTION 16470

PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Distribution panelboards.
2. Lighting and appliance branch-circuit panelboards.

1.2 DEFINITIONS

A. MCCB: Molded-case circuit breaker.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of panelboard.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details.
2. Detail enclosure types including mounting and anchorage, environmental protection, knockouts, corner treatments, covers and doors, gaskets, hinges, and locks.
3. Detail bus configuration, current, and voltage ratings.
4. Short-circuit current rating of panelboards and overcurrent protective devices.
5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
6. Include wiring diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Panelboard schedules for installation in panelboards.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.6 FIELD CONDITIONS

A. Service Conditions: NEMA PB 1, usual service conditions, as follows:

1. Ambient temperatures within limits specified.
2. Altitude not exceeding 6600 feet.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace panelboards that fail in materials or workmanship within specified warranty period.

1. Panelboard Warranty Period: 18 months from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANELBOARDS COMMON REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NEMA PB 1.

C. Comply with NFPA 70.

D. Enclosures: Surface-mounted, dead-front cabinets.

1. Rated for environmental conditions at installed location.

a. NEMA 250, Type 1.

2. Height: 84 inches maximum.
3. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box. Trims shall cover all live parts and shall have no exposed hardware.
4. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover (“Door-in-door”). Trims shall cover all live parts and shall have no exposed hardware.

E. Phase, Neutral, and Ground Buses: Hard-drawn copper, 98 percent conductivity.

F. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Main and Neutral Lugs: Mechanical type, with a lug on the neutral bar for each pole in the panelboard.
3. Ground Lugs and Bus-Configured Terminators: Mechanical type, with a lug on the bar for each pole in the panelboard.

G. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals. Assembly listed by an NRTL for 100 percent interrupting capacity.

2.2 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.

B. Mains: According to drawings.

C. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. MCCB: Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers:

a. Inverse time-current element for low-level overloads.
b. Instantaneous magnetic trip element for short circuits.

2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
3. MCCB Features and Accessories:

a. Standard frame sizes, trip ratings, and number of poles.
b. Breaker handle indicates tripped status.
c. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.

2.4 MULTIFUNCTION ENERGY METERS

A. Multifunction Energy Meter: Integrally-mounted, permanently installed, solid-state, digital I/O instrument for power and energy metering and monitoring; complying with UL 61010-1.

1. Capable of metering 4-wire Y, 3-wire Y, 3-wire delta, or single-phase power systems as applicable.

B. Overvoltage: Comply with UL 61010-1 overvoltage withstand rating for CAT III.

C. Accuracy:

1. Comply with ANSI C12.20, Class 0.5.

D. Data Link:

1. Modbus-RTU, RS-485. Verify requirements with the controls vendor.

E. Meter Physical Characteristics:

1. Display: Backlit LCD with antiglare and scratch-resistant lens.
2. Display of Metered Values:

a. One screen to show at least one user-selected value

F. Sampling Rate: Continuously sample and record voltage and current at a rate not less than 64 Insert number samples per cycle, simultaneously on all voltage and current channels of the meter.

G. Meters:

1. Instantaneous, rms:

a. Current: Each phase, neutral and three-phase average.
b. Voltage: L-L each phase, L-L three-phase average, L-N each phase, and L-N three-phase average.
c. Active Power (kW): Each phase and three-phase total.
d. Reactive Power (kVAR): Each phase and three-phase total.
e. Apparent Power (kVA): Each phase and three-phase total.
f. Power Factor: Each phase and three-phase total.

2. Energy:

a. Active Energy (kWh): Three-phase total.

3. Demand, Derived from Instantaneous rms Meters:

a. Current: Present and maximum.
b. Active: Present and maximum.
c. Reactive: Present and maximum.
d. Apparent: Present and maximum.

H. Capacities and Characteristics:
1. Circuit Connections:

a. Voltage: Measurement autoranging, 60- to 400-V ac L-N. Connect directly to low-voltage (600 V and less) without using voltage transformers. Meter impedance shall be 2-megohm L-L or greater. Overload Tolerance: 1500-V ac, rms, continuously.
b. Current: Connect to instrument grade current transformer with a metering range of 5 mA to 6 A. Overcurrent tolerance of the instrument shall be 10 A continuous, 50 A for 10 seconds once per hour, and 120 A for one second per hour.
c. Frequency: 45 to 65 Hz.

2.5 IDENTIFICATION

A. Panelboard Label: Manufacturer's name and trademark, voltage, amperage, number of phases, and number of poles shall be located on the interior of the panelboard door.

B. Breaker Labels: Faceplate shall list current rating, UL and IEC certification standards, and AIC rating.

C. Circuit Directory: Directory card inside panelboard door, mounted in transparent card holder.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1.

B. Install panelboards and accessories according to NECA 407.

C. Mount panelboard cabinet plumb and rigid without distortion of box.

D. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

E. Install overcurrent protective devices and controllers not already factory installed.

1. Set field-adjustable, circuit-breaker trip ranges.

F. Make grounding connections and bond neutral for services and separately derived systems to ground. Make connections to grounding electrodes, separate grounds for isolated ground bars, and connections to separate ground bars.

G. Install filler plates in unused spaces.

H. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

3.2 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components;.

B. Create a directory to indicate installed circuit loads; incorporate Owner's final room designations. Obtain approval before installing. Handwritten directories are not acceptable. Install directory inside panelboard door.

C. Panelboard Nameplates: Label each panelboard with an engraved phenolic nameplate with identification, voltage, and source.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test for low-voltage air circuit breakers stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Panelboards will be considered defective if they do not pass tests and inspections.

END OF SECTION 16470

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SECTION 16479

SURGE PROTECTION FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes field-mounted SPDs for low-voltage (120 to 600 V) power distribution and control equipment.

1.2 DEFINITIONS

MCOV: Maximum Continuous Operating Voltage

MOV: Metal-Oxide Varistor

OCPD: Overcurrent Protective Device

SCCR: Short-Circuit Current Rating

SPD: Surge Protective Device

UL: Underwriter’s Laboratory

VPR: Voltage Protection Rating

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
2. Copy of UL Category Code VZCA certification, as a minimum, listing the tested values for VPRs, $I_{nominal}$ ratings, MCOVs, type designations, OCPD requirements, model numbers, system voltages, and modes of protection.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to replace or replace SPDs that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL SPD REQUIREMENTS

A. SPD with Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

C. Comply with UL 1449.

D. MCOV of the SPD shall be the nominal system voltage.

E. Separately-enclosed SPDs shall have integral overcurrent protection/service disconnect.

2.2 SERVICE ENTRANCE SUPPRESSOR

A. SPDs: Comply with UL 1449, Type 2.

1. SPDs with the following features and accessories:
   a. Indicator light display for protection status.

B. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per phase shall not be less than 100 kA. The peak surge current rating shall be the arithmetic sum of the ratings of the individual MOVs in a given mode.

C. Protection modes and UL 1449 VPR for grounded wye circuits with 480Y/277 V and 208Y/120 V, three-phase, four-wire circuits shall not exceed the following:

1. Line to Neutral: 1200 V for 480Y/277 V, .
2. Line to Ground: 1200 V for 480Y/277 V, .
3. Line to Line: 2000 V for 480Y/277 V, .

D. SCCR: Equal or exceed 100 kA.

E. $I_{nominal}$ Rating: 20 kA.

2.3 ENCLOSURES

A. Indoor Enclosures: NEMA 250, Type 1.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1.

B. Install an OCPD or disconnect as required to comply with the UL listing of the SPD.

C. Install SPDs with conductors between suppressor and points of attachment as short and straight as possible, and adjust circuit-breaker positions to achieve shortest and straightest leads. Do not splice and extend SPD leads unless specifically permitted by manufacturer. Do not exceed manufacturer's recommended lead length. Do not bond neutral and ground.

D. Use crimped connectors and splices only. Wire nuts are unacceptable.

E. Complete startup checks according to manufacturer's written instructions. Energize SPDs after power system has been energized, stabilized, and tested.

3.2 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative.

1. Compare equipment nameplate data for compliance with Drawings and Specifications.
2. Inspect anchorage, alignment, grounding, and clearances.
3. Verify that electrical wiring installation complies with manufacturer's written installation requirements.

B. An SPD will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.3 DEMONSTRATION

A. Train Owner's maintenance personnel to operate and maintain SPDs.

END OF SECTION 16479

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SECTION 16480

ENCLOSED CONTROLLERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section specifies the furnishing, installation, connection, and testing of motor controllers.

B. Section includes the following enclosed controllers rated 600 V and less:
   1. Reduced-voltage solid-state (RVSS) start

1.2 DEFINITIONS

A. CPT: Control power transformer.

B. MCCB: Molded-case circuit breaker.

C. MCP: Motor circuit protector.

D. N.C.: Normally closed.

E. N.O.: Normally open.

F. OCPD: Overcurrent protective device.

1.3 APPLICABLE PUBLICATIONS

A. A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by basic designation only.

B. Institute of Electrical and Electronic Engineers (IEEE):
   1. 519-92 Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems
   2. C37.90.1-02 Standard Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus

C. International Code Council (ICC):
   1. IBC-12 International Building Code

D. National Electrical Manufacturers Association (NEMA):
   1. ICS 1-08 Industrial Control and Systems: General Requirements
   2. ICS 1.1-09 Safety Guidelines for the Application, Installation and Maintenance of Solid State Control
   3. ICS 2-05 Industrial Control and Systems Controllers, Contactors, and Overload Relays Rated 600 Volts
   4. ICS 4-05 Industrial Control and Systems: Terminal Blocks
   5. ICS 6-06 Industrial Control and Systems: Enclosures
   6. ICS 7-06 Industrial Control and Systems: Adjustable-Speed Drives

7. ICS 7.1-06 Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable-Speed Drive Systems
8. MG 1 Part 31 Inverter Fed Polyphase Motor Standards

E. National Fire Protection Association (NFPA):
1. 70-14 National Electrical Code (NEC)

F. Underwriters Laboratories Inc. (UL):
1. 508A-07 Industrial Control Panels
2. 508C-07 Power Conversion Equipment

1.4 ACTION SUBMITTALS

A. Product Data: For each type of enclosed controller.

B. Shop Drawings: For each enclosed controller. Include dimensioned plans, elevations, sections, details, and required clearances and service spaces around controller enclosures.

1. Wiring Diagrams: For power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.7 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MOTOR CONTROLLERS

A. Comply with IEEE, NEMA, NFPA, UL, and as shown on the drawings.

B. Separately enclosed, unless part of another assembly.

C. Combination type, with circuit breaker or motor circuit protector type disconnecting means, with external operating handle with lock-open padlocking positions and ON-OFF position indicator.

D. Start control as indicated on drawings.

2.2 FULL-VOLTAGE CONTROLLERS

A. General Requirements for Full-Voltage Controllers: Comply with NEMA ICS 2, general purpose, Class A.

B. Motor-Starting Switches: "Quick-make, quick-break" toggle or push-button action; marked to show whether unit is off or on.

1. Configuration: Nonreversing.
2. Surface mounting.
3. Pilot light.

C. Magnetic Controllers: Full voltage, across the line, electrically held.
1. Configuration: Nonreversing.
2. Contactor Coils: Pressure-encapsulated type.

a. Operating Voltage: Depending on contactor NEMA size and line-voltage rating, manufacturer's standard matching control power or line voltage.

3. Power Contacts: Totally enclosed, double-break, silver-cadmium oxide; assembled to allow inspection and replacement without disturbing line or load wiring.
4. Control Circuits: 120-V ac; obtained from integral CPT, with primary and secondary fuses, with sufficient capacity to operate integral devices and any remotely located pilot, indicating, and control devices.
5. Melting Alloy Overload Relays:

a. Inverse-time-current characteristic.
b. Class 10 tripping characteristic.
c. Heaters in each phase matched to nameplate full-load current of actual protected motor and with appropriate adjustment for duty cycle.

6. Bimetallic Overload Relays:

a. Inverse-time-current characteristic.
b. Class 10 tripping characteristic.
c. Heaters in each phase matched to nameplate full-load current of actual protected motor and with appropriate adjustment for duty cycle.

7. Solid-State Overload Relay:

a. Switch or dial selectable for motor running overload protection.
b. Sensors in each phase.
c. Class 10/20 selectable tripping characteristic selected to protect motor against voltage and current unbalance and single phasing.

8. External overload reset push button.

D. Combination Magnetic Controller: Factory-assembled combination of magnetic controller, OCPD, and disconnecting means.

1. Auxiliary Contacts: N.O./N.C., arranged to activate before switch blades open.

2. MCP Disconnecting Means:

a. UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents, instantaneous-only circuit breaker with front-mounted, field-adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
b. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.

3. MCCB Disconnecting Means:

a. UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents; thermal-magnetic MCCB, with inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits.
b. Front-mounted, adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
c. Lockable Handle: Accepts three padlocks and interlocks with cover in closed position.

2.3 SOLID-STATE REDUCED VOLTAGE (RVSS) MOTOR CONTROLLERS

A. In accordance with applicable portions of 2.1 and 2.2 above.

B. Closed circuit transition from start to run and run to stop

C. Soft start and soft stop

D. Keypad configurable settings:
1. Start ramp duration
2. Stop ramp duration
3. Peak current

E. Phase loss protection

F. Limit inrush currents to not more than 300% of motor full load amps (FLA).

2.4 ENCLOSURES

A. Enclosed Controllers: NEMA ICS 6, to comply with environmental conditions at installed location. Enclosure type as indicated on the drawings. Where not otherwise indicated,

1. Dry and Clean Indoor Locations: Type 1.
2. Outdoor Locations: Type 3R.
3. Wash-Down Areas: Type 4X, stainless steel.
4. Other Wet or Damp Indoor Locations: Type 4.
5. Areas subject to corrosive liquids or gases: Type 4X stainless steel.
6. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: Type 12.

2.5 ACCESSORIES

A. Push Buttons, Pilot Lights, and Selector Switches: NEMA ICS 5; heavy-duty type; factory installed in controller enclosure cover unless otherwise indicated.

B. Control Relays: Auxiliary and adjustable time-delay relays.

C. Phase-Failure, Phase-Reversal, and Undervoltage and Overvoltage Relays: Solid-state sensing circuit with isolated output contacts for hard-wired connections. Provide adjustable undervoltage, overvoltage, and time-delay settings.
   1. For RVSS starters, protection features may be provided by the RVSS device.

D. Logic circuitry shall be provided to perform the functions intended, as described in the drawings and the function description in Section 11500 Process Control Systems.

2.6 MOTOR CONTROLS FUNCTIONAL DESCRIPTION

A. Controls and indications are provided to protect the pump and pump motor:
   1. An emergency power-off (EPO) switch for each pump
   2. Motor thermostat for each pump
   3. Pump sealwater system (consisting of a solenoid for each pump and one low water pressure switch)
   4. A check-valve limit switch for each pump
   5. Motor fault detection functions shall be provided within the reduced-voltage solid-state (RVSS) starter for each pump.

B. Each enclosed motor controller shall contain all necessary controls, indications, and logic in order to fully protect the pump and pump motor which drives it. Wiring to protection devices shall be terminated directly within the motor controller and shall not rely on the Station Controller to relay the signals. Control logic is provided in the drawings to describe the control and protection features, and further description of intent is provided here.
   1. Upon receiving a signal from the Station Controller to start, the system shall immediately send a start signal to the RVSS starter.
   2. The following abnormal conditions shall be defined.
      a. Permissive Conditions
         1) The motor thermostat is open.
         2) The wet well level is below the ‘Low Level’ setpoint.
      b. Emergency Conditions
         1) The EPO switch is depressed.
         2) The check valve fails to open within the specified time after pump start.
      c. RVSS Internal Conditions
         1) Any fault condition internal to the RVSS starter, including motor overload.
   3. In the event any of the abnormal conditions are detected, the controller shall prevent the pump from starting.
   4. In the event any of the abnormal conditions above become true during operation, the controller shall stop the pump as follows:
      a. Permissive Conditions: the controller shall ‘soft-stop’ the pump.
      b. Emergency Conditions: the controller shall immediately stop the pump without a ‘soft-stop’ ramp-down.
      c. RVSS Internal Conditions: shall be handled according the manufacturers standard settings for the particular fault condition. If the manufacturer does not have standard settings, consult the Engineer for handling of each fault condition.
   5. Each of the above abnormal conditions except for the Low Level condition shall latch until an operator presses a ‘Reset’ button to remove the latch. The ‘Reset’ button shall remove the latch momentarily only, and shall not override a persistent abnormal signal.
   6. The Low Level permissive condition shall be provided with a momentary pushbutton to override the Low Level condition, in order to allow the operator to pump down the well beyond the Low Level setpoint if required.
   7. The check-valve circuitry shall function as follows:
      a. Upon the starting the pump motor, the check valve is expected to open within a certain amount of time. If the check valve fails to open (as determined by a limit

switch) after a certain adjustable time-delay, the check valve fault circuit shall latch.

8. The enclosed controller shall energize the normally-open seal-water solenoid at all times while the motor is not energized (as reported by the RVSS starter), and shall de-energize the solenoid whenever the motor is energized.
9. The enclosed controller shall send the following signals to the Station Controller:
    a. Pump OK (Not in Fault) (collected alarm indicating no Permissive, Emergency, or RVSS protection or fault conditions exist)
    b. Pump In Auto
    c. Pump Running

C. Control assemblies shall comply with applicable portions of Section 16902 Electrical Controls and Relays.

D. The motor controller provider shall coordinate with the station controls provider to ensure all interfaces are compatible.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Wall-Mounted Controllers: Install enclosed controllers on walls with tops at uniform height, and with disconnect operating handles not higher than 79 inches above finished floor, unless otherwise indicated, and by bolting units to wall or mounting on lightweight structural-steel channels bolted to wall. For controllers not at walls, provide freestanding racks complying with Section 16190 "Hangers and Supports for Electrical Systems."

B. Floor-Mounted Controllers: Install enclosed controllers on 4-inch nominal-thickness concrete base.

1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
2. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
4. Install anchor bolts to elevations required for proper attachment to supported equipment.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

D. Install fuses in each fusible-switch enclosed controller.

E. Install fuses in control circuits if not factory installed. Fuse per manufacturer’s recommendations.

F. Install heaters in thermal overload relays. Select heaters based on actual nameplate full-load amperes after motors have been installed.

G. Comply with NECA 1.

3.2 IDENTIFICATION

A. Identify enclosed controllers, components, and control wiring.

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved nameplate.
3. Label each enclosure-mounted control and pilot device.
4. Affix laminated wiring schematic to inside of controller door.

3.3 CONTROL WIRING INSTALLATION

A. Install wiring between enclosed controllers and remote devices and facility's central control system.

B. Bundle, train, and support wiring in enclosures.

C. Connect selector switches and other automatic-control selection devices where applicable.

1. Connect selector switches to bypass only those manual- and automatic-control devices that have no safety functions when switch is in manual-control position.
2. Connect selector switches with enclosed-controller circuit in both manual and automatic positions for safety-type control devices such as low- and high-pressure cutouts, high-temperature cutouts, and motor overload protectors.

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed controller, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Inspect controllers, wiring, components, connections, and equipment installation. Test and adjust controllers, components, and equipment.
2. Test insulation resistance for each enclosed-controller element, component, connecting motor supply, feeder, and control circuits.
3. Test continuity of each circuit.
4. Verify that voltages at controller locations are within plus or minus 10 percent of motor nameplate rated voltages. If outside this range for any motor, notify Construction Manager before starting the motor(s).
5. Test each motor for proper phase rotation.
6. Perform each electrical test and visual and mechanical inspection stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
7. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
8. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.

D. Enclosed controllers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

A. Set field-adjustable switches and overload-relay pickup and trip ranges.

B. Adjust the trip settings of MCPs and thermal-magnetic circuit breakers with adjustable instantaneous trip elements. Initially adjust to six times the motor nameplate full-load ampere ratings and attempt to start motors several times, allowing for motor cooldown between starts. If tripping occurs on motor inrush, adjust settings in increments until motors start without tripping. Do not exceed eight times the motor full-load amperes (or 11 times for NEMA Premium Efficient motors if required). Where these maximum settings do not allow starting of a motor, notify Construction Manager before increasing settings.

3.6 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain enclosed controllers, including power factor correction capacitors.

END OF SECTION 16480

SECTION 16902
ELECTRICAL CONTROLS AND RELAYS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Products
   a. Control Components
   b. Tools, supplies, and Spare Parts
2. Execution
   a. Installation
   b. Configuration of Controls and Equipment
   c. Field Tests
   d. Record Drawings

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Without limiting the generality of the other requirements of the specifications, all work herein shall conform to the applicable requirements of the following documents. All referenced specifications, codes, and standards refer to the most current issue available at the time of Bid.

1. National Electric Code (NEC)
2. NEMA Specification ICS- 1970 (Revised, 1975), Industrial Controls and Systems

1.3 SUBMITTALS

A. ACTION SUBMITTALS

1. Product Data: for each product provided
2. Shop Drawings: For each controller, relay, terminal, and all other components
   a. Wiring Diagrams: for power, signal, and control wiring

B. INFORMATIONAL SUBMITTALS

1. Field Quality Control Reports

C. CLOSEOUT SUBMITTALS

1. Operation and Maintenance Data

1.4 STORAGE AND HANDLING

A. Secure and maintain a location to store the material in accordance with and manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 CONTROL COMPONENTS

A. Electrical control and relay systems shall be assembled using NEMA rated components. Components designed and built to International Electrotechnical Commission (IEC) standards are not recognized. Equipment designed, manufactured and labeled solely in compliance with IEC standards is not acceptable.

B. Motor control circuits shall be wired in accordance with the requirements specified herein or indicated on the Drawings.

C. Legend plates shall be plastic, black field (background) with white lettering. Pushbuttons and selector switches shall be non-illuminated. Pushbuttons shall include a full guard. Panic stop/alarm pushbuttons shall be red mushroom type with manual-pull release.

D. Pushbuttons and selector switches for all electrical equipment shall be of the same type and manufacturer unless otherwise specified herein or indicated on the Drawings.

E. Pushbuttons, selector switches, and other pilot devices for pump control panels shall be as specified herein and as shown on the Drawings.

F. Engraved nameplates shall be securely fastened to the front of each pushbutton station, disconnect switch, and motor starter remotely located from the motor control center. If adequate space is not available, the nameplate shall be mounted below the push button station. Identify all switches, control stations, and motor controllers as to their respective equipment.

G. Pilot lights shall be of the proper control voltage, LED type, heavy-duty, corrosion-resistant NEMA 4X (where exposed to weather) with legend plates as specified herein, indicated on the Drawings, or otherwise directed by the Engineer. Legend plates shall be plastic, black field (background) with white lettering. Pilot light lens colors shall be as indicated on drawings. Pilot lights for all electrical panels shall be of the same type and manufacturer unless otherwise specified herein or indicated on the Drawings.

H. Pilot lights for control panels shall be round with custom engraved legend plates for each pilot light.

I. Control relays shall be general purpose plug-in type with coil voltage as shown on the Drawings and sealed 10 ampere contacts. All relays shall have min three SPDT contacts. Machine tool relays shall be provided when the contact burden exceeds 10 amperes. Miniature type or "ice cube" relays are not acceptable.

J. Terminal blocks shall be assembled on non-current carrying galvanized steel DIN mounting rails securely bolted to the enclosure or cabinet subpanel. Terminals shall be tubular screw type with pressure plate for wire size 22 - 8 AWG.

Power terminal blocks shall be single tier with a minimum rating of 600 volts, 30A. Signal terminal blocks shall be single tier with a minimum rating of 600 volts, 20A. Separate terminal strips shall be provided for each type of power and signal used within each cabinet. There shall be min 20% spare terminals. Terminals shall be marked with a permanent, continuous marking strip. One side of each terminal shall be reserved exclusively for incoming field conductors. Common connections and jumpers required for internal wiring shall not be made on the field side of the terminal. Subject to the approval of the Engineer, a vendor's pre-engineered and prefabricated wiring termination system may be acceptable.

K. Alarm horns shall be made for surface, flush, or semi-flush mounting on walls, panels, enclosures, or on square outlet boxes.

2.2 TOOLS, SUPPLIES AND SPARE PARTS

A. The electrical control and relay systems and accessories shall be furnished with all special tools necessary to disassemble, service, repair, and adjust the equipment. All spare parts as recommended by the equipment manufacturer shall be furnished to the Owner by the Contractor.

B. The spare parts shall be packed in containers suitable for long term storage, bearing labels clearly designating the contents and the pieces of equipment for which they are intended.

C. Spare parts shall be delivered at the same time as the equipment to which they pertain. The Contractor shall properly store and safeguard such spare parts until completion of the work, at which time they shall be delivered to the Owner.

D. Spare parts lists, included with the shop drawing submittal, shall indicate specific sizes, quantities, and part numbers of the items to be furnished. Term such as "1 lot of packing material" are not acceptable.

E. Parts shall be completely identified with a numerical system to facilitate parts control and stocking. Each part shall be properly identified by a separate

number. Those parts which are identical for more than one size, shall have the same parts number.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The Contractor shall furnish, install, test, and place in satisfactory operation all electric controls and relays as specified herein and indicated on the Drawings.

B. The Contractor shall furnish and install, as specified herein and indicated on the Drawings, all motor control components and wiring for all motor-operated equipment furnished under this Section and all other Sections as indicated.

C. The Contractor shall furnish and install all external power and control wiring to control panels of prewired packaged equipment, unless indicated otherwise.

D. Control wiring requirements are indicated in electrical schematics and descriptions on the Drawings and in equipment manufacturer's equipment data. The Contractor shall furnish and install all control wiring in accordance with these Contract Documents. The Contractor shall provide all control circuits and wiring for a particular item of equipment in accordance with requirements as set forth by the manufacturer of the particular item of equipment.

E. As specified herein and indicated on the Drawings, furnish and install instrumentation wiring and connections to instrumentation equipment furnished under all Contracts of this Specification. Unless indicated otherwise, motor control switches, pilot lights, relays, and other control equipment for mounting in instrumentation panels shall be furnished, installed, and wired by the Contractor.

F. Where annunciators or other types of alarm systems are indicated as being furnished by others, the Contractor shall furnish and install the wiring and make connections to the alarm initiating device or contacts and to the annunciator. Where annunciators or alarm systems are indicated or specified in the Contract, the Contractor shall furnish and install the equipment and the complete wiring.

G. Where pumps provided by others are furnished with solenoid valves or other devices for control, the Contractor shall wire these valves or devices.

H. Unless otherwise specified herein or indicated on the Drawings, motor controllers shall be wired to drop out and remain dropped out on loss of power to the line side of the controller.

I. Operator action shall be required to restart the motor unless the motor is intended to automatically restart.

J. Where devices are installed on the doors of NEMA 4, 4X, or 3R enclosures, devices shall be selected and installed to maintain the NEMA rating of the enclosure.

K. Wiring in all starters, panels, junction boxes, and similar equipment shall be brought out to numbered terminal strips for interconnection. The Contractor shall be responsible for documenting terminal numbers for all starters, controls, panels, and similar equipment provided under the Contract. At the completion of the project, the Contractor shall submit a complete set of record drawings showing and/or listing all terminals in boxes, panels, starters, and similar equipment in a single, complete bound package for the equipment and control supplied under the Contract.

L. The Contractor is responsible for coordinating the electrical work under the Contract with all equipment starters, controls, and instruments provided. The Contractor shall verify and coordinate with process equipment power supply and voltage, process equipment control power supply and voltage, and details of installation and interconnection.

M. Electrical control schematic diagrams drawn using a ladder-type format shall be submitted for all electrical equipment which is being provided under the Contract.

N. Where space or strip heaters are provided within the enclosures for electrical equipment, the Contractor shall make connections to these heaters from an appropriate power source and operate the heaters with temperature control as necessary until the equipment is installed and operated according to its intended use.

3.2 CONFIGURATION OF CONTROLS AND EQUIPMENT

A. All controls including wiring, control switches, pushbuttons, indicating lights, control interlocks and similar devices, shall be provided at the control voltages specified herein or indicated on the Drawings.

B. All equipment, cabinets, and devices furnished under this Contract shall be heavy-duty type, designed for continuous industrial service. The system shall contain products of a single manufacturer, insofar as possible, and shall consist of equipment models which are currently in production.

C. All equipment shall be designed to operate on a 60 Hz alternating current power source at a nominal 117 volts, plus or minus 10 percent, except where specifically noted. All regulators and power supplies required for compliance with the above shall be provided.

D. All switches shall have min double-pole, double-throw, contacts rated at a minimum of 600 VA, unless specifically noted otherwise.

E. Materials and equipment used shall bear a U.L. label wherever such labeling of equipment and materials are available.

F. Unless otherwise specified or indicated on the Drawings, all equipment shall be designed, furnished, and installed so that in the event of a power interruption, the equipment must be restarted manually after a power failure.

G. All power terminals shall be insulated and identified.

H. All instruments shall operate at 10 to 125 degrees F unless otherwise specified.

I. Internal wiring within all starters, panels, instruments, junction boxes and similar equipment, shall be brought out to numbered terminal strips for interconnection and field wiring.

J. All control components shall be mounted in a manner that will permit servicing, adjustment, testing, and removal without disconnecting, moving, or removing any other component. Components mounted on the inside of panels shall be mounted on removable plates and not directly to the enclosure. Mounting shall be rigid and stable unless shock mounting is required otherwise by the manufacturer to protect equipment from vibration. Component's mounting shall be oriented in accordance with the component manufacturer's and industries' standard practices. All internal components shall be identified with suitable plastic or metal engraved tags attached with drive pins adjacent to (not on) each component identifying the component in accordance with the Drawings, Specifications, and supplier's data.

K. Unless otherwise noted, the Contractor shall provide all interconnecting wiring and conduit for complete control systems. The Contractor shall make all connections to equipment devices, instruments, and all components not otherwise connected but that require electrical connection.

L. The shield on each instrumentation cable shall be continuous from source to destination and shall be bonded to ground as directed by the manufacturer of the instrumentation equipment. All analog control functions shall utilize 4-20 mA DC control signals, unless otherwise specified. All analog transmission shall take place within shielded twisted cables which are not susceptible to interference or noise.

3.3 FIELD TESTS

A. The Contractor, in cooperation with a representative of the panel manufacturer, shall conduct field tests prior to operation of the equipment.

Field tests shall be conducted for all hardware components and shall include a functional check of all items. Field tests shall include a functional check of all instruments and control equipment. All equipment shall be connected and fully operational for field testing. Field tests shall demonstrate that the controls perform according to the Contract requirements and that all equipment, valves, switches, controls, alarms, interlocks, indicating lights, and similar equipment function properly. Based on the results of field tests, the Contractor shall make any required corrections to equipment and controls and shall make any adjustments required to the control logic and control settings to achieve the specified operation. Field tests shall be conducted for the full range of operating modes and conditions specified. The Contractor shall make modifications and adjustments to the controls as directed by the Engineer for optimizing operation of the overall system. All costs in connection with field tests of equipment provided under the Contract shall be borne by the Contractor. The Contractor shall be fully responsible for the proper operation of all motor starters and controls during the tests.

3.4 RECORD DRAWINGS

A. Record drawings shall be provided to the owner. One complete set of record wiring diagrams encased in plastic or plexiglass envelopes shall be provided for each starter, panel, and similar equipment. The diagrams shall include wire color codes showing connections from numbered terminal blocks to external equipment.

END OF SECTION 16902

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SECTION 31 05 00
COMMON RESULTS FOR EARTHWORK

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Materials for Earthwork.

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions:

1. Geotechnical Engineer: A Professional Engineer, licensed in the state in which the Work is performed, with engineering expertise in the analysis, design, and construction of foundations, slopes, retaining structures, embankments, tunnels, levees, wharves, landfills, and other systems that are made of or are supported by soil or rock. The Geotechnical Engineer is the Professional hired by the Contractor, Owner, or Engineer as applicable.

2. Borrow: Fill material hauled in from off-site that has been approved by the Engineer.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination.

B. Preconstruction Meeting: attend prior to mobilization, clearing, excavating, or grading.

C. Sequencing.

D. Scheduling.

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that all materials provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit product data/shop drawings for materials.

D. Material Test Reports: Provide soil and aggregate material test reports and evaluation of compliance from a qualified testing agency as follows:

1. Classification of each on-site or borrow soil proposed for backfill in accordance with ASTM D2487, unless otherwise directed by Engineer.

2. Laboratory compaction curve according to ASTM D698 and ASTM D1557 for each on-site or borrow soil material proposed for fill or backfill.

1.5 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Furnish each material from a single source throughout the Work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

PART 2– PRODUCTS

2.1 OWNER-FURNISHED BORROW AREAS

A. Not used.

2.2 SUBSOIL MATERIALS:

A. Satisfactory Subsoils: Non-plastic soils as defined by ASTM D 2487 soil classification group (Unified Soil Classification System) (GW, GP, SW, SP, GW-GC, SP-SM, GM, GC, SM, and SC); free of rock or gravel larger than 3 inches in any dimension, debris, organic matter, waste, frozen materials, muck, roots, vegetation, and other deleterious matter.

B. Unsatisfactory Subsoils: Plastic soils as defined by ASTM D 2487 soil classification group (such as ML, CL CH, MH, OH, OL and PT); soils which contain rock or gravel larger than 3 inches in any dimension, debris, organic matter, waste frozen materials, vegetation, and other deleterious matter. Unsatisfactory soils also include satisfactory soils not maintained within +/- 3% of optimum moisture content at time of compaction, unless otherwise approved by the Engineer and Geotechnical Engineer.

C. Structural Fill: Material shall be clean soil material with USCS classifications of GW, GM, SW, SP, or SM with a Standard Proctor (ASTM D698) maximum dry density of at least 100 PCF, maximum Liquid Limit of 40, Plasticity Index of 20 or less, less than 3% by weight organic or foreign matter content and no roots greater than 1/4 inch in diameter, and no rocks greater than 3 inches diameter or greater than 30% retained on the 3/4 inch sieve.

2.3 TOPSOIL MATERIALS:

A. Native, imported, or modified soil which is friable in texture and primarily organic in nature, free of subsoil, clumps of clayey soils, rocks, stones, and other objects over 3/4 inch diameter, and without weeds, roots, gravel, and other objectionable material.

2.4 COARSE AGGREGATES:

A. Class #57 Stone: NCDOT Table 1005-1 Aggregate Gradation - Coarse Aggregates for Standard Size #57 and Standard Specifications for Roads and Structures Sections 1005 and 1006.

B. Class #67 Stone: NCDOT Table 1005-1 Aggregate Gradation - Coarse Aggregates for Standard Size #67 and Standard Specifications for Roads and Structures Sections 1005 and 1006.

2.5 RIP RAP:

A. NCDOT Standard Specifications Section 1042 – Rip Rap Materials, Class A, B, 1, or 2 as indicated on the Drawings.

B. Rip Rap shall be in compliance with the North Carolina Erosion and Sediment Control Planning and Design Manual.

2.6 GEOSYNTHETICS

A. Geosynthetics shall be protected from mud, dirt, dust, sunlight, and debris during transport and storage. Material shall be inert to commonly encountered chemicals; resistant to mildew, rot, insects, and rodents, and biologically and thermally stable. Geotextile fabric for subsurface installation shall not be exposed to direct sunlight for more than 24 hours before or during installation.

B. Soil Stabilization Fabric: NCDOT Standard Specifications for Roadways and Structures Section 1056 – Geosynthetics, for Type 4 soil stabilization fabric. However, provide fabric meeting Geotechnical Engineers recommendations for the application and use intended.

C. Fabric for Subsurface Drains: Non-woven needle-punched fabric shall conform to NCDOT Standard Specifications for Roadways and Structures Section 1056 – Geosynthetics for Type 1 engineering fabric.

PART 3 – EXECUTION

3.1 SUBSOIL MATERIALS

A. See Construction Specification Section 31 23 00, Excavation and Fill, and Section 31 23 33, Trenching and Backfilling, for installation of subsoil materials.

3.2 TOPSOIL MATERIALS

A. See Construction Specification Section 31 22 00, Grading, and Section 31 23 33, Trenching and Backfilling, for placement of topsoil.

3.3 AGGREGATES

A. See Construction Specification Section 31 23 00, Excavation and Fill, and Section 31 23 33, Trenching and Backfilling, for installation of aggregates for earthwork.

3.4 RIP RAP

A. See Construction Specification Section 31 23 00, Excavation and Fill, for installation of rip rap.

3.5 GEOSYNTHETICS

A. The use of geosynthetic materials for subgrade stabilization shall be approved by the Engineer and Geotechnical Engineer.

B. See Construction Specification Section 31 23 00, Excavation and Fill, for installation of geosynthetics for earthwork.

END OF SECTION

SECTION 31 10 00
SITE CLEARING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Clearing.

2. Grubbing.

3. Removing and Disposing of Vegetation and Debris.

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions:

1. Clearing: Clearing shall consist in the felling, cutting, removal, and satisfactory disposal of trees, down timber, brush, rocks, projected roots, stumps, rubbish, and other material within right of ways and easements designated for removal to a maximum height of six inches above grade in accordance with these specifications.

2. Grubbing: Grubbing shall consist of the removal of roots 1 1/2 inch and larger, organic matter, debris, stumps, rocks greater than 3 inches in diameter to a minimum depth of 18 inches below grade and the disposal thereof.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Attend preconstruction meeting with appropriate authorities having jurisdiction and Owner prior to mobilization or clearing. Owner may require tree protection fencing in sensitive areas, where specifically identified trees are desired to be protected, and when required by the landscape ordinance.

B. The extent of site clearing is shown on the Drawings when appropriate, but otherwise should be limited to within the road right of way or easement.

C. Contact North Carolina 811 by calling 811 or 1-800-632-4949 two business days before digging for locates of existing utilities. Confirm utilities have been located prior to grubbing.

1.4 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Comply with codes, laws, ordinances, and regulations of governmental authorities having jurisdiction over this part of the work.

1.5 SITE CONDITIONS

A. Environmental:

1. Crossing, disturbing, and encroaching into wetlands and other jurisdictional waters shall be subject to the approval, permitting requirements, and permit conditions of the agencies with jurisdictional oversight, which are USACE, DWR, and in Areas of Environmental Concern, DCM.

2. Before crossing or entering a jurisdictional wetland, verify that a wetlands permit has been obtained and review and comply with the conditions of the permit. Prevent draining or modifying wetlands beyond permitting limits. For permitted disturbances, restore the disturbed areas as indicated in the Contract Documents and permit(s).

3. Before crossing streams or ditches, or working within 50 feet of streams, rivers, ponds, lakes, or Class SA waters, verify that a permit has been obtained and review and comply with the conditions of the permit. Unless otherwise permitted, shown on the Drawings, or exempted by NCDEQ, roadways and utilities crossing streams, rivers, ponds, lake buffers, or Class SA water shall be as near perpendicular as possible (the crossing is considered to be perpendicular if it intersects the stream or surface water between an angle of 75 and 105 degrees). Do not disturb more than 50 linear feet (longitudinal) of riparian buffer without approval from NCDEQ. Review the NCDEQ permit for specific requirements.

PART 2– PRODUCTS – Not Used

PART 3– EXECUTION

3.1 EXAMINATION

A. Verify existing conditions match conditions shown on the Drawings. Notify Engineer immediately if existing conditions have changed.

3.2 PROTECTION

A. Protection of In-Place Conditions:

1. Protect and maintain existing conditions in accordance with Construction Specification Section 02 01 00, Maintenance of Existing Conditions.

2. Provide barricades, fences, coverings, or other types of protection necessary to prevent damage to existing improvements not indicated to be removed, and improvements on adjoining property. Restore damaged improvements to their original condition or to a condition acceptable to the owner or other parties or authorities having jurisdiction.

B. Protection of Existing Improvements:

1. Provide protection necessary to prevent damage to existing improvements not indicated to be removed.

2. Protect improvements on adjoining properties and on Owner's easements.

3. Restore damaged improvements to their original condition, as acceptable to parties having jurisdiction.

C. Protection of Existing Trees and Vegetation:

1. Protect existing trees and other vegetation, which are to remain in place, against unnecessary cutting, breaking, or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. When such damage does occur, rough edges of scarred areas shall be removed in accordance with accepted horticultural practices. Provide temporary guards to protect trees and vegetation to be left standing.

2. Trees and vegetation designated to remain or outside of the construction limits shall be repaired or replaced at Contractor's expense in a manner acceptable to Owner if they are damaged by construction operations. Repair tree damage as directed by a qualified tree arborist.

D. Protection of Drainage Channels:

1. Protect vegetation along existing drainage channels unless Drawings indicate those areas to be cleared.

E. Protection of Wetlands and Adjacent Waters:

1. Take extensive precautions during construction activities to prevent the release of sediment into wetlands or receiving waters and an increase in turbidity.

F. Implement the Erosion & Sedimentation Control Plan prior to land disturbance other than that required to install erosion and sedimentation control measures. A copy of the approved plan shall be maintained on the site.

3.3 DEMOLITION

A. See Construction Specification Section 02 41 13, Selective Site Demolition for demolition requirements.

B. Demolish and completely remove from the site existing utilities, structures, or surface features indicated on the Drawings to be removed and dispose of off-site. Coordinate with applicable utility companies to shut off services if lines are active.

C. Comply with applicable codes and ordinances concerning demolition operations.

D. The use of explosives is not permitted.

E. Maintain existing utilities and protect from damage during demolition operations. Do not interrupt existing utilities. Provide temporary services to maintain service except where Contract Documents allow service interruptions.

F. Fill below-grade areas and voids resulting from demolition operations with satisfactory soil materials in accordance with Construction Specification Section 31 23 00, Excavation and Fill, unless further excavation or earthwork is indicated in those areas.

3.4 GENERAL

A. Remove vegetation, improvements, or obstructions interfering with installation of new construction. Remove such items elsewhere on the site or premises as specifically indicated. Removal includes stumps and roots.

B. Carefully and cleanly cut roots and branches of trees not indicated to be removed where such roots and branches obstruct new construction.

C. Clearing Permanent Construction Easements in Wooded Areas: Clear the entire area within the limits of the construction easements unless indicated otherwise. Remove trees, stumps, root mat, brush, undergrowth, and other material to permit the work to progress in an unobstructed manner.

D. Clearing Permanent Easements in Lawn Areas: Remove existing trees, shrubs, and lawn only to the extent necessary to permit the work to progress in an unobstructed manner. Do not indiscriminately clear vegetation.

E. Clearing Temporary Construction Easements: Clear the area within the limits of the temporary construction easements only to the extent necessary to accomplish the work and protect new construction from future damage.

3.5 CLEARING AND GRUBBING

A. Clear and grub the area within the construction limits, as designated on the Drawings, of trees, stumps, roots, brush, undergrowth, hedges, heavy growth of grasses or weeds, debris and rubbish of any nature that, in the opinion of the Engineer, is unsuitable for foundation material. Nonperishable items that are not deleterious to the project and will be a minimum of 5 feet below the finish elevation of the earthwork or slope of the embankment may be left in place.

B. Clearing consists of the felling and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off at a minimum of 6 inches below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Clearing shall also include the removal and disposal of structures that obtrude, encroach upon, or otherwise obstruct the work.

C. In areas designated as selective clearing limits, trees 6 inches and larger shall remain. Other vegetation shall be removed as specified above.

D. Unless otherwise noted, trees within the construction limits shall become the property of the Contractor and shall be removed from the site.

E. Carefully and cleanly cut roots and branches of trees indicated to remain where the roots and branches obstruct construction of a proposed utility line. Provide protection for roots and branches over 1 ½ inches in diameter that are cut during construction operations. Coat the cut faces with emulsified asphalt, or other coating especially formulated for horticultural use on cut or damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out. Provide earth cover as soon as possible.

F. The method of stripping, clearing, and grubbing the site shall be at the discretion of the Contractor. However, stumps, roots, and other debris protruding through the ground surface or in excavated areas shall be completely removed and disposed of off the site.

G. When clearing up to the clearing limits, remove any tree where the roots are cut and the tree could be rendered unstable by the effects of high winds and in danger of toppling into either the right of way or onto private property.

3.6 STRIPPING OF TOPSOIL

A. Remove the existing topsoil to a depth of 6 inches or to the depth encountered from all vegetated areas in which excavation will occur. Strip topsoil in a manner to prevent intermingling with underlying subsoil. The topsoil shall be stored in stockpiles separate

from the excavated trench material if the topsoil is to be utilized on site. Otherwise, the topsoil shall be disposed of off-site. Maintain topsoil in accordance with the approved Sedimentation and Erosion Control Plan.

3.7 DISPOSAL

A. Brush, treetops, stumps, debris, and other cleared and grubbed material shall be hauled away and disposed of in accordance with applicable laws and regulations. Clean up debris resulting from clearing operations continuously with the progress of the work. Promptly remove salvageable material that becomes the property of the Contractor and is not to be reused in construction. Do not sell material on site.

B. Dispose of cleared material in a NCDEQ approved and permitted land clearing and inert debris type landfill. Obtain applicable permits and pay fees for the disposal of material.

C. Burning is not permitted on the site.

3.8 PROTECTION OF PAVEMENT

A. Remove debris in a manner that prevents spillage onto pavement.

B. Keep pavement and area adjacent to site clean and free from mud, dirt, dust, and debris.

END OF SECTION

SECTION 31 23 19
DEWATERING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary dewatering and surface water control systems for open excavations, trenches, bored crossings, and tunnels.

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions:

1. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.

2. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Dewatering in the NCDOT Right of Way: Provide submittals to NCDOT as requested and comply with NCDOT standards and requirements.

2. Railroad Rights of Way: Provide submittals to Railroad Owner as requested and comply with Railroad standards and requirements.

3. Contact North Carolina 811 by calling 811 or 1-800-632-4949 two business days before digging for locates of existing utilities. Confirm utilities have been located prior to excavating.

B. Pre-installation Meetings:

1. Conduct a Pre-installation Meeting in accordance with Construction Specification Section 01 31 00, Project Management and Coordination.

C. Sequencing and Scheduling:

1. Sequence and schedule the Work to allow sufficient time for dewatering prior to construction operations. Additional time will not be allowed due to delays resulting from dewatering.

1.4 ACTION SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that all materials provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit product data/shop drawings for equipment and materials.

D. Dewatering Plan:

1. Indicate dewatering system layout, well depths, well screen lengths, dewatering pump locations, pipe sizes and capacities, grades, filter sand gradations, surface water control devices, valves, and water disposal method and location.

2. Indicate primary and standby (when specifically requested by the Owner) power system location and capacity.

3. Indicate layout and depth of monitoring wells, piezometers, and flow measuring devices for system performance measurement.

4. Include detailed description of dewatering and monitoring system installation procedures and maintenance of equipment.

5. Include description of emergency procedures to address problems that may arise.

6. Dewatering pumps: indicate sizes, capacities, priming method, engine or motor characteristics.

7. Pumping equipment for control of surface water within excavation.

1.5 INFORMATIONAL SUBMITTALS

A. Design Data:

1. When requested by the Engineer, or when dewatering plan does not function sufficiently to provide dry trenches and open excavations, provide design data, signed and sealed by a Professional Engineer, licensed in the State of North Carolina, indicating design values, analyses, and calculations to support design. Provide geotechnical investigations including description and profile of geology, soil, and groundwater conditions.

1.6 QUALITY ASSURANCE

A. Comply with all codes, laws, ordinances, and regulations of governmental authorities having jurisdiction over this part of the work.

B. When Owner permits do not cover discharge of water, obtain permit from EPA under National Pollutant Discharge Elimination System (NPDES) for storm water discharge from construction sites.

C. Furnish and store at Project site standby equipment ready for immediate use upon failure of dewatering equipment.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

1.8 SITE CONDITIONS

A. See Construction Specification Section 02 32 00, Geotechnical Investigations for subsurface data available through Owner.

1.9 WARRANTY OR BONDS

A. Bonds:

1. Provide bonds as directed by NCDOT or railroad entities related to dewatering within their rights of way.

PART 2– PRODUCTS

2.1 DEWATERING EQUIPMENT

A. Select dewatering equipment to meet specified design and performance requirements.

2.2 ACCESSORIES

A. Provide accessories to meet specified design and performance requirements.

B. Valves and Fittings: Furnish valves and fittings to isolate each well from header pipe and to prevent loss of pump prime.

PART 3– EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting Work.

3.2 PREPARATION

A. Identify discharge location prior to installation of dewatering equipment and confirm existing permits are sufficient or obtain additional permits as necessary.

3.3 GENERAL

A. Provide dewatering and surface water control systems to permit the Work to be completed on dry and stable subgrade.

B. Excavation to subgrade, placement of bedding, pipe, and structure installation, and backfilling shall be performed in the dry.

C. No pipe shall be constructed in water and water shall not be allowed to drain through the pipe. The open end of the pipe shall be kept closed with a tight-fitting plug to prevent washing of any foreign matter into the line.

D. No structure shall be constructed in water and water shall not be allowed to flow over or rise upon any concrete masonry structure until the work has been accepted.

E. Where underground streams or springs are encountered, provide temporary drainage, well pointing, or bailing. Notify the Engineer of such conditions immediately.

F. Locate dewatering system components to allow continuous dewatering operations without interfering with installation of permanent Work and existing public rights of way, sidewalks, and adjacent buildings, structures, and improvements.

G. Install dewatering systems in accordance with City, State, and Federal agency requirements.

3.4 SURFACE WATER

A. Control surface runoff and prevent entry or accumulation of water in excavations. Do not use excavated trenches as temporary drainage ditches. Install a dewatering system to keep subgrades dry and convey ground water away from excavations.

B. Prevent surface water from ponding on prepared subgrades and from flooding project site and the surrounding area. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation. Reroute surface water runoff away from or around excavated areas.

3.5 GROUND WATER

A. When ground water is encountered in trenches or pits, furnish, install, and operate necessary machinery, appliances, and equipment to remove the water that accumulates by pumping, bailing, well-pointing, or other approved dewatering method, to the satisfaction of the Engineer. The Contractor shall perform work necessary to keep the trenches and pits entirely clear from water while bedding is being placed, pipe is being laid, masonry units are being placed, and structures are either being set or constructed.

B. Install and operate dewatering systems so that the ground water level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property. Before dewatering is started, obtain the approval of the Engineer for the method, installation, and operation of the dewatering system.

C. Maintain the dewatering system until no longer required. Release groundwater to its static level in such a manner to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted fill or backfill, and prevent flotation or movement of any structures, pipelines, and sewers.

3.6 SYSTEM OPERATION AND MAINTENANCE

A. Operate dewatering system continuously until backfill is a minimum of 4 feet above normal ground water table elevation.

B. Conduct daily observation of dewatering system and monitoring system. Make required repairs and perform scheduled maintenance.

C. Fill fuel tanks before tanks reach 25 percent capacity.

D. When dewatering system cannot control water within excavation, notify the Engineer and stop excavation work. Supplement or modify dewatering system and provide other remedial measures to control water within excavation. Demonstrate dewatering system operation complies with performance requirements before resuming excavation operations.

E. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.

F. Correct unanticipated pressure conditions affecting dewatering system performance.

3.7 DISPOSAL

A. Surface water and water removed from the trench or excavations shall be conveyed in a proper manner to a suitable point of discharge and shall comply with applicable erosion and sediment control laws as well as applicable stormwater regulations.

B. Dispose of surface and ground water in such a manner to cause no injury to public health, public or private property, Work completed or in progress, street surfaces, or which may cause any interference with the use of the streets. Water, if odorless and sediment free, may be discharged into an existing storm drain, channel, or street gutter in a manner approved by the Owner. When water is not odorless and sediment free, a means shall be provided for desilting (filtering) the water before discharge. Under no circumstances shall water be discharged into a sanitary sewer.

3.8 SYSTEM REMOVAL

A. Remove or abandon all dewatering system components in accordance with City, State, and Federal requirements. Abandon dewatering system components only when approved by Owner, and right of way, easement, and property owner.

END OF SECTION

SECTION 31 23 33
TRENCHING AND BACKFILLING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Excavating trenches for utilities.

2. Backfilling and compaction.

B. Related Requirements

1. Construction Specification Section 31 23 19, Dewatering.

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions

1. Backfill

a. Initial Backfill: Soil or aggregate materials placed in an excavated trench from the pipe springline to a point 12 inches above the top of the pipe.

b. Final Backfill: Soil or aggregate materials placed in an excavated trench from the initial backfill to finished grade.

c. Select Backfill: Select backfill shall consist of approved material imported from off-site for use as backfill. Select backfill shall not be used until all suitable trench excavation material has been placed in the trench, unless authorized by the Resident Project Representative. Unless otherwise designated on the Drawings and in the contract documents, the Contractor shall make his own arrangements for obtaining select backfill borrow and pay all costs involved.

2. Bedding: Soil or aggregate materials placed in an excavated trench from the subgrade/foundation to the base of the pipe.

3. Borrow: Borrow shall consist of approved backfill material imported from off-site.

4. Competent Person: As defined by 29 CFR 1926.32(f): “one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.”

5. Pipe Embedment: The area around a pipe in an excavated trench which includes the bedding, haunching, and initial backfill as depicted in ASTM D 2321.

6. Excavation: All material excavated, regardless of its nature or composition, shall be classified as unclassified excavation except for Rock Excavation as defined below. Excavation shall include the removal of all soil, rock not meeting the requirements stated below, rocks of all types, boulders, and all other obstacles

encountered and shown to be removed within the limits of excavation shown on the Drawings or specified herein. The cost of excavation shall be included in the appropriate Unit or Lump Sum Bid Price and no additional payment will be made for the removal of obstacles encountered within the excavation limits shown on the Drawings and specified herein.

a. Rock Excavation:

i. Consists of blasting (if necessary) and removal of rock material for the purpose of establishing the required subgrade elevation for pipe trenches and shall include stockpiling excavated material and subsequent placement or disposal of same.

ii. When rock is encountered, it will be the responsibility of the Contractor to establish the top elevation of rock by test digging with an excavator at not less than 100-foot intervals with a minimum of two in the presence of the Engineer. The Engineer shall then establish the top elevation of the rock layer and compute the quantity of material to be classified as rock, and the Contractor shall be paid accordingly.

iii. Rock is defined as material that cannot be removed with a Caterpillar Model 330 hydraulic excavator or equivalent machinery. This classification does not include loose rock, concrete, cemented gravel, or other materials that can be removed by means other than hoe-ramming or blasting, but for reasons for economy the Contractor chooses to remove said material by hoe-ramming or blasting. Rock does not include boulders smaller than 1 CY in volume.

iv. Authorized rock excavation in pipe trenches shall be limited to a width equal to the pipe diameter plus 3 feet and to a depth of the pipe invert plus 6 inches.

v. Authorized rock excavation for manholes shall be limited to the manhole outer diameter plus 4 feet to a depth of 8 inches below the manhole base.

vi. Excavation of rock beyond limit indicated, as well as remedial work required in connection with such over excavation, shall be at the Contractor's expense.

vii. There shall be no payment for rock excavated if the Engineer has not been notified to prepare measurements and confirm quantities in advance of such excavation.

7. Foundation: Soil or aggregate materials placed in an excavated trench below the subgrade where undercut excavation has been performed.

8. Haunching: Soil or aggregate materials placed from the pipe invert (top of bedding) to the springline of the pipe.

9. Springline: The midpoint or horizontal centerline elevation of the pipe.

10. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

11. Subgrade: Surface or elevation remaining after completing the trench excavation or, the top surface of the backfill (stone or soil) immediately below the pipe conduit or pipe bedding, as applicable.

12. Topsoil: Native, imported, or modified soil which is friable in texture and primarily organic in nature, free of subsoil, clumps of clayey soils, rocks, stones, and other objects over ¾" in diameter, and without weeds, roots, gravel, and other objectionable material.

13. Undercut Excavation: Removal and satisfactory disposal of all unsuitable material located below subgrade elevation performed only at the direction of the Resident Project Representative. Unauthorized undercut excavation, as well as remedial work directed by Resident Project Representative, shall be at Contractor's expense.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination

1. Contact North Carolina 811 by calling 811 or 1-800-632-4949 two business days before grading for locates of existing utilities. Confirm utilities have been located prior to excavating.

B. Preconstruction Meeting: Attend prior to mobilization, clearing, excavating, or grading.

C. Sequencing

D. Scheduling

1.4 ACTION SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Provide submittals for materials in accordance with Construction Specification Section 31 05 00, Common Results for Earthwork.

C. Dewatering Plan: In accordance with Construction Specification Section 31 23 19, Dewatering.

1.5 INFORMATIONAL SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan. Prepare under direct supervision of Professional Engineer experienced in design of this work and licensed in State of North Carolina.

C. Provide certifications for OSHA Competent Person training for Excavation.

1.6 CLOSEOUT SUBMITTALS

A. Record Documentation: Accurately record as-built elevations.

1.7 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Comply with all codes, laws, ordinances, and regulations of governmental authorities having jurisdiction over this part of the work.

C. Qualifications

1. A Certified Competent Person designated by the Contractor shall be on-site at all times when excavation or pipe installation is being conducted.

D. Furnish each material from a single source throughout the Work.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with Section 01 60 00 - Product Requirements for transporting, handling, storing, and protecting products.

1.9 SITE CONDITIONS

A. Environmental

1. Crossing, disturbing, and encroaching into wetlands and other jurisdictional waters shall be subject to the approval, permitting requirements, and permit conditions of the agencies with jurisdictional oversight, which are USACE, DWR, and in Areas of Environmental Concern, DCM.

2. Before crossing or entering a jurisdictional wetland, verify that a wetlands permit has been obtained and review and comply with the conditions of the permit. Prevent draining or modifying wetlands beyond permitting limits. For permitted disturbances, restore the disturbed areas as indicated in the Contract Documents and permit(s).

3. Before crossing streams or ditches, or working within 50 feet of streams, rivers, ponds, lakes, or Class SA waters, verify that a permit has been obtained and review and comply with the conditions of the permit. Unless otherwise permitted, shown on the Drawings, or exempted by NCDENR, roadways and utilities crossing stream, river, pond, or lake buffers or Class SA water shall be as near perpendicular as possible (the crossing is considered to be perpendicular if it intersects the stream or surface water between an angle of 75 and 105 degrees). Do not disturb more than 50 linear feet (longitudinal) of riparian buffer without approval from NCDENR. Review the NCDENR permit for specific requirements.

PART 2– PRODUCTS

2.1 SOIL AND AGGREGATE MATERIAL CLASSIFICATIONS FOR FOUNDATION, EMBEDMENT, AND BACKFILL

A. Materials listed herein include aggregates classified in accordance with NCDOT Standard Specifications Section 1005 and soils classified in accordance with the Unified Soil Classification System (ASTM Method D 2487 and D 2488.)

B. Class of embedment and backfill materials: In accordance with ASTM D 2321.

2.2 SOIL AND AGGREGATE MATERIALS

A. Acceptable use of soils and aggregates for foundation, embedment, and backfill shall be in accordance with ASTM D 2321.

B. Foundation/Stabilization Stone: NCDOT Class 57 or 67 stone or ASTM D 2321 Class 1.

C. Bedding: In accordance with the pipe embedment/laying condition type.

D. Haunching: In accordance with the pipe embedment/laying condition type.

E. Initial Backfill: In accordance with the pipe embedment/laying condition type.

F. Final Backfill: Material shall be ASTM D 2321 Class II, III, or IV-A soils (GW, GP, SW, SP, GM, GC, SM, SC, ML, CL), or a combination of these; free of rock or gravel greater than 3 inches in any dimension, debris, waste, frozen materials, vegetation, or any other deleterious matter from on-site excavations.

G. Select Backfill: Material shall be clean soil material with USCS classifications of GW, GM, SW, SP, or SM with a Standard Proctor (ASTM D698) maximum dry density of at least 100 PCF, maximum Liquid Limit of 40, Plasticity Index of 20 or less, less than 3% by weight organic or foreign matter content and no roots greater than ¼" in diameter, and no rocks greater than 3" diameter or greater than 30% retained on the ¾" sieve. Material shall also meet the requirements of NCDOT Class III, Type 2 Select Material as specified in Section 1016 of the NCDOT Standard Specifications for Roads and Structures and be approved by NCDOT prior to use when used within NCDOT roadways.

H. Flowable Fill: See Section 03 00 00 – Concrete.

I. Borrow: Material approved by the Engineer from an off-site source.

J. Topsoil: Obtained on-site or from an off-site source.

2.3 PIPE EMBEDMENT / LAYING CONDITION TYPES

A. Pressure Pipelines

1. PVC Pipe C900

a. 12-inch diameter and less

i. Up to 8 feet of cover: Type 1 unless indicated otherwise on the Drawings. Class I, II, or III embedment material.

ii. Above 8 feet to 20 feet of cover: Type 4 or 5 as indicated on the Drawings. For Type 4, haunching and initial backfill shall be Class I, II, or III embedment material.

b. Greater than 12-inch diameter: Type 4 or 5 as indicated on the Drawings. For Type 4, haunching and initial backfill shall be Class I, II, or III materials.

2. DI Pipe

a. 12-inches diameter and below: Type 1 unless indicated otherwise on the Drawings.

b. 14-inches diameter and above: Type 4 or 5 as indicated on the Drawings with pressure class as indicated on the Drawings.

2.4 GEOSYNTHETIC MATERIALS

A. See Section 31 05 00 – Common Work Results for Earthwork for geosynthetic material specifications.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify existing conditions match conditions shown on the Drawings. Notify Engineer immediately if existing conditions have changed.

B. Verify suitability of existing conditions prior to beginning excavation and backfill operations. Examine the areas and conditions under which excavation, backfilling, and compaction are to be performed and notify the Engineer, in writing, of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in an acceptable manner.

3.2 PREPARATION

A. Install sedimentation and erosion control in accordance with the Drawings, Construction Specification Section 31 25 00, Erosion and Sedimentation Controls, and the Erosion and Sedimentation Control Permit.

B. Vegetated Areas

1. Perform clearing and grubbing in accordance with Construction Specification Section 31 10 00, Site Clearing.

2. Strip topsoil to a depth of 6 inches or to the depth encountered from all areas in which excavation will occur. Strip topsoil in a manner to prevent intermingling with underlying subsoil. The topsoil shall be stored in stockpiles separate from excavated or graded materials if the topsoil is to be utilized on site. Otherwise, the topsoil shall be disposed of off-site. Maintain topsoil in accordance with the approved Sedimentation and Erosion Control Plan.

3. Remove, demolish and dispose of, or relocate existing structures and utilities as indicated on the Drawings and in accordance with Construction Specification Section 02 40 00, Selective Site Demolition. Remove, store, and protect structures and incidental items that are not scheduled for demolition or relocation for reinstallation upon completion of pipe installation.

C. Paved areas

1. Remove and dispose of existing pavement, base, and curb and gutter within the limits indicated on the Drawings and in accordance with Construction Specification Section 02 40 00 – Selective Site Demolition.

D. Protection

1. Protect and maintain existing conditions in accordance with Construction Specification Section 02 01 00, Maintenance of Existing Conditions and Section 31 10 00, Site Clearing.

2. Underpin adjacent structures which may be damaged by excavation work.

3. Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction.

4. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards caused by earthwork operations.

5. Provide traffic control in accordance with Construction Specification Section 01 55 00, Temporary Facilities and Control.

6. Comply with Owner and NCDOT requirements when working within or adjacent to roads within their respective jurisdictions.

3.3 MINIMUM PIPE COVER

A. Comply with local authorities having jurisdiction.

B. Minimum cover from top of pipe to proposed finished grade shall be 36 inches unless shown otherwise in the Contract Documents. Where the minimum cover cannot be provided, install DI pipe or encase the pipe in concrete as directed by the Engineer.

3.4 TRENCHING

A. Trenching shall be performed in accordance with OSHA Standard 29 CFR Part 1926, OSHA Subpart P “Excavation and Trenching.”

B. Accomplish trenching with equipment suitable for utility installation. Excavate trenches as required to install pipes to the lines and grades indicated on the Drawings.

C. Trenches for sanitary and storm sewers shall be excavated in straight lines. Trenches for water mains may be curved within the limits of curvature of the pipe and allowable deflection angles. The trench alignment shall not exceed the allowable vertical or horizontal pipe deflection recommended by the pipe manufacturer.

D. Trench width

1. The width of the trench at the top of the pipe shall be a width that will permit the proper construction of joints and compaction of backfill around the pipe and shall be equal to the largest outside diameter of the pipe plus 12 inches on each side of the pipe, measured at the top of the pipe.

2. Every effort shall be made to maintain the width of the pipe plus 24 inches; however, the trench width must be wide enough to provide adequate space for laying and joining pipe and appurtenances. Sufficient space shall be allowed at the joints for the free use of wrenches for tightening of bolts.

3. The minimum trench width should generally be no less than 36 inches in order to accommodate a “Rammax” type tamp.

E. The sides of the trenches shall be uniform and vertical. Vertical walls shall project at least 2 feet above the top of the pipe unless the height to finished grade is less than 2 feet. Decreasing the trench wall height may require a change in pipe material, pipe embedment or laying condition.

F. Use of boards or other materials to jack up or support the pipe will not be permitted.

G. Excavated Material

1. Place excavated material:

a. Away from the roadway

b. A minimum of 2’ from the edge of excavation

c. In a manner that will not endanger the work and that will provide access at all times to all parts of the trench.

d. To provide access at all times to fire hydrants, and gate valves located in the vicinity of the Work.

e. To minimize inconvenience to the public to the greatest extent practicable.

2. Stockpiling excavated material adjacent to the trench in a manner to prevent surcharging and potentially rendering the excavation unstable.

3. Evaluate excavated material for acceptability as trench backfill. Separate material that is acceptable for initial backfill and reserved for that use. Separate material that is acceptable for final backfill and reserved for that use.

4. Material that does not meet the requirements for backfill shall be considered unsuitable material. Unsuitable material shall be removed from the project site and disposed of in accordance with applicable laws and ordinances at the Contractor's expense.

5. Where removal of unsatisfactory material results from inadequate shoring or bracing, failure to dewater, improper material storage exposing it to rain or flooding, or other types of failure to meet Contract Documents, the work shall be performed at no additional cost to the Owner. If additional material is required to replace this material, supply it from an approved borrow site at no additional cost to the Owner.

6. Excess material shall be removed from project site and disposed at the Contractor's expense.

H. Once the trench has been excavated, proceed immediately to prepare the subgrade, place the bedding, install the pipe, and backfill the excavation. Excavating, pipe laying, and backfilling shall move forward at approximately equal rates of progress. Contractor shall excavate only as much trench as he can completely install pipe, backfill, compact, and cleanup within that working day. String out only the amount of pipe that can be installed in one day.

I. Trenches shall not be left open without proper supervision during working hours or steel plating completely covering the excavation. Prepare for and schedule the work so that trenches are not left open for a longer period of time than is reasonably necessary as determined by the Engineer.

J. Protect excavation bottoms from freezing when the atmospheric temperature is less than 35 degrees F.

K. Conduct the work to insure that solids and mud are contained within the trench and to ensure that solids and mud do not enter the existing system.

3.5 CHANGE OF TRENCH LOCATION

A. If the Engineer directs that the location of a trench be changed from that shown on the Drawings to a relatively similar location as determined by the Engineer, or if a changed location shall be authorized upon Contractor's request, Contractor shall not be entitled to extra compensation or to a claim for damage, provided that the change is made before the excavation is begun. If the change is made at the direction of the Engineer involves the abandonment of excavation already made, the abandoned excavation will be paid

for as additional excavation. Backfill in this case shall be a negotiated extra work item. In the event that the trench is abandoned in favor of a new location at the Contractor's request, the abandoned excavation and backfill shall be at the Contractor's expense. Backfill shall conform to the requirements of this Section.

3.6 TRENCHING IN FILLS

A. In areas where trenching for pipes will be in fills, the fills shall be brought to an elevation of at least 12 inches above the top of the pipe and compacted. The trench shall be excavated in the compacted fill as specified in this section.

3.7 EXCAVATION FOR STRUCTURES

A. Excavation for structures shall be in accordance with the requirements for trenches.

B. Excavate to minimum depth of 6 or 8 inches below the required bottom elevation of the structure as indicated in the details for placement of bedding.

C. Excavate to provide a minimum of 2 feet of horizontal clearance between the outer surface of the structure and the trench wall.

3.8 EXCAVATION FOR THRUST BLOCKING

A. Excavate area to receive poured in place concrete blocking to dimensions shown in the details. Blocking shall be placed in undisturbed residual soils.

3.9 PITS FOR TRENCHLESS INSTALLATIONS

A. Pits for trenchless installations shall be excavated and maintained in accordance with the requirements for trenches.

B. Pits shall not be left open without proper supervision during working hours or without steel plating completely covering the excavation after the work has been completed for the day. Prepare for and schedule the work so that pits are not left open for a longer period of time than is reasonably necessary as determined by the Engineer.

3.10 SHEETING AND BRACING

A. Where conditions permit, trench walls may have vertical sides up to a maximum depth as allowed by OSHA. Above this depth, either the entire trench wall shall be laid back in accordance with OSHA requirements, a trench box shall be used that is certified for the trench depth, or the trench shall be sheeted and braced in accordance with OSHA requirements. Furnish, install, and maintain sheeting, bracing, shoring, etc. as required to safely support the sides of the trenches.

B. Trenches in proximity to structures shall be sheeted and braced to prevent settlement or other disturbance of those structures.

C. Trenches and other excavations shall be properly sheeted and braced where necessary to accomplish the following:

1. Keep excavations within the easement and right-of-way limits, or other limits shown on the Drawings

2. Prevent shifting of materials resulting in damage to pavements, structures, pipe and utilities

3. Provide safe working conditions

D. All sheeting shall be in designed and installed in accordance with OSHA requirements, State law, and local ordinances.

E. Contractor shall be responsible for the adequacy of sheeting and bracing, for damage resulting from sheeting and bracing failure, and for placement, maintenance and removal.

F. Furnishing, placing, maintaining, and withdrawing sheeting where required shall be included in the Unit Price of the pipe or structure, and no additional payment will be made.

G. Submit detailed plans of sheeting and bracing. If the Owner is of the opinion that sufficient or proper supports have not been provided, or that additional areas must be sheeted and braced, he may order additional supports or sheeting and bracing to be installed at the expense of the Contractor.

H. All sheeting and bracing in excavations shall be withdrawn as the backfilling is performed, unless indicated otherwise on the Drawings. Where sheeting and bracing is to be removed, it shall be carefully pulled to prevent damage to the pipe or structure. Voids remaining after sheeting has been pulled shall be filled with suitable material as approved by the Engineer. The Owner may order the whole or a part of sheeting and bracing to be left in place or he may permit it to be left in place at the request and expense of the Contractor. Compensation for sheeting and bracing ordered to be left in place shall be negotiated as a change order. Unless otherwise directed, all sheeting and bracing left in place shall be cut off at least 2-feet below the finished surface of the ground or pavement.

3.11 DEWATERING

Comply with Construction Specification Section 31 23 19 – Dewatering for control of surface and ground water.

3.12 ROCK

A. When rock is encountered in the trench, the Engineer shall be notified immediately and before any rock has been blasted or removed. The Resident Project Representative will measure the rock, after which, the rock shall be excavated to a depth of 6 inches below the grade of pipe. Rock removal shall be in accordance with Construction Specification Section 31 23 16.26, Rock Removal.

B. After removal of the rock, bedding shall be placed as required for the pipe embedment or laying condition type.

C. Special precautions shall be exercised to prevent any pipe from resting on rock or any other hard projection that might cause failure of the pipe. At no time shall the pipe bell or barrel rest on rock. A minimum of 6 inches of Class 57 or 67 stone is required between the barrel of the pipe and rock. A minimum of 12 inches of clearance is required between the sides of the pipe and the rock. Thicker bedding may be required for deeper pipe. This condition shall be considered by the Engineer on a case-by-case basis.

D. Where a cast-in-place manhole, precast structure (such as a manhole or vault), or other structure will bear over rock, remove the rock to a minimum of 8 inches below the foundation or footing of the structure and place an 8-inch layer of Class 57 or 67 stone over the rock.

3.13 TRENCH SUBGRADE PREPARATION

A. All trenches shall be excavated to accommodate the bedding as shown in the details and as required in this Section. For gravity sewers, prepare subgrade and bedding for laterals in the same manner as the main.

B. Trenches for water mains and wastewater force mains shall be graded to avoid local high points. Trenches shall be graded either level or on a continuous upslope to the high points designated on the Drawings. Trenches shall be of sufficient depth to provide the minimum cover over the top of the pipe.

C. For installations on a flat bottom trench, the trench shall be excavated to the depth required to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground at every point between bell holes, except that it will be permissible to disturb and otherwise modify the finished surface over a maximum length of 18" near the middle of each length of pipe for the withdrawal of pipe slings or other lifting tackle.

D. The trench bottom shall be uniform in grade and remain static during backfilling and under all subsequent trench conditions. To insure a uniform depth of stone, the bottom of the trench shall be graded to within 0.04 foot (1/2-inch) of the plan specified grade. The stone foundation or bedding shall be graded to the same tolerance.

E. Excavate a space under each bell to sufficient length to relieve it of any load and to allow ample space for filling and finishing the joint.

F. In no case shall the pipe be brought to uniform grade by blocking up under the barrel or bell.

3.14 UNDERCUT EXCAVATION OF UNSUITABLE SUBGRADE

A. Subgrade soils which are Class V material, yielding, unstable, inadequately supporting, mucky, or otherwise unsuitable, shall be excavated a minimum of 8 inches below the specified subgrade. Remove the unsuitable material for the full width of the trench and stabilize the trench to provide an acceptable foundation. The excavated material shall be replaced with compacted foundation stone. The trench bottom shall provide a stable and continuous support for the pipe system with bell holes provided to permit jointing.

B. When the Contractor identifies potential unsuitable subgrade material, he shall notify the Engineer immediately and request review and approval for removal of the material. He shall define the limits of the material by drawing station locations and limits on the Drawings. Dewater the trench below the subgrade elevation so that the subgrade can be evaluated when dry. Wet subgrade shall not constitute unsuitable subgrade material.

C. Undercut excavation shall be approved by the Engineer prior to excavation. No payment will be made for undercut excavation that proceeds without the prior approval of the Engineer.

3.15 UNAUTHORIZED OVER-EXCAVATION

A. Care shall be taken not to over-excavate the trench. Removal of material beyond indicated trench subgrade elevations or side dimensions, without specific approval of the Engineer shall be considered unauthorized over-excavation. Trenches excavated below grade or wider that specified shall be backfilled as directed by the Engineer. No extra compensation will allowed for this work.

B. In no case shall the pipe be brought to grade by blocking under the barrel of the pipe.

3.16 FOUNDATION STABILIZATION

A. Unsuitable subgrade material shall be replaced by placement of foundation stone as directed by the Engineer.

B. Install foundation stone to no greater depth than is necessary to provide a stabilized ditch bottom, but in no case less than 8” in depth.

C. The volume of foundation stone shall be determined by multiplying the depth of undercut excavation authorized, by the allowable trench width, and then by the length of trench authorized. Foundation stone quantities shall be agreed upon at the close of each day's construction and the Resident Project Representative and the Contractor shall sign the tabulation of agreed quantities.

D. Where conversion from cubic yardage to tonnage is necessary, it shall be computed at the rate of 1 cubic yard of foundation stone weighing 4,000 pounds.

3.17 PLACEMENT OF BEDDING

A. Trenches

1. Place bedding in uniform layers and hand shape as required so that the bottom of the pipe rests uniformly upon the material for the entire length of the pipe. Bell holes and depressions required for joining the pipe shall be dug after the bedding has been graded, shaped and compacted. Depressions shall be only the length, depth, and width required to make the joint properly.

2. After placing the pipe, carefully hand tamp the bedding material with rods and shovels as required to fill the voids beneath the pipe haunches and provide full support under and around the pipe.

B. Structures

Place bedding in uniform layers. Shape, grade, and compact the bedding so that the entire bottom area of the structure rests level on the bedding.

3.18 BACKFILLING

A. Conduct backfill operations of open-cut trenches closely following bedding, laying, and jointing of pipe.

B. Embedment Backfill: Backfill by hand or mechanical means acceptable to the Engineer, from the top of the bedding to the crown of the pipe with materials as specified in Article 2.3. Do not backfill on muddy or frozen material. Place layers of backfill material in even 6-inch lifts on both sides of the pipe. Do not move, injure or disturb the pipe. Insure that uniform side support is provided throughout the length of pipe. Use only hand tamping for compaction. Exercise extreme care to avoid displacing joints and appurtenances or causing any horizontal or vertical misalignment, separation, or distortion. Repair damages, distortions, or misalignments to full satisfaction of the Engineer. Remove pipe broken or damaged during installation.

C. Backfilling Over the Pipe: Backfill from the top of the pipe to a minimum depth of 12 inches above the crown of the pipe with materials as specified in Article 2.3, providing sufficient care to prevent injuring or moving the pipe. Place backfill in even layers and compact to specified density by hand or approved mechanical means. Place layers of backfill in 6-inch lifts.

D. Backfilling to Street Subgrade: Backfill and compact from 12 inches above the crown of the pipe to the street subgrade with final backfill from native materials as specified in Article 2.2 Soil and Aggregate Materials, compacting to the required density. Compact with vibratory compaction devices such as a Rammax or jumping jack tamp. PLATE TAMPS SHALL NOT BE ALLOWED. Layers of backfill material shall be placed in maximum 12-inch lifts. Increased layer thickness may be permitted for non-cohesive material provided the Contractor demonstrates to the satisfaction of the Engineer that the specified compaction will be obtained. Contractor shall be held responsible for settlement over all trenches and he shall be required to add material and compact as directed if settlements occur.

E. Heavy equipment shall not be operated over any pipe until it has been properly backfilled and compacted with a vibratory compaction device such as a Rammax or jumping jack tamp and the minimum cover has been provided as required by the Drawings. Pipe that is misaligned, shows excessive settlement, or has been otherwise damaged by the Contractor’s operations, shall be removed and replaced at no cost to the Owner.

F. Structure Backfill: Backfill placed within 2 feet of manholes and other special structures shall be of the same quality as that specified for backfill around pipelines. Prevent wedging action of the backfill against structure by placing the material uniformly around the structure so that approximately the same elevation is maintained in each lift. Material shall be solidly tamped with a mechanical or pneumatic tamper in a manner that does not damage the structure or produce unequal pressures. Refill all excavations as rapidly as practical after completion of the structural work therein, or after the excavations have served their purpose.

G. Use of Select Backfill

1. In the event that the native materials are determined to be unsuitable for backfill by the Engineer, select backfill shall be placed in the trench. The placement of select backfill materials will not be allowed when the Engineer determines that the native soil materials are suitable for backfill and shall not be used to relieve the Contractor of exercising reasonable effort to dewater, segregate, dry, and compact native soil materials as specified.

2. The Engineer shall be the sole judge as to whether the use of select backfill is allowed. Use of select backfill shall be authorized in advance of placement.

3. For each location where select backfill is authorized, the volume shall be determined by the average depth of the fill area times the average of the bottom and top trench width times the length of the fill area authorized. Select backfill quantities shall be agreed upon at the close of each day's construction and the Resident Project Representative and the Contractor shall sign the tabulation of the agreed upon quantities. The location of each authorized use of select backfill shall be recorded by Drawing Sheet number and Station number on the tabulation. The tabulations shall be made on duplicate copies. Copies shall accompany each application for payment for this material.

H. Re-excavate trenches that have been improperly backfilled, to a depth as required for proper backfill and compaction. Backfill and compact as specified or correct to the approval of the Engineer.

I. Work performed shall not be covered prior to inspection, testing, and approval. Should any of the Work be covered prior to approval, it shall be exposed and then backfilled and compacted as specified at no additional cost to the Owner.

3.19 COMPACTION REQUIREMENTS

A. Thoroughly compact each lift in accordance with the requirements of the governing authority (NCDOT for NCDOT roadways and local municipality for municipal roadways) and the following minimum criteria:

Material Classification	AASHTO T99/ASTM D 698 Density
NCDOT Class 57 or 67 Stone Bedding	95% Standard Proctor
Initial Backfill	As per pipe embedment or laying condition type requirements
Select Backfill	95% Standard Proctor
Final Backfill – Beneath pavement, curb and gutter, and driveways up to the top 12 inches	95% Standard Proctor
Final Backfill – Top 12 inches beneath pavement, curb and gutter, and driveways	98% Standard Proctor
Final Backfill – Beneath vegetated areas	90% Standard Proctor
Aggregate Base Course	100% Standard Proctor
Backfill Around Structures	95% Standard Proctor

3.20 GRADING

A. All pipe areas shall be graded and maintained so that erosion or saturation will not damage the pipe bed or backfill.

B. All areas within the limits designated on the Drawings, including adjacent transition areas, shall be uniformly graded. Finish surfaces within the specified tolerances with uniform levels or slopes between points where elevations or existing grades are shown.

C. Protect newly graded areas from traffic and erosion, and repair and re-establish the grade in settled, eroded, or rutted areas. Where compacted areas are disturbed by subsequent construction or adverse weather, scarify the surface, reshape, and re-compact to the required density. If the Contractor fails to maintain any trench within 2 days after receipt of written notice from the Owner, the Owner may backfill said depressions and the cost of such work may be retained from monies due the Contractor. In case of emergency, the Owner may backfill any dangerous depressions without prior notice to the Contractor.

D. Grading tolerances of finished surface

1. Finish subgrade areas that are to receive topsoil. Finish elevations shall be within 0.10 foot of required subgrade elevations.

2. Shape subgrade under sidewalks to line, grade, and cross-section. Subgrade shall be brought to within 0.10 foot of required subgrade elevations.

3. Shape subgrade under pavement to line, grade, and cross-section. Bring to within 0.05 feet of required subgrade elevations.

3.21 FIELD QUALITY CONTROL

A. Compaction Tests

1. In the course of backfilling trenches and the preparation of subgrades, Owner may require compaction testing to verify that the backfilling and compaction of the trenches, pits, and excavations complies with the requirements of the Contract Documents. Contractor shall allow adequate time for testing.

2. Contractor shall engage a qualified geotechnical testing firm to perform laboratory Standard Proctor Tests in accordance with ASTM D698/AASHTO T99 to establish a moisture-density relationship for materials being used as fill. The firm will perform field density determinations in accordance with one or more of the following as recommended by the firm:

   a. ASTM D1556/AASHTO T191 (Density In-Place by the Sand Cone Method)

   b. ASTM D2167/AASHTO T205 (Density In-Place by the Rubber-Balloon Method)

   c. ASTM D2937/AASHTO T204 (Density In-Place by Drive Cylinder Method)

   d. ASTM D6938 (Density In-Place by Nuclear Method)

3. The location of the compaction testing shall be determined by the Owner or Resident Project Representative.

4. The Resident Project Representative or the Owner will observe testing.

5. Test results and inspection reports will be submitted by the testing firm directly to the Owner and Engineer.

6. Compaction testing will be paid through an Allowance as described in Section 01 20 00, Price and Payment Procedures.

B. Non-Conforming Work

1. Where density testing indicates that compaction was not achieved in accordance with the Contract Documents, the material in that lift shall be removed, replaced, compacted, and re-tested, as directed by the Engineer, until the backfill meets or exceeds the minimum density requirements.

2. Payment for failed compaction test shall be made by the Contractor by deducting the cost from the monies due the Contractor on the next Pay Application.

3.22 RESTORATION OF SITE

A. Promptly backfill, compact, grade, and otherwise restore the disturbed area to the basic condition which will permit resumption of pedestrian or vehicular traffic and any other critical activity or functions consistent with the original use of the property.

B. Upon completion of trenching and backfill operations, fine grade the site, removing all surplus excavated material, leaving the area free from surface irregularities.

END OF SECTION

SECTION 31 25 00
EROSION AND SEDIMENTATION CONTROLS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Erosion and Sedimentation Control Measures.

2. Stormwater General Permit NCG010000 and Self Inspection Requirements.

B. The work shown on the Drawings and specified herein shall constitute the erosion control plan for this project in conformance with the Sedimentation Pollution Control Act of 1973, including subsequent amendments. The erosion control plan shown is based on the anticipated construction methods and sequence, and includes the permanent and temporary measures as required. Provide additional measures as needed to prevent erosion resulting from construction activity.

C. Temporary erosion control measures shall include, but not be limited to, check dams, diversion ditches, silt fences, rip rap, grass, mulches, mats, fabric, netting, construction entrances, or any other methods or devices that are necessary to control or restrict erosion. Temporary erosion control measures may include work outside the right-of-way or construction limits where such work is necessary because of construction such as borrow pit operations, haul roads, plant sites, equipment storage sites, and disposal of waste or debris.

D. Related Requirements:

1. DEMLR Land Quality Section “Letter of Approval with Modifications and Performance Reservations” located in the appendices.

2. Construction Specification Section 32 90 00, Planting.

1.2 REFERENCES

A. Abbreviations and Acronyms:

1. The following is a partial list of typical abbreviations and acronyms used in this section. See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

DEMLR North Carolina Department of Environmental Quality, Division of Energy, Mineral and Land Resources

NPDES National Pollutant Discharge Elimination System

B. Definitions: Not used.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. General Construction Sequence:

1. Confirm locations of and construct or install gravel construction entrances, silt fences, silt fence stone filter outlets, diversion ditches, drop inlet protection, pipe inlet protection, and skimmer basins as indicated on the drawings. Install other necessary erosion control measures whether indicated on the drawings or not in accordance with the specifications.

2. Where appropriate, clear, grub, and strip topsoil to limits required for construction. Legally dispose of waste materials.

3. Begin excavation and grading activities after erosion control measures have been installed.

4. Stockpiled fill material shall be protected from sedimentation and runoff.

5. Begin construction and installation of infrastructure and permanent erosion control protection.

6. Backfill and establish finish grades as quickly as possible after pipes have been installed.

7. Establish permanent soil vegetation after pipe installation.

8. All erosion and sedimentation control measures shall be inspected weekly and after each significant rainfall. Repair measures that have failed immediately.

9. Establish ground cover on slopes following completion of grading on each phase of the work. After ground cover is well established and the sites are stabilized, remove temporary measures including silt fences, diversion ditches, skimmer basins, and other measures. Install permanent vegetation to areas disturbed by the temporary measures.

    a. Within 14 days unless noted otherwise.

    b. Perimeter dikes, swales, ditches, slopes and high quality water (HQW) zones: Within 7 days.

    c. Side slopes steeper than 3:1 (H:V): Within 7 days unless 10 feet or shorter in length and not steeper than 2:1 side slopes, then within 14 days.

    d. Side slopes between 3:1 and 4:1 and greater than 50 feet in length: Within 7 days.

10. Remove erosion control measures and restore areas affected by measures within 30 days after Engineer has determined that final site stabilization is acceptable.

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that all products provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit product data/shop drawings for geotextile fabric, rip rap and stone, hardware cloth, matting, wattle, porous baffles, compost stock, and other erosion control materials. Include manufacturer’s installation instructions.

D. Drawings: Submit scaled drawings of proposed changes in erosion control measures shown on Drawings and additional measures proposed by Contractor.

1.5 CLOSEOUT SUBMITTALS

A. Record Documentation

1.6 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Comply with codes, laws, ordinances, and regulations of governmental authorities having jurisdiction over this part of the work. The Contractor shall keep himself fully informed of such regulations which in any way affect the conduct of the work and shall observe and comply with such regulations.

C. Erosion and sedimentation controls shall comply with the North Carolina Sedimentation Pollution Control Act of 1973 including subsequent amendments and NCAC Title 15A Environment and Natural Resources, Chapter 4 Sedimentation Control as adopted by the North Carolina Sedimentation Control Commission.

D. Comply with the North Carolina Department of Environment and Natural Resources, “Sediment Control Planning and Design Manual.”

E. Comply with NPDES Stormwater General Permit No. NCG010000.

F. Construction activities shall comply with NCDOT Standard Specifications for Roads and Structures.

G. In the event of conflict between the regulations listed above and the requirements of these Specifications, the more restrictive requirements shall apply.

H. Contractor shall be liable for damages to public or private property caused by silting or slides originating in areas used by Contractor.

I. Install and maintain erosion control devices as required to function properly and to satisfy the representatives of the North Carolina Land Quality Section, Division of Land Resources, Department of Environment, Health, and Natural Resources, and the Engineer.

J. Perform a complete site inspection of the erosion control measures every week and when rainfall occurs on site (within no more than 24 hours of the event). Note and implement corrective and maintenance measures immediately. Document inspections and provide documentation to Engineer’s Project Representative weekly.

K. Contractor will not receive time extensions on the contract resulting from time delays due to a shutdown by the N. C. Land Quality Section or due to unanticipated corrective work.

L. Maintain a rain gauge on site and record daily rainfall amounts.

M. Maintain the “DWQ-DEMLR Monitoring Form” attached to the end of this Section to document inspection and monitoring requirements.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

PART 2 – PRODUCTS

2.1 GEOTEXTILE FABRIC

A. Geotextile fabric shall be protected from mud, dirt, dust, sunlight, and debris during transport and storage. Material shall be inert to commonly encountered chemicals; resistant to mildew, rot, insects, and rodents; and biologically and thermally stable. Geotextile fabric for subsurface installation shall not be exposed to direct sunlight for more than 24 hours before or during installation.

B. Silt Fence Fabric: NCDOT Standard Specifications for Roadways and Structures Section 1056 – Geosynthetics, for Type 3 engineering fabric. Fabric should contain ultraviolet ray inhibitors and stabilizers to provide a minimum construction life of six months.

C. Filter Fabric for Rip Rap: NCDOT Standard Specifications for Roadways and Structures Section 1056 – Geosynthetics, for Type 2 engineering fabric.

2.2 RIP RAP: NCDOT Standard Specifications Section 1042 – Rip Rap Materials, Class A, B, 1 or 2 as indicated on the Drawings.

2.3 CHECK DAM: NCDOT Standard Specifications Section 1633 – Temporary Rock Silt Checks.

2.4 SILT FENCE: NCDOT Standard Specifications Section 1605 – Temporary Rock Silt Fence.

2.5 STONE FOR SEDIMENT CONTROL: NCDOT Standard Specifications Section 1005 – General Requirements for Aggregate.

2.6 STONE FOR EROSION CONTROL: NCDOT Standard Specifications Section 1610 – Stone for Erosion Control.

2.7 EROSION CONTROL MATTING

A. Straw with Net Lining:

1. Straw fiber matrix sewn between two photo-degradable nets.

2. Wire staples machine made of No. 11 gage new steel wire formed into a “U” shape; not less than 6 inches long with not less than a 1-inch wide throat.

B. Curled Wood Mat:

1. Machine-produced mat of curled wood excelsior fibers, 80 percent of which are 6 inches or longer in length, evenly distributed over the entire area of the mat, with one side of the mat covered with a 1 inch by 1-inch photo-degradable extruded plastic mesh; mats minimum 47-inch width and weigh 0.975 pounds per square yard +/- percent.

2. Wire staples machine made of No. 11 gage new steel wire formed into a “U” shape; not less than 6 inches long with not less than a 1-inch wide throat.

C. Synthetic Mat:

1. Machine-produced mat of 100 percent UV stabilized polypropylene fibers. Top side of mat with netting of approximately 0.5 inch by 0.5-inch mesh size; bottom side of mat with netting of approximately 0.625 inch by 0.625-inch mesh size; mats sewn together with thread stitched on approximate 1.5 inch centers.

2. Wire staples machine made of No. 11 gage new steel wire formed into a “U” shape; not less than 6 inches long with not less than a 1-inch wide throat.

2.8 WATTLE

A. Wattle shall meet the following specifications:

100% Curled Wood (Excelsior) Fibers	
Minimum Diameter	12 in.
Minimum Density	2.5 lb/ft 3 +/-10%
Net Material	Synthetic
Net Openings	1 in. x 1 in.
Net Configuration	Totally Encased
Minimum Weight	20 lb. +/-10% per 10 ft. length

B. Anchors: Stakes shall be used as anchors. Provide hardwood stakes a minimum of 2-ft. long with a 2 in. x 2 in. nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving down into the underlying soil.

C. Matting shall meet the requirements of section 1060-8 of the NCDOT Standard Specifications, or shall meet specifications provided elsewhere in this contract.

D. Provide staples made of 0.125" diameter new steel wire formed into a “U” shape not less than 12" in length with a throat of 1" in width.

2.9 COMPOST SOCK

A. Compost used for compost filter sock filler material (filter media) shall be weed free and derived from a well-decomposed source of organic matter. The compost shall be produced using an aerobic composting process meeting CFR 503 regulations including time and temperature data. The compost shall be free of any refuse, contaminants, or other materials toxic to plant growth. Non-composted products will not be accepted. Test methods for the items below should follow US Composting Council Test Methods for the Examination of Composting and Compost guidelines for laboratory procedures:

B. pH – 5.0-8.0 in accordance with TMECC 04.11-A, “Electrometric pH Determinations for Compost”

C. Particle size – 99% passing a 2 inch (50mm) sieve and 30-50% passing a 3/8 inch (9.5mm) sieve, in accordance with TMECC 02.02-B, “Sample Sieving for Aggregate Size Classification.” (Note – In the field, product commonly is between 1/2 inch [12.5mm] and 2 inch [50mm] particle size).

D. Moisture content of less than 60% in accordance with standardized test methods for moisture determination.

E. Material shall be relatively free (<1% by dry weight) of inert or foreign man-made materials.

F. A sample shall be submitted to the Engineer for approval prior to being used and must comply with local, state, and federal regulations.

2.10 SILT SACK INLET FILTER PROTECTION:

A. Sack designed to keep silt, sediment, and construction debris out of the storm water system.

B. Sack shall fit the opening of the catch basin, drop inlet, or curb and gutter, and hang beneath the grate in the catch basin.

C. Provide integral lifting straps to allow removal of the unit for emptying and manual inspection of the storm water system.

D. For curb inlets, provide a curb filter or deflector placed in front and extending beyond the inlet opening on both sides.

E. Constructed of sewn geotextile fabric meeting the following specifications:

PROPERTY	TEST METHOD	UNITS	TEST RESULTS
Grab Tensile Strength	ASTM D 4632	lbs	255 x 275
Grab Tensile Elongation	ASTM D 4632	%	20 x 15
Puncture Strength	ASTM D 4833	lbs	130
Mullen Burst Strength	ASTM D 3786	psi	420
Trapezoid Tear Strength	ASTM D 4533	lbs	40 x 50
Apparent Opening Size	ASTM D 4751	US Std Sieve	20
Permittivity	ASTM D 4491	sec^{1}	1.5
Ultraviolet Resistance	ASTM D 4355	%	70

PART 3– EXECUTION

3.1 EXAMINATION

A. Verify existing conditions match conditions shown on the Drawings. Notify Engineer immediately if existing conditions have changed.

3.2 PREPARATION

A. Implement the Erosion & Sedimentation Control Plan prior to land disturbance other than as necessary to install erosion and sedimentation control measures. A copy of the approved plan shall be maintained on the site.

B. Permanent or temporary soil stabilization, which includes seeding, mulching, or ground cover sufficient to restrain erosion, must be applied to portions of the disturbed area in accordance with Construction Specification Section 32 90 00, Planting.

C. Immediately clean sediment transported onto public roads. Sediment shall be removed by shoveling or sweeping and be transported to a controlled disposal area.

D. Prior to suspension of operations on the project, or any portion thereof, take necessary measures to protect the construction area, including but not limited to, borrow sources,

soil type base course sources, and waste areas, from erosion during the period of suspension.

3.3 GENERAL REQUIREMENTS

A. Install temporary and permanent erosion control measures in accordance with these Specifications and with the North Carolina Erosion & Sedimentation Control Planning & Design Manual.

B. Provide diversion ditches and berms as necessary to prevent concentrated flow of water across disturbed areas.

C. Stockpile excavated material on the opposite side of the utility trenches from the watercourses to the extent that is permissible.

D. If stockpiles are placed on the watercourse side of the trench, provide silt fence or silt berms with stone filter outlets along the entire length of the stockpile that is on the watercourse side of the trench. The placement of these measures shall be at no additional cost to the Owner. Upon the completion of backfilling, the measures shall be removed and the site graded to its natural grade or as shown on plans.

E. Maintain natural buffer zones along watercourses sufficient to retain visible siltation within the first 25% of the buffer width.

F. Provide a settling basin with a gravel filter outlet for water pumped from trenches or dewatering equipment. Pumping of that water directly into any stream, pond, or watercourse is prohibited.

3.4 TEMPORARY EROSION CONTROL MEASURES

A. Temporary Gravel Construction Entrance/Exit:

1. Gravel construction entrances/exits provide a buffer area where mud and sediment can be removed from vehicles to avoid transporting it onto public roads.

2. Provide gravel construction entrances/exits wherever traffic will be leaving a construction site and moving directly onto a public road or other paved off-site area. Route site traffic to properly constructed entrances/exits.

3. Provide temporary gravel construction entrances/exits where shown on the Drawings and at additional points where vehicles enter and exit the construction site prior to disturbing the remainder of the site.

4. Locate construction entrances/exits to provide for maximum utility by all construction vehicles. Provide turning radii sufficient to accommodate large trucks.

5. Install gravel construction entrances/exits in accordance with Detail 31-03 and as follows:

a. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade it.

b. Place filter fabric to improve stability of the foundation in locations subject to seepage or high water table and on clay soils.

c. Place gravel to the specific grade and dimensions shown on the plans, and smooth it.

d. Provide drainage to carry water to a sediment trap or other suitable outlet.

6. Maintenance:

a. Check the condition of entrances/exits at a sufficient interval to enable timely maintenance before mud and sediment begin to leave the site.

b. Maintain the gravel pad in a condition sufficient to prevent tacking or direct flow of mud and sediment onto streets.

c. Provide periodic topdressing with 2- to 3-inch stone to maintain 6-inch depth.

d. After each rainfall, inspect any structure used to trap sediment and clean it out as necessary. Immediately remove all spilled, washed, or tracked onto public roadways.

7. If conditions at the site are such that most of the mud and sediment are not removed by vehicles traveling over the gravel, the tires should be washed. Washing should be performed on an area stabilized with crushed stone that drains into a sediment trap or other suitable disposal area. A wash rack may also be used to make washing more convenient and effective.

8. Immediately remove any mud, soil, sediment, and other objectionable materials spilled, tracked, or washed onto public roadways or paved areas.

9. Remove gravel construction entrance/exits after the site is stabilized and the project is complete. Stabilize the entrance/exit areas per the Drawings.

B. Silt Fence:

1. Silt fence retains sediment on site from small, disturbed areas by reducing the velocity of sheet flows to allow sediment deposition. Silt fence is appropriate for small, disturbed areas that are less than 0.25 acre per 100 feet of fence and where runoff can be stored behind the silt fence without damaging the fence or the submerged area behind the fence.

2. Provide silt fence where shown on the Drawings and as necessary to prevent erosion and deposition of soil off site.

3. Install silt fence at directional bore entry and exit points to assist with confining drilling fluid to the construction site.

4. Install silt fence on the low side of stockpiles. Extend fence around approximately 90% of the perimeter of the stockpile.

5. Do not install silt fence across streams, ditches, or waterways, or other areas of concentrated flow.

6. Install silt fence in accordance with Detail 31-01 and as follows:

a. Excavate a trench approximately 4 inches wide and 8 inches deep along the proposed line of posts and upslope from the barrier.

b. Drive support posts securely into the ground a minimum of 2 feet. When a wire mesh support fence is used, space posts a maximum of 8 feet apart.

c. Extra strength filter fabric with a 6-foot post spacing does not require wire mesh support fence. In this case, securely fasten the filter fabric directly to the posts.

d. Construct the filter fabric from a continuous roll cut to the length of the barrier to avoid joints. Where joints are necessary, securely fasten the filter cloth only at a support post with 4-foot minimum overlap to the next post.

e. Support standard strength filter fabric by wire mesh fastened securely to the upslope side of the posts. Extend the wire mesh support to the bottom of the trench. Place 12 inches of the fabric along the bottom and side of the trench,

f. Fasten the wire reinforcement, then fabric on the upslope side of the fence post with wire or plastic zip ties. Wire or plastic zip ties must have a minimum of 50 pound tensile strength.

g. Backfill the trench with soil placed over the filter fabric and compact thoroughly to ensure proper performance.

7. Maintenance:

a. Inspect silt fences at least once a week and after each rainfall. Repair immediately.

b. Replace fabric that collapses, tears, decomposes, or becomes ineffective promptly.

c. Remove sediment deposits when sediment depth behind fence reaches 6 inches, as necessary to provide adequate storage volume for the next rain, and to reduce pressure on the fence.

8. When directed by the Engineer and after the contributing drainage area has been properly stabilized, remove all fencing materials and unstable sediment deposits. Bring the area to grade and stabilize it.

C. EC Measure:

1. Purpose/Use

2. Location

3. Installation

4. Maintenance

5. How to handle if not functioning properly.

6. Remedial measures.

7. Removal and final stabilization.

D. Check Dams and Silt Fence Stone Outlets:

1. Class B erosion control stone.

2. Place filter fabric between soil and rip rap and extend across ditch.

3. Rip rap shall not exceed 24 inches in height at center and slope shall be 2:1.

4. Place rip rap over the ditch banks to keep water from cutting around the dam.

5. Construct check dam to dimensions shown on the Drawings.

E. Diversion Ditch:

1. Construct skimmer basins prior to construction of diversion ditches.

2. Strip topsoil and clear area.

3. Construct diversion ditch in locations and dimensions as shown on the Drawings.

4. Construct the ditch so that the top of the dike is not lower at any point than the design depth.

5. Vegetate the ridge immediately after construction unless it will remain in place less than 15 days.

F. Skimmer Basin:

1. Clear, grub, and strip the area under the embankment of vegetation and root mat.

2. Place acceptable fill for the embankment in accordance with Construction Specification Section 31 23 00, Excavation and Fill. Over fill the embankment 6 inches to allow for settlement.

3. Shape the basin to the specified dimensions. Prevent the skimming device from settling into the mud by excavating a shallow pit under the skimmer or providing a low support under the skimmer of stone or timber.

4. Place the barrel on a firm, smooth foundation of impervious soil. Place the fill material around the pipe spillway in 4-inch layers and compact it under and around the pipe to at least the same density as the adjacent embankment. Place a minimum depth of 2 feet of compacted backfill over the pipe spillway before crossing it with construction equipment.

5. Assemble the skimmer following the manufacturer’s instructions, or as designed.

6. Lay the assembled skimmer on the bottom of the basin with the flexible joint at the inlet of the barrel pipe. Attach the flexible joint to the barrel pipe and position the skimmer over the excavated pit or support. Be sure to attach a rope to the skimmer and anchor it to the side of the basin. This will be used to pull the skimmer to the side for maintenance.

7. Install the spillway in undisturbed soil to the greatest extent possible. The spillway should be lined with laminated plastic or impermeable geotextile fabric. The fabric must be wide and long enough to cover the bottom and sides and extend onto the top of the dam for anchoring in a trench. The edges may be secured with 8-inch staples or pins. The fabric must be long enough to extend down the slope and exit onto stable ground.

G. Temporary Seeding and Mulching: See Construction Specification Section 32 90 00, Planting.

H. Stream or Ditch Pipe Crossings:

1. Complete pipe crossing in one working day. Carefully stabilize disturbed slopes by tamping with equipment buckets and mechanical or hand tamping. Distribute topsoil evenly on slopes and tamp.

2. Where rip rap is required, carefully place as shown on the details.

3. Fertilize, seed, and mulch each crossing's slopes as soon as practicable after completing the crossing and in no case more than two weeks after disturbance of the slopes.

4. Install excelsior blankets where indicated and immediately after permanent seeding in accordance with manufacturer's recommendations. Blankets shall be installed with the netting on top and the fibers in contact with the soil over the entire area. When excelsior blankets are installed in ditches, they shall be applied in the direction of the flow of water. When installed on slopes, the blankets shall be applied either horizontally or vertically, and end and sides shall be butted snugly and stapled in accordance with manufacturer's recommendations.

5. Maintain erosion control measures.

I. Hardware Cloth and Gravel Inlet Protection:

1. Space 1.25 lb/linear foot steel stakes, 5-foot minimum length, evenly around the perimeter of the inlet a maximum of four feet apart, and securely drive them into the ground a minimum of 24 inches deep.

2. Install 19-gauge hardware cloth with 1/4-inch mesh openings around stakes. Installed height shall be 2 feet with 2 feet laid under the gravel for anchoring.

3. Place Class 57 or 67 stone around cloth to a height of 16 inches with a 2:1 outside slope to grade.

4. Fasten cloth securely to the stakes.

J. Block and Gravel Inlet Protection:

1. Lay concrete blocks on firm, smooth foundation excavated 3 inches below storm drain top. Place blocks against drain inlet for lateral support. For inlet protection required on existing paved lot, lay concrete blocks on pavement 6 inches from storm drain outlet.

2. Place at least one concrete block on its side in each bottom row of blocks.

3. Place wire mesh with 1/2-inch openings over block openings used for drainage.

K. Wire and Stone Inlet Protection:

1. Space steel posts evenly around the perimeter of the inlet a maximum of three feet apart. Securely drive the posts at least 18 inches into the ground.

2. Attach wire mesh with 1/4-inch openings as indicated on the drawings.

3. Place stone as indicated on the Drawings.

L. Rock Pipe Inlet Protection: Place rip rap and stone as indicated on the Drawings to prevent sediment migration into existing storm drains.

M. Slope matting:

1. Grade and smooth surface and remove rocks and sticks.

2. Assure placement of matting in close contact with soil as shown and staple in place.

3. Anchor top and bottom as shown.

N. Wattle:

1. Wattles shall be secured to the soil by wire staples approximately every linear foot and at the end of each section of wattle. A minimum of 4 stakes shall be installed on the downstream side of the wattle with a maximum spacing of 2 linear feet along the wattle, and according to the detail. Install a minimum of 2 stakes on the upstream side of the wattle according to the detail provided in the plans. Stakes shall be driven into the ground a minimum of 10 inches with no more than 2 inches projecting from the top of the wattle. Drive stakes at an angle according to the detail provided in the plans.

2. Only install wattle(s) according to the detail provided in the plans and as directed to a height in ditch so flow will not wash around wattle and scour ditch slopes. Overlap adjoining sections of wattles a minimum of 6 inches.

3. Install matting in accordance with the detail provided in the Drawings and with section 1631-3(B) of the NCDOT Standard Specifications, or in accordance with specifications provided elsewhere in this contract.

O. Porous Baffles:

1. Grade the basin so that the bottom is level front to back and side to side.

2. Install posts or sawhorses across the width of the skimmer basin.

3. Steel posts should be driven to a depth of 24 inches, spaced a maximum of 4 feet apart, and installed up the sides of the basin as well. The top of the fabric should be 6 inches higher than the invert of the spillway. Tops of baffles should be 2 inches lower than the top of the berms.

4. Install at least three rows of baffles between the inlet and outlet discharge point. Basins less than 20 feet in length may use two baffles.

5. Wrap porous material, like jute backed by coir material, over a sawhorse or the top wire. Hammer rebar into the sawhorse legs for anchoring. The fabric should have 5 to 10 percent openings in the weave. Attach fabric to a rope and a support structure with zip ties, wire, or staples.

6. The bottom and sides of the fabric should be anchored in a trench or pinned with 8-inch erosion control matting staples.

7. Do not splice the fabric, but use a continuous piece across the basin.

P. Compost Sock:

1. Compost filter socks should be installed parallel to the base of the slope or other disturbed area. In extreme conditions (i.e., 2:1 slopes), a second compost filter sock shall be installed at the top of the slope.

2. Stakes shall be installed through the middle of the compost filter sock on 10-foot centers, using 2 inch by 2 inch by 3 foot wooden stakes. In the event staking is not possible, i.e., when compost filter socks are used on pavement, heavy concrete blocks shall be used behind the compost filter socks to help stabilize during rainfall/runoff events.

3. Staking depth for sand and silt loam soils shall be 12 inches and 8 inches for clay soils.

4. Loose compost may be backfilled along the upslope side of the compost filter sock, filling the seam between the soil surface and the device, improving filtration and sediment retention.

5. If the compost filter sock is to be left as a permanent filter or part of the natural landscapes, it may be seeded at time of installation for establishment of permanent vegetation. The engineer will specify seed requirements.

6. Compost filter socks are not to be used in perennial, ephemeral, or intermittent streams.

Q. Silt Sack Inlet Filter Protection: Install and maintain in accordance with manufacturer recommendations.

3.5 WATER AND AIR POLLUTION

A. Exercise every reasonable precaution to prevent the eroding of soil and the silting of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces, or other property caused by construction operations.

B. Exercise every reasonable precaution to prevent pollution of rivers, streams, and water impoundments. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, and other harmful waste shall not be discharged into or alongside of rivers, streams, or impoundments, or into natural or manmade channels leading thereto.

C. Comply with state and local air pollution regulations.

D. Dust Control: Control dust within the project area and at other areas affected by the construction of the project, including, but not specifically limited to, unpaved secondary roads, haul roads, access roads, disposal sites, borrow and material sources, and production sites. Dust control shall not be considered effective where the amount of dust creates a potential or actual unsafe condition, public nuisance, or condition endangering the value, utility, or appearance of any property.

E. Noise Control: Exercise every reasonable precaution to prevent excessive and unnecessary noise. Select methods that minimize the disturbance of residents.

3.6 PERMANENT EROSION CONTROL MEASURES

A. Grass: See Construction Specification Section, 32 90 00, Planting.

3.7 MONITORING AND MAINTENANCE PLAN

A. Inspect erosion control measures weekly and within 24 hours after each rainfall totaling 0.5 inches over any 24-hour period. Make needed repairs immediately to prevent further damage and erosion. Utilize the inspection record form attached at the end of this Section to document monitoring activities and corrective actions taken. Provide records to the Owner and Engineer monthly. Structures and measures that shall be inspected include:

1. Silt Fence Stone Filter Outlet and Rock Pipe Inlet Protection: Inspect for significant erosion around the edges and between dams. Install protective rip rap liners in portions of the channel where erosion occurs. Remove sediment accumulated behind the dams as required to prevent damage to channel vegetation. Add stones to dams as required to maintain design height and cross section.

2. Skimmer Basin: Remove sediment and restore the basin to its original dimensions when sediment accumulates to one-half the height of the first baffle. Inspect the fabric-lined spillway for damage and make any required repairs with fabric that spans the full width of the spillway. Check the embankment, spillways, and outlet for erosion damage and make necessary repairs immediately. Clean the skimmer immediately if the skimmer, orifice, skimmer arm, or barrel pipe becomes clogged.

3. Porous Baffles: Remove sediment deposits when it reaches half full to provide adequate storage volume for the next rain event. Should the fabric of a baffle collapse, tear, decompose, or become ineffective, replace it promptly.

4. Stockpiles: Stockpiles shall be checked for sedimentation and stabilization.

5. Diversion Ditch: Inspect for any erosion on the ridge and in the flow areas. Remove sediment when sediment accumulates to 4 inches.

6. Inlet Protection: Hardware cloth which collapses, tears, or becomes ineffective shall be replaced immediately. Remove sediment deposits when sediment accumulates behind stone or cloth. Replenish stone as needed.

7. Rock Outlet Protection: Inspect weekly and after a 0.5-inch or greater rainfall to see if any erosion around below the rip rap has taken place or if stones have been dislodged. Repair immediately.

8. Erosion Control Matting: Monitor and repair matting as necessary until ground cover is established. Matting shall remain in close contact with ground.

9. Compost Sock: Inspect compost socks weekly and after each significant rainfall event (1/2 inch or greater). Remove accumulated sediment and any debris. The compost sock must be replaced if clogged or torn. If ponding becomes excessive, the sock may need to be replaced with a larger diameter or a different measure. The sock needs to be reinstalled if undermined or dislodged. The compost sock shall be inspected until land disturbance is complete and the area above the measure has been permanently stabilized.

10. Clean sediment transported onto public roads at the end of each day. Sediment shall be removed by shoveling or sweeping and be transported to a controlled disposal area. Street washing shall be allowed after sediment is removed in this manner.

11. Seeding, Fertilizing, and Mulching: Seeded areas shall be inspected for failure and necessary repairs shall be made within the same season.

END OF SECTION

INSPECTION AND MONITORING RECORDS FOR ACTIVITIES UNDER STORMWATER GENERAL PERMIT NCG010000 AND SELF-INSPECTION RECORDS FOR LAND DISTURBING ACTIVITIES PER G.S. 113A-54.1

Project Name		**Project #**	
Financially Responsible Party (Permittee)		**County**	
Name of Inspector		**Company**	
Address			
Phone Number		**Email Address**	

PART 1A: Rainfall Data.

Day / Date	Rain Amt (in)	Initials	Notes: Daily Rainfall Required. Except for Holidays or Weekends. If no rain, indicate with a "zero"
M			
T			
W			
Th			
F			
Sat (Optional)			
Sun (Optional)			

PART 1B: Current Phase of Project

Phase of Grading check the applicable box(es)	X	Comments
Installation of perimeter erosion and sediment control measures		
Clearing and grubbing of existing ground cover		
Completion of any phase of grading of slopes or fills - describe		
Installation of storm drainage facilities		
Completion of all land-disturbing activity, construction or development		
Permanent ground cover sufficient to restrain erosion has been established		

PART 1C: Signatures

By this signature, I certify in accordance with the NCG010000 permit & G.S. 113A-54.1 that this report is accurate and complete to the best of my knowledge.	
Landowner or Financially Responsible Party (Permittee) or Agent (Designee)	Date

GROUND STABILIZATION TIMEFRAMES		
Site Area Description	**Stabilization**	**Timeframe Exceptions**
Perimeter dikes, swales and slopes	**7 Days**	**None**
High Quality Water (HQW) Zones	**7 Days**	**None**
Slopes Steeper than 3:1	**7 Days**	**If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed**
Slopes 4:1 or flatter	**14 Days**	**7 days for slopes greater than 50' in length**
All other areas with slopes flatter than 4:1	**14 Days**	**None, except for perimeters and HQW Zones**

*For a digital copy of this form and other information, see http://portal.ncdenr.org/web/wq/ws/su/construction or http://portal.ncdenr.org/web/lr/erosion

PART 2A: EROSION AND SEDIMENTATION CONTROL MEASURES: Measures must be inspected at least ONCE PER 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL EVENT GREATER THAN 0.5 INCH PER 24 HOUR PERIOD.

Erosion and Sedimentation Control Measures Inspected						Inspection Date	Describe Actions Needed Corrective actions should be performed as soon as possible and before the next storm event	Corrected Date
Name/Number/ Location of Measure (List all measures on Plan)	Operating Properly? (Y/N)	Any Repair or Maintenance Needed? (Y/N)	*New Measures Installed **					
			Proposed Dimensions (ft.)	*Actual Dimensions (ft.)*	*Significant Deviation from Plan? (Y/N)*			

*New erosion and sedimentation control measures installed since the last inspection should be documented here or by initialing and dating each measure or practice shown on a copy of the approved erosion and sedimentation control plan.

PART 2B: STORMWATER DISCHARGE OUTFALLS (SDOs): SDOs must be inspected at least ONCE PER 7 CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL EVENT GREATER THAN 0.5 INCH PER 24 HOUR PERIOD.

Stormwater Discharge Outfalls Inspected					Inspection Date	Report Visible Sedimentation to streams or wetlands to DWQ within 24 Hours http://portal.ncdenr.org/web/wq/ Describe Actions Needed Corrective actions should be performed as soon as possible and before the next storm event	Corrected Date
Stormwater Discharge Outfall ID or Location	Any Visible Sedimentation in Streams, Wetlands or Outside Site Limits? (Y/N)	Any Increase in Stream Turbidity from Discharge? (Y/N)	Any Visible Erosion below SDO? (Y/N)	Any visible oil sheen, floating or suspended solids or discoloration? (Y/N)			

PART 2C: GROUND STABILIZATION Must be recorded after each Phase of Grading

Area Where Temporary or Permanent Ground Cover is Required	Date Land-Disturbance Stopped or Completed	Time Limit for Ground Cover 7 days or 14 days	Is Ground Cover Sufficient to Restrain Erosion? (Y/N)	Inspection Date	Describe Actions Needed	Corrected Date

*For a digital copy of this form and other information, see http://portal.ncdenr.org/web/wq/ws/su/construction or http://portal.ncdenr.org/web/lr/erosion

SECTION 32 31 13
CHAIN LINK FENCES AND GATES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Chain link fence

2. Gates

B. Related Requirements

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions: Not used.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination

1. Contact North Carolina 811 by calling 811 or 1-800-632-4949 two business days before grading for locates of existing utilities. Confirm utilities have been located prior to excavating.

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that all fences, gates, and products provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit product data/shop drawings for framing, fabric, barbed wire, accessories, concrete, and hardware. Submit dimensional drawings for framing, footings, gates, and fencing. Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components. Include manufacturers’ installation instructions.

1.5 CLOSEOUT SUBMITTALS

A. Record Documentation: Accurately record fence and gate locations.

1.6 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Perform Work in accordance with Owner standards, specifications and details.

C. Materials used for the construction of chain link fences, gates, and appurtenances shall be new and free of defects. Materials and appurtenances shall be clearly, legibly, and appropriately marked for identification purposes.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

B. Transport, deliver, receive, store, and handle all fence and gate products in accordance with manufacturer recommendations.

C. Deliver fence fabric and accessories in packed cartons or firmly tied rolls.

D. Identify each package with manufacturer's name.

E. Store fence fabric and accessories in secure and dry place.

F. Inspect products thoroughly upon arrival for damage. Remove damaged or rejected materials from the site immediately.

PART 2 – PRODUCTS

2.1 GENERAL

A. Framing, fabric, gates, and components shall be suitable for 8-foot-high fencing as shown in the Drawings.

B. Fence dimensions shall be in accordance with the Drawings.

C. All fence components shall be black UV resistant vinyl coated.

2.2 FRAMING

A. ASTM F1083, hot-dip galvanized, Schedule 40 steel pipe as follows:

1. Line Posts: 2.375" outside diameter.

2. Corner, End, and Pull Posts: 3.000" outside diameter.

3. Top and Brace Rail: 1.660" outside diameter.

B. Gate Frame: 2.000" outside diameter.

C. Gate Posts:

1. 3.000" outside diameter for gate widths 6'-0" or less.

2. 4.000" outside diameter for gate widths 6'-1" to 13'-0".

3. 6.625" outside diameter for gate widths 13'-1" to 18'-0".

4. 8.625" outside diameter for gate widths over 18'-0".

2.3 FABRIC

A. Black, UV resistant vinyl coated chain link; 2-inch diamond mesh; top selvage twisted tight; bottom selvage knuckle end closed.

2.4 BARBED WIRE

A. Aluminum or zinc-coated, 12-1/2 gage steel wire, and 14 gage steel barbs; consists of two strands of twisted wire with four-point barbs on 5-inch spacing.

B. Aluminum-Coated: ASTM A585.

C. Zinc-Coated: ASTM A121.

2.5 ACCESSORIES

A. Tension Wire: Marcelled, 7 gage metallic-coated steel wire; ASTM A824 Type I aluminum- coated, or Type II zinc-coated Class 2.

B. Tension and Brace Bands: 12 gage pressed steel, hot-dip galvanized, ¾" wide.

C. Tension Bars: Steel strip, minimum 3/16" thick by ¾" wide, hot-dip galvanized.

D. Tie Wires: 9 gage round galvanized steel wire.

E. Post Caps: Pressed steel or cast iron, hot-dip galvanized; designed to fit snugly over post and exclude moisture from inside.

F. Barb Wire Support Arms: Pressed steel or cast iron and hot-dip galvanized with provisions for attaching three rows of barbed wire vertically. Capable of withstanding 250 pounds downward pull at outermost end of arm without failure. Arms designed to fit securely over line posts. Provide hardware for attaching arms to end and corner posts.

G. Fasteners: Galvanized carriage bolts with nuts.

2.6 SWING GATE HARDWARE

A. Hinges: Structurally capable of supporting gate leaf and allow opening and closing without binding. Permit gate to swing 180 degrees inward or outward.

B. Single Gate Latch: Forked type, capable of retaining gate in closed position and have provision for padlock. Capable of operation from either side of gate.

C. Double Gate Latch: Provide drop rod to hold inactive gate leaf. Provide locking device and padlock eyes as an integral part of latch.

D. Keeper: Provide a keeper for each gate leaf over 5'-0" width, consisting of mechanical device for securing free end of gate when in full open position.

2.7 PRIVACY SLATS

A. Privacy Slats: Vinyl strips, flat configuration, sized to fit fence fabric, opaque.

2.8 CONCRETE

A. Concrete shall be 2,500 psi in accordance with Construction Specification Section 03 00 00, Concrete.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify existing conditions match conditions shown on the Drawings. Notify Engineer immediately if existing conditions have changed.

3.2 PREPARATION

A. Protection of In-Place Conditions

1. Protect and maintain existing conditions in accordance with Construction Specification Section 02 01 00, Maintenance of Existing Conditions.

2. Protect structures, utilities, sidewalks, pavements, and other facilities, along with lawns and existing exterior plants from damage caused by fence and gate installation.

3.3 INSTALLATION

A. Install chain link fencing and gates in accordance with ASTM F567- Standard Practice for Installation of Chain-Link Fence and the Drawings.

B. All line posts shall be spaced equidistant in the fence line on a maximum of 10-foot centers. Posts shall be set plumb in concrete bases. The top of the posts shall be brought to a smooth grade line. The wire fence shall be set accurately to line and grade and shall be plumb.

C. End, corner, pull, or intermediate posts shall be placed in the following locations: corners; changes in direction; abrupt changes in grade; intervals no greater than 500 feet in the fence line. Each end or gate post shall have one brace assembly and each corner or intermediate post shall have two brace assemblies.

D. Horizontal braces shall be provided at all terminal posts, corner posts, and intermediate posts at the mid-height of the posts and shall extend from the above-mentioned posts to the first adjacent line posts. Braces shall be securely fastened to the line posts by brace ends and brace bands and to the terminal posts by approved rail end connectors. Diagonal brace rods shall be trussed from the brace end on the line post back to the terminal post, corner post or intermediate post and fastened to it by an approved connector.

E. Work shall be done in a neat, substantial, craftsman like manner with each plane of fencing straight and plumb.

F. Upon completion of fence installation, all material and debris shall be removed from the job site and the fence fabric shall be adjusted as required for a first class installation.

3.4 POST FOUNDATIONS

A. Post holes shall be in true alignment and of sufficient size to provide a permanent foundation of concrete. Holes shall be well centered on the posts.

B. Post foundations shall be carefully rodded or tamped into place. The top of concrete shall be neatly troweled and leveled up from edges to the posts so as to have a pitch outward in all directions.

C. No materials shall be installed on the posts, nor shall any load be applied to the posts within 3 days after the individual post foundation is completed.

3.5 PRIVACY SLATS

A. Install slat inserts in vertical pattern woven through fence fabric.

B. Fasten slats according to manufacturers' instructions.

3.6 CLEANUP

A. Disposal: Remove surplus soil and waste material, unsuitable soil, trash, and debris and legally dispose of off-site.

3.7 PROTECTION

A. Protect chain link fence and gates from damage until accepted into service by the Owner.

END OF SECTION

SECTION 32 90 00
PLANTING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preparing subgrade for planting.

2. Spreading topsoil.

3. Applying lime and fertilizer.

4. Seeding.

5. Sodding.

6. Planting (plants and trees).

1.2 REFERENCES

A. Abbreviations and Acronyms:

1. The following is a partial list of typical abbreviations and acronyms used in this section. See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

PLS Pure Live Seed

B. Definitions:

1. Finish Grade: In terms of planting, the surface that has been established, graded, raked, and prepared to receive lime, fertilizer, seed, mulch, sod, and plantings. The finished surface of planting soil.

2. Sod: An existing established mat of grass that has been removed from one area by a mechanical harvester and transferred to a prepared subgrade at another location, used to render a finished appearance and/or provide immediate resistance to erosion.

3. Subgrade: Surface or elevation remaining after completing the excavation before placement of topsoil.

4. Topsoil: Native, imported, or modified soil which is friable in texture and primarily organic in nature, free of subsoil, clumps of clayey soils, rocks, stones, and other objects over 3/4 inch diameter, and without weeds, roots, gravel, and other objectionable material.

5. Weeds: Vegetative species other than specified species to be established in given area.

C. Reference Standards:

1. The following is a partial list of referenced standards used in this section. See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

AAN	American Association of Nurserymen
ANLA	American Nursery & Landscaping Association
NCSPA	North Carolina Sod Producers Association
TPI	Turfgrass Producers International

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that products provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data: Submit product data for seed mix, fertilizer, mulch, sod grass species, and other accessories. Include installation instructions.

D. Topsoil Analysis: Provide a topsoil analysis. Soil testing shall state percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil. The soils report shall state suitability of topsoil for lawn growth and recommend quantities of nitrogen, phosphorus, potash nutrients, and soil amendments to be added to produce satisfactory topsoil.

E. Seed certification: Seed shall be labeled to show it meets North Carolina Seed Law requirements. Seed must have been tested within 6 months of planting. A seed bag tag shall be submitted with final payment request from each type or mixture of seed used. Provide Vendor's statement for seed mixture stating botanical and common name, place of origin, strain, percentage of purity, percentage of germination, and amount of PLS per bag.

F. Sod: Every shipment of sod shall be accompanied by an invoice or sales slip indicating the variety, species, quality grade of the shipment, and date of harvest.

G. Type of herbicide to be used during first growing season to contain annual weeds and application rate.

1.5 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. A representative of the Owner must inspect, review, and approve materials to be used for planting prior to installation.

C. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging. Remove from the site seed which has become wet, moldy, or otherwise damaged in transit.

D. Furnish topsoil, seed, fertilizer, lime, sod, and other materials from a single source throughout the Work.

E. Perform work in the NCDOT right-of-way in accordance with NCDOT requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer. Store and protect fertilizer in a location where it will remain dry until application.

C. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

D. Follow the nursery’s directions for delivery and storage of seed, sod, and plant materials.

E. Deliver sod on pallets or in rolls. Protect exposed roots from dehydration. Do not deliver more sod than can be installed within 24 hours.

F. See PART 3 - EXECUTION of this Section for requirements for delivery, storage, and handling of sod materials.

1.7 PROJECT CONDITIONS

A. Temporary Seeding:

1. Denuded areas to be graded during the construction phases that are not to be brought to final grade within 30 days shall receive temporary seeding within 15 days of completing initial earthwork. Note that the time for establishment of permanent ground cover is 15 working days or 30 calendar days, whichever is shorter. Temporary seeding shall also be used to stabilize finished grade areas if the time of year is outside the specified permanent seeding periods.

2. Seed mixture shall be chosen to ensure the development of plants during the season of planting, and to ensure future growth and permanence.

B. Environmental:

1. Wetlands: Before crossing or entering jurisdictional wetlands, verify that a wetlands permit has been obtained for the encroachment and review special restrictions imposed on the project. Take care to not disrupt drainage, alter, or destroy wetlands unless a permit has been obtained, in which case, the conditions of the permit must be strictly followed. Restore areas noted on the Drawings, the Contract Documents, and/or in the permit. Encroachments shall be subject to USACOE and NCDEQ Division of Water Resources approval and permitting conditions.

1.8 WARRANTY

A. The warranty period for plantings shall be 12 months from the date of substantial completion if not designated as temporary cover.

PART 2– PRODUCTS

2.1 TOPSOIL

A. Comply with ASTM D 5268, pH range of 5.5 to 7, a minimum of 4% organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.

B. On-site Topsoil Source: Reuse surface soil stockpiled on site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth. Provide erosion control measures to prevent erosion and off-site deposition of topsoil. Obtain topsoil from naturally well-drained sites where topsoil occurs at least 4 inches in depth. Do not obtain from swamps or marshes.

C. Off-site Topsoil Source: Contractor may supplement on-site source with imported or manufactured topsoil when quantities are insufficient. Obtain topsoil from naturally well-drained sites where topsoil occurs at least 4 inches in depth. Do not obtain from swamps or marshes.

2.2 FERTILIZER

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium.

B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium.

C. Cyanic compound or hydrated lime not permitted in mixed fertilizers.

D. Application Rate:

1. For permanent seeding and sod: 600 lb/ac of 10-20-20 or according to soil tests.

2. For temporary seeding: 600 lb/ac of 10-20-20 or according to soil tests.

2.3 LIME

A. Lime shall be in accordance with ASTM C 602, “Standard Specification for Agricultural Liming Materials,” agricultural limestone containing a minimum 80 percent calcium carbonate equivalent, Class O, with a minimum 95 percent passing through No. 8 sieve and a minimum 55 percent passing through No. 60 sieve.

B. Provide a pelleted form of limestone with a water-soluble binder to speed breakdown of limestone where significant pH adjustment is necessary to establish plantings.

C. Application Rate: 4,000 lb/ac or according to soil tests.

2.4 SEED

A. Seed shall be entirely free from bublets or seed of Bermudagrass (except where specifically called for in the seed mixture), Johnson Grass, Nutgrass, Sanbur, Wild Onion, Wild Garlic, Witchweed, and Crotalaria.

B. Seed shall not contain more than 2%, singly or collectively, of crop seed other than the kind or kinds of seed specified.

C. Provide the following seed mixture according to region, application, and planting date:

Seeding Region & Application	Planting Period	Seed Mixture	Rate (lb/ac)
Mountain or Piedmont, low maintenance areas	Feb. 15 – Apr. 30 or Sep. 1 – Oct. 31	Tall fescue Pensacola Bahiagrass Kobe lespedeza	80 50 40
Mountain or Piedmont, high maintenance areas (i.e. lawns)	Feb. 15 – Apr. 30 or Sep. 1 – Oct. 31	Tall fescue blend (2 or 3 improved varieties) Rye (grain)	200 25
Mountain or Piedmont, grass lined swale	Feb. 15 – Apr. 30 or Sep. 1 – Oct. 31	Tall fescue	200
Coastal Plain, low maintenance	Apr. 1 – Jul. 15	Pensacola Bahiagrass Common Bermudagrass(*) German millet ** or Bermudagrass at 5 lb/ac*	50 10 10
Coastal Plain, high maintenance (i.e. lawns)	Mar. 1 – Jun. 30	Centipedegrass	15
Coastal Plain, high maintenance (i.e. lawns)	Apr. 1 – July 31	Common Bermudagrass	60
Coastal Plain, grass lined swale	Apr.1 – July 31	Common Bermudagrass	80

D. Provide the following temporary seed mixture according to planting date:

Planting Period	Seed Mixture	% by Weight	Rate (lb/ac)
Jan. 1 – May 1	Rye (grain)	100	120
May 1 – Aug. 15	German Millet	100	40
Aug. 15 – Dec. 30	Rye (grain)	100	120

2.5 MULCH

A. For seeded areas: Clean, seed-free, threshed straw of oats, wheat, barley, rye, beans, peanuts, or other locally available mulch material which does not contain an excessive quantity of matured seeds of noxious weeds or other species that will grow or be detrimental to seeding, or provide a menace to surrounding land. Do not use material which is fresh or excessively brittle, or which is decomposed and will smother or retard growth of grass.

B. Around trees and shrubs: Hardwood chips, shredded bark, or other material as approved by the Engineer.

2.6 SOD – Not Used

2.7 PLANTS AND TREES

A. Provide trees, plants, and ground cover of species and size identified in the plant schedule, grown in climatic conditions similar to those in locality of the Work.

B. Provide species in accordance with Standardized Plant Names, official code of American Joint Committee on Horticulture Nomenclature.

C. Label individual plants or each bundle of plants when tied in bundles.

D. Provide nursery grown stock, freshly dug. No heeled-in, cold storage, or collected stock will be accepted.

E. Provide plants that are No. 1 Grade conforming to “American Standard for Nursery Stock” of AAN. Plants shall be sound, healthy, and well-branched, with symmetrical, vigorous, and balanced root and top growth; free from disease, injurious insects, mechanical wounds, broken branches, decay, and other defects.

F. Furnish trees with reasonably straight trunks, well balanced tops, and single leader.

G. Furnish deciduous plants in dormant state, except those specified as container grown.

H. Balled and burlapped plants shall have firm, natural balls of soil.

I. Container-grown plants shall have roots well established in soil, grown in container for at least one growing season.

J. Bare root plants shall have an intact root system, cleaned of earth, wrapped immediately in wet straw, moss, or other suitable material.

2.8 WATER

A. Water shall be clean, fresh, and free of substances or matter capable of harming or inhibiting vigorous growth of grass, sod, trees, plants and groundcover.

B. Provide water from an approved source. Approval shall be received prior to use.

2.9 ACCESSORIES

A. Tree Stakes: As detailed or in accordance with State Specifications.

B. Staking Wire: Minimum 12 GA galvanized wire.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that fills and trench backfilling have been inspected and accepted by the Owner.

B. Verify that subgrades have been contoured and compacted and are ready to receive the Work of this section.

C. Examine the areas and conditions under which planting is to be performed and notify the Engineer, in writing, immediately of conditions which differ from the Drawings or which are detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

D. Examine subgrade to receive sodding and associated work and conditions under which work will be installed. Do not proceed until unsatisfactory conditions have been corrected in a manner complying with the Contract Documents and are acceptable to the installer. Starting of work within a particular area will be construed as installer's acceptance of surface conditions.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, along with lawns and existing exterior plants from damage caused by planting operations.

B. Protect undisturbed lawns, shrubs, and trees and promptly repair damages caused by seeding, sodding, and groundcover operation.

C. Protect landscaping and other features remaining as final Work.

D. Proceed with planting only when existing and forecasted weather conditions permit.

3.3 PREPARATION OF SUBGRADE

A. General:

1. Excavate, grade, and prepare subgrade for seeding and sodding in accordance with Construction Specification Section 31 23 00, Excavation and Fill; Section 31 23 33, Trenching and Backfill; and Section 31 22 00, Grading.

2. Prepare sub-soil to eliminate uneven areas and low spots. Correct any surface irregularities to prevent pocket or low areas which will allow water to stand. Maintain lines, levels, profiles, and contours. Make changes in grade gradual. Blend slopes into level areas. The subgrade upon which this work is to be placed shall be smoothly shaped and compacted to a firm, even surface conforming to the elevations shown on the Drawings.

3. When establishing finish grades, remove and dispose of clods, hard lumps, rocks, roots, litter, and other foreign matter not passing through the teeth of a hand iron rake. Tractor drawn raking equipment that compacts lawn areas will not be allowed. Fine grade the site to ensure that the finished grade conforms to the proposed finished grades as shown on the plans and the applicable standard details.

4. Dense or compacted soil areas and cut grade soil areas shall be ripped at greater than 6 inches of depth with a spring toothed ripper or similar equipment after finish grade but before tillage. Severely compacted surfaces shall be ripped to at least 12 inches of depth. No compaction soils shall be covered with soil fill until ripped.

5. Remove debris, roots, branches, and stones in excess of one inch. Remove foreign materials, weeds, and undesirable plants and their roots. Remove contaminated subsoil. Remove soft, mucky, frozen, and unsuitable material and replace with approved material.

6. Finished lawn areas shall be sufficiently high to meet paved areas and catch basins after settlement.

B. Placing Topsoil

1. Stockpile existing topsoil and replace in areas where seeding, sodding, and planting are required to a nominal depth of 4 inches. Place topsoil during dry weather.

2. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.

3. Remove roots, weeds, rocks over 1 inch in any dimension, sticks, rubbish and extraneous matter, and foreign material while spreading.

4. Manually spread topsoil close to buildings, structures, trees, landscaping, ornamental structures, and other existing items to prevent damage.

5. Lightly compact placed topsoil.

6. Remove surplus subsoil and topsoil from site.

7. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.4 APPLICATION OF FERTILIZER AND LIME

A. Prior to applying lime and fertilizer, loosen areas with a double disc or other suitable device if the soil has become hard or compacted. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil. Finish grades on slopes shall be roughened parallel to contours to maximize surface storage and minimize runoff.

B. Distribute lime and fertilizer uniformly over areas to be seeded.

C. Thoroughly incorporate lime and fertilizer into soil to a depth of at least 2” by disking, harrowing, or other approved methods. Remove stones or other substances from surface which will interfere with turf development or subsequent mowing operations.

D. Grade lawn areas to a smooth, even surface with a loose, uniformly fine texture. Roll and rake, remove ridges and fill depressions, as required to meet finish grades. Limit fine grading to areas which can be planted soon after preparation.

E. Restore lawn areas to specified condition if eroded or otherwise disturbed after fine grading and before planting.

3.5 RESTORATION OF VEGETATION - GENERAL

A. The work to be done to acquire the necessary vegetative cover shall include but is not limited to preparation of the subgrade, application of lime and fertilizer, seeding, mulching to hold the seed and soil in place until germination and growth occur, and sodding.

B. Restore vegetation as the work progresses. Areas to be protected by vegetative cover include areas disturbed during construction that are not otherwise stabilized by gravel, concrete, asphaltic paving, or other impervious built-upon surface.

C. All disturbed surfaces shall be vegetated, non-erosive, and stable within 15 working days of completion of the land disturbing activity. In areas where construction will resume later than 15 days, provide temporary seeding to restore vegetation until construction resumes.

D. Permanently restore disturbed areas as soon as practical after completion of construction in an area but in no less than 15 working days.

E. Maintained vegetated areas to prevent erosion throughout the life of the project.

F. Restore disturbed areas as specified but in no case less than the original vegetative condition.

G. When established residential or commercial lawns are disturbed, permanent grass seeding shall match existing grass type. When unmaintained areas are disturbed, permanent grass seeding shall be appropriate for the region and conditions. Unless noted otherwise, Piedmont and Mountain region projects shall use a Tall Fescue blend and coastal region projects shall use Centipedegrass or common Bermudagrass.

H. Portions of the project area are in developed areas with established lawns which extend from the property line to the pavement edge. In some situations, the Owner may direct the Contractor to provide sodding for specific lawns. In these situations, provide sodding that matches the existing type of grass. This could include the following types of sod: Bermuda, Carpet, Centipede, St. Augustine, and Zoysia.

I. In general, where streets have roadside ditches, the area from the edge of pavement to the centerline of the ditch will be seeded or sodded, depending on the existing condition of the grass. The Owner or Engineer will determine which areas will be sodded.

J. Areas disturbed the construction limits and without Owner authorization shall be restored by the Contractor to the requirements of this Section at his own expense.

K. Apply water to seeded, sodded, and planted areas as necessary to provide vigorous growth.

L. Alternative methods such as hydro-seeding or hydro-mulching may be considered on an individual basis.

3.6 PERMANENT AND TEMPORARY SEEDING

A. Seed NCDOT rights-of-way in accordance with NCDOT specifications and the requirements of the approved encroachment agreement.

B. Apply the proper seed mixture at the specified rate for the proper growing period.

C. Where utilities are installed through a manicured lawn, the seeding shall be modified to restore ground cover to match the existing lawn.

D. Do not use seed which is wet, moldy, or otherwise damaged.

E. Employ satisfactory methods of sowing using mechanical power-driven drills or seeders, mechanical hand seeders, or other approved equipment.

F. Distribute seed evenly over entire area, 50 percent sown in one direction, remainder at right angles to first sowing.

G. Do not sow immediately following heavy rain or when winds are over 12 mph.

H. Lightly rake seed into soil followed by light rolling or cultipacking.

I. Do not seed areas in excess of that which can be mulched on same day.

J. Provide the proper care of the seeded area during the period that vegetation is being established. In the event of an erosive rain before an adequate stand of vegetation has been established, damaged areas shall be re-graded, re-limed, re-fertilized, reseeded, and re-mulched at the Contractor's expense.

K. A stand of grass shall be considered acceptable when area cover is at least 95%. Overseed and otherwise maintain the grassed areas until the stand of grass has reached a uniform height of 3 to 4 inches and a state of uniform species maturity. Annual weed grasses and grain weeds shall not be considered part of the area cover, and seeding stands shall not be considered acceptable until the stand reaches a state of uniform post-seeding maturity for the specified species.

L. If straw mulching results in competing stands of grain, maintenance shall include mowing of the grain weed stand to a height of 4 inches prior to reaching a height of 10 inches. Grain weed stands shall not be considered part of the minimum 95% area cover. Unacceptable grass stands shall be aerated and overseeded at half the original rate, as many times as necessary to establish an acceptable stand.

3.7 MULCHING

A. Immediately protect seeded areas against erosion by mulching. Spread mulch in continuous blanket using 2 tons per acre to a depth of 4 or 5 straws. Apply asphaltic tack at 0.10 gallons per square yard or as otherwise recommended by manufacturer.

3.8 EROSION FABRIC

A. Cover seeded slopes where grade is 3:1 or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.

B. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.

C. Secure outside edges and overlaps at 36 inch intervals with stakes.

D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.

E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.9 SODDING

A. Existing sod stands may be carefully taken up, protected, and replaced to their original condition, or the Contractor may elect to install new sod of the same grass type.

B. After inspection and approval of the source of sod by the Owner, the sod shall be cut with approved sod cutters to such a thickness that after it has been compacted, it shall have a uniform thickness of not less than 2 inches. Sod sections or strips shall be cut in uniform widths, not less than 10 inches, and in lengths of not less than 18 inches, but of such length as may be readily lifted without breaking, tearing, or loss of soil. Where strips are required, the sod must be rolled without damage with the grass folded inside. The Contractor may be required to mow high grass before cutting sod.

C. The sod shall be transplanted within 24 hours from the time it is stripped, unless circumstances beyond the Contractor's control make storing necessary. In such cases, sod shall be stored in an unrolled condition, irrigated, and protected from exposure to air drafts and sun and shall be kept from freezing. Sod shall be cut and moved only when

the soil moisture conditions are such that favorable results can be expected. Where the soil is too dry, permission to cut sod may be granted only after it has been watered sufficiently to moisten the soil to the depth the sod is to be cut.

D. Sodding shall be performed only during the seasons when satisfactory results can be expected. Frozen sod shall not be used and sod shall not be placed upon frozen soil. Sod may be transplanted during periods of drought with the approval of the Director, provided the sod bed is watered to moisten the soil to a depth of at least 4 inches immediately prior to laying the sod.

E. The sod shall be moist and shall be placed on a moist earth bed. Do not handle sod with pitchforks. Do not dump sod from vehicles. Carefully place sod by hand, edge to edge and with staggered joints, in rows at right angles to the slopes, commencing at the base of the area to be sodded and working upward. Immediately press sod firmly into contact with the sod bed by tamping or rolling with approved equipment to provide a true and even surface, and ensure knitting without displacement of the sod or deformation of the surfaces of sodded areas. Where the sod may be displaced during sodding operations, when replacing it, the workmen shall work from ladders or treated planks to prevent further displacement. Screened soil of good quality shall be used to fill cracks between sod sections. The quantity of the fill soil shall not cause smothering of the grass.

F. When laid on surfaces of slopes which may cause sod to slide due to the height and slope of the surface or due to the nature of the soil, sod shall be stabilized by a method acceptable to the Owner to ensure proper binding and to prevent slippage. Anchoring is best achieved by using wooden pegs 6 to 10 inches long to anchor the sod to the slope. To avoid interference with the future mowing operations, pegs shall be driven beneath the mower cutting height. Curvilinear shapes and forms shall be cut and trimmed with a sharp cutting tool to assure proper shapes and forms.

G. Where the grades are such that the flow of water will be from paved surfaces across sodded areas, the surface of the soil in the sod after compaction shall be set approximately 1 inch below the pavement edge. Where the flow will be over the sodded areas and onto the paved surface around manholes and inlets, the surface of the soil in the sod after compaction shall be placed flush with pavement edges.

H. Adequate water and watering equipment must be on hand before sodding begins, and sod shall be kept moist until it has become established and its continued growth assured. Water sodded areas a minimum of 1 inch of water, twice per week until re-established and at least once per week thereafter until work is accepted. Watering shall be done in a manner, which will avoid erosion from the application of excessive quantities and will avoid damage to the finished surface.

3.10 PLANTING

A. General:

1. Place and orient plants and trees for best appearance.

2. Set plants and trees vertically.

3. Remove non-biodegradable root containers.

4. Set plants and trees in pits or beds, partly filled with prepared plant mix, at minimum depth as indicated on Drawings under each plant. Remove or loosen burlap, ropes, and wires from top half of root ball.

5. Place bare root plant and tree materials so roots lie in natural position. Backfill soil mixture in 6-inch layers. Maintain plant and tree materials in vertical position.

6. Saturate soil with water when pit or bed is half full of topsoil and again when full.

B. Plant Relocation and Re-planting:

1. Relocate plants as indicated on the Drawings.

2. Ball or pot removed plants when temporary relocation is required.

3. Replant plants in pits or beds, partly filled with prepared topsoil mixture, at minimum depth as indicated on Drawings under each plant. Remove or loosen burlap, ropes, and wires from top half of root ball.

4. Place bare root plant materials so roots lie in natural position. Backfill soil mixture in 6-inch layers. Maintain plant materials in vertical position.

5. Saturate soil with water when pit or bed is half full of topsoil and again when full.

C. Installation of Accessories:

1. Place mulch beds around plants where indicated on Drawings.

2. Wrap deciduous shade and flowering tree trunks and place tree protectors.

3. Brace plants vertically with plant-protector-wrapped guy wires and stakes to the following:

Tree Caliper	Tree Support Method
1 inch	1 stake with one tie
1 - 2 inches	2 stakes with two ties
2 - 4 inches	3 guy wires [with eye bolts and turn buckles]
Over 4 inches	4 guy wires [with eye bolts and turn buckles]

D. Field Quality Control:

Plants and trees will be rejected when ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

3.11 MAINTENANCE

A. Begin maintenance of planted areas immediately after each portion is planted and continue until final acceptance.

B. Provide general care for the restored areas as soon as the areas have been seeded and mulched, sod has been laid, and plantings have been installed. Such care shall continue until grass is well established and exhibits vigorous growing condition and through final inspection and acceptance of the work. Restored areas shall be protected against traffic or other use by warning signs or barricades as approved by the Owner.

C. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, re-grading, and replanting as required to establish a smooth, uniform lawn, free of weeds and eroded or bare areas.

D. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper use of herbicides.

E. Provide and maintain temporary piping, hoses, and watering equipment as required to convey water from water sources and to keep planted areas uniformly moist as required for proper growth. Provide a suitable backflow prevention device for filling of water tank trucks or trailers. Lay out temporary lawn watering system and arrange watering schedule to avoid walking over muddy and newly seeded areas. Use equipment and water to prevent puddling and water erosion and displacement of seed or mulch. Water sodded, seeded, and planted areas as necessary for providing for vigorous growth of sod, seed, and plants.

F. Mow the sodded and seeded areas with approved mowing equipment as soon as there is enough top growth to cut with mower set at recommended height for principal species planted. Repeat mowing as required to maintain height. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Time initial and subsequent mowings as required to maintain a height of 2 to 3 inches. Do not mow lower than 2 inches.

G. In the event that weeds or other undesirable vegetation are permitted to grow to such an extent that, either cut or uncut, they threaten to smother the species, they shall be mowed and the clippings raked and removed from the area.

H. Maintenance of sodded lawn areas, shall include watering until a depth of 4 inches is wet, spot weeding, mowing, application of herbicides, fungicides, insecticides and re-sodding until a full, uniform stand of grass, free of weeds, undesirable grass species, disease and insects is achieved and accepted. Water sod thoroughly as required to establish proper rooting.

I. Re-mulch with new mulch in areas where mulch has been disturbed by wind or maintenance operations sufficiently to nullify its purpose. Anchor as required to prevent displacement.

J. Unacceptable plantings are those areas that do not meet the quality of the specified material, produce the specified results, or were not installed to the specified methods.

3.12 CLEANUP

A. Remove surplus soil and waste material, unsuitable soil, trash, and debris and legally dispose of off-site.

3.13 PROTECTION

A. After seeding and mulching, care shall be taken to prevent runoff and destruction of seeded areas.

3.14 FINAL ACCEPTANCE

A. Lawns will be acceptable when requirements, including maintenance, have been met, and a healthy, uniform, close stand of specified grass is established, free of weeds, bare or dead spots, and surface irregularities.

END OF SECTION

SECTION 33 01 10.58
DISINFECTION OF WATER UTILITY PIPING SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Disinfection of new water mains.

2. Disinfection of repaired water mains.

B. Related Requirements:

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions: Not Used.

C. Reference Standards:

1. The following is a partial list of referenced standards used in this section. See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

AWWA B300 Hypochlorites

AWWA B301 Liquid Chlorine

AWWA C651 Disinfecting Water Mains

AWWA Manual M12, Simplified Procedures for Water Examination

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with Owner for interruption of service, operation of valves, line cut-ins, or placement of a tapping sleeve and valve in accordance with Construction Specification Section 33 14 13, Water Utility Distribution Piping.

B. Coordinate and schedule disinfection of water mains with Owner at least one week in advance. Owner shall be present during disinfection operations.

C. Notify residents in writing at least 48 hours prior to interruption and then again 24 hours prior to interruption.

D. Pre-disinfection Meeting: Conduct a pre-disinfection meeting with Owner and RPR a minimum of 24 hours before disinfection to review the process and procedure required by Owner. Comply with Owner requirements.

E. Sequencing:

F. Scheduling:

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that materials and products provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit product data/shop drawings for materials and products.

D. Bacteriological Test Reports.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Testing Agencies: Company specializing in testing potable water systems, certified or approved, as required by local or state authorities.

PART 2 – PRODUCTS

2.1 FORMS OF CHLORINE:

A. Liquid Chlorine

B. Sodium Hypochlorite Solution

C. Calcium Hypochlorite Granules or Tablets

PART 3 – EXECUTION

3.1 GENERAL

A. Basic Disinfection Procedure (AWWA C651-05):

1. Inspect materials to be used to ensure their integrity.

2. Prevent contaminating materials from entering the water main during storage, construction, or repair. Note potential contamination at the construction site.

3. Remove, by flushing or other means, those materials that may have entered the water main.

4. Chlorinate any residual contamination that may remain, and flush the chlorinated water from the main.

5. Protect the existing distribution system from backflow caused by hydrostatic pressure test and disinfection procedures.

6. Document that an adequate level of chlorine contacted each pipe to provide disinfection.

7. Determine the bacteriological quality by laboratory test after disinfection.

8. Final connection of the approved new water main to the active distribution system.

3.2 PREPARATION

A. Comply with guidelines in AWWA C651 for preventive and corrective measures during construction.

3.3 METHODS OF CHLORINATION FOR NEW MAINS

A. Comply with one of the three methods of chlorination in AWWA C651 required by Owner:

1. Tablet Method

2. Continuous Feed Method

3. Slug Method

3.4 FINAL FLUSHING

A. Provide final flushing in accordance with AWWA C651.

B. Clear the main of heavily chlorinated water.

C. Where there is any possibility that the chlorinated discharge will cause damage to the environment, apply a neutralizing chemical to the water to thoroughly neutralize the residual chlorine.

3.5 FINAL CONNECTIONS TO EXISTING MAINS

A. Follow sanitary construction practices during installation of the final connection so that there is no contamination of the new or the existing water main.

B. Comply with AWWA C651 for connections.

3.6 DISINFECTION PROCEDURES WHEN CUTTING INTO OR REPAIRING EXISTING MAINS

A. Comply with the following procedures in AWWA C651 when existing mains are wholly or partially dewatered:

1. Provide trench treatment.

2. Swab or spray (with a 1% hypochlorite solution) the interior of pipe and fittings used in making the repairs before they are installed.

3. Flush toward the work area from both directions if possible.

4. Where practical, in addition to the procedures above, the section of the main in which the break is located shall be isolated, service connections shut off, and the section flushed and chlorinated as described in AWWA C651 Section 4.4.4.

5. Take bacteriological samples following the procedures in AWWA C651 Section 5.1.3.

B. AWWA C651 indicates that the existing main may be returned to service prior to the completion of bacteriological testing after the appropriate procedures have been completed, in order to minimize the time customers are without water. The Owner will determine when the main can be placed back into service.

3.7 SPECIAL PROCEDURE FOR CAULKED TAPPING SLEEVES

A. In accordance with AWWA C651, before a tapping sleeve is installed, thoroughly clean the exterior of the main to be tapped and the interior surface of the sleeve by lightly dusting with calcium hypochlorite powder.

3.8 BACTERIOLOGICAL TESTS

A. Comply with AWWA C651 for performing bacteriological tests.

B. If the initial disinfection fails to produce satisfactory bacteriological results or if the other water quality is affected, re-disinfect the mains in accordance with AWWA C651. Complete the bacteriological tests again and repeat the disinfection and testing cycle until acceptable results are obtained.

END OF SECTION

SECTION 33 01 30.42
CLEANING OF MANHOLES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Cleaning of manholes in preparation for inspection and rehabilitation.

B. Related Requirements

1. Construction Specification Section 33 01 30.81, Manhole and Wetwell Rehabilitation

1.2 REFERENCES

A. Abbreviations and Acronyms

1. The following is a partial list of typical abbreviations and acronyms used in this section. See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

CCTV Closed-circuit television

B. Definitions

1. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.

2. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination

1. Cleaning shall not proceed until the submittals have been approved by the Engineer and returned to Contractor and proper notification has been given to Owner.

B. Pre-installation Meetings

1. Conduct a Pre-installation Meeting concurrently with the CCTV Inspection Pre-installation meeting if required by Engineer or Owner in accordance with Construction Specification Section 01 31 00, Project Management and Coordination. Article 1.5 Pre-installation Meetings.

2. In addition to the requirements of Construction Specification Section 01 31 00, Article1.5, review the following:

a. Identify the equipment operator

b. Equipment type and operation

c. Bypass Pumping Plan

d. Sequencing

e. Scheduling

1.4 ACTION SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that material, and other products provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data: Submit product data for cleaning equipment and products. Provide Material Safety Data Sheets (MSDS) for cleaning products.

1.5 INFORMATIONAL SUBMITTALS

A. Safety Plan including confined space entry protocol to meet OSHA requirements.

1.6 CLOSEOUT SUBMITTALS

A. Record Documentation: Video or photographs of cleaned manhole immediately prior to rehabilitation.

1.7 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Qualifications

1. Provide operators that can demonstrate experience with cleaning manholes and structures.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

1.9 FIELD CONDITIONS

A. Existing Conditions

1. Manholes to be rehabilitated under this Contract are old and may be in very poor structural condition. Use extreme caution during cleaning of manholes. If cleaning operations begin to damage manhole, stop cleaning that manhole and report the condition to the RPR immediately.

PART 2 – PRODUCTS

2.1 CLEANING PRODUCTS

A. Dispose of cleaning products as recommended by the MSDS.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that the size, location, and invert of the existing sanitary sewer manholes are as indicated on the Drawings.

3.2 PREPARATION

A. Protect in-place conditions in accordance with Construction Specification Section 02 01 00, Maintenance of Existing Conditions.

B. Bypass wastewater flow from pipes entering the manhole in accordance with the Bypass Pumping Plan where the manhole cannot be completely cleaned and inspected when directed by the Engineer or Owner.

3.3 CLEANING

A. Clean the interior surfaces of the manhole of debris, dirt, oil, grease, remains of old coating materials, and any other extraneous materials.

B. Pressure wash manhole walls with high-pressure water blasting at approximately 2,000 to 5,000 psi to remove loose mortar, concrete, debris, and grease and oil residues and to prepare the surface to ensure a reliable mechanical bond with the coating system.

C. Remove debris from the manhole and incoming sewer connections. Do not discharge debris downstream through the sanitary sewer system.

D. Wastewater from cleaning operations can be discharged to the Owner's sewer provided solids have been removed and the wastewater has been filtered through a de-silting device.

E. Properly dispose of debris and residue from cleaning operations at a suitable landfill in accordance with local, state, and federal requirements.

3.4 REPAIR AND RESTORATION

A. Repair manholes or structures damaged by cleaning operations.

3.5 FIELD QUALITY CONTROL

A. Make provisions for the RPR to enter the manhole in accordance with OSHA requirements to observe the condition of the cleaned manhole.

END OF SECTION

SECTION 33 01 30.81
MANHOLE AND WETWELL REHABILITATION

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Rehabilitation of Sanitary Sewer Manholes and Wastewater Pumping Station Wetwells. Requirements for wetwells are as stated for manholes.

B. Related Requirements:

1. Construction Specification Section 33 01 30.42, Cleaning of Manholes.

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements, for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions:

1. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.

2. Informational Submittals: Written and graphic information and physical samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

C. Reference Standards: Below is a partial list of referenced Standards. See Construction Specification Section 01 40 00, Quality Requirements, for a list of reference standards used throughout the Contract Documents.

1. ASTM F2551: Standard Practice for Installing a Protective Cementitious Liner System in Sanitary Sewer Manholes

2. ASTM C150: Standard Specification for Portland Cement Type I

3. ASTM C33: Standard Specification for Concrete Aggregates

4. ASTM C78: Standard Test Method for Flexural Strength of Concrete; Using Simple Beam with Third Point Loading

5. ASTM C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)

6. ASTM C157: Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete

7. ASTM C267: Test Methods for Chemical Resistance of Mortars, Grouts and Monolithic Surfacings and Polymer Concretes

8. ASTM C293: Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center-Point Loading)

9. ASTM C309: Specification for Liquid Membrane-Forming Compounds for Curing Concrete

10. ASTM C321: Standard Test Method for Bond Strength of Chemical-Resistant Mortars

11. ASTM C348: Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars

12. ASTM C494: Standard Specification for Chemical Admixtures for Concrete

13. ASTM C496: Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens

14. ASTM C666: Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing

15. ASTM C882: Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete by Slant Shear

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Rehabilitation shall not proceed until the submittals have been approved by the Engineer and returned to Contractor.

2. Coordinate work with Owner.

3. Conduct installation operations and schedule work and cleanup in a manner that causes the least possible obstruction and inconvenience to traffic, pedestrians, businesses, and property owners and tenants.

B. Pre-installation Meetings:

1. Conduct a Pre-installation Meeting in accordance with Construction Specification Section 01 31 00, Project Management and Coordination, Article 1.5, Pre-installation Meetings.

2. In addition to the requirements of Construction Specification Section 01 31 00, Article 1.5, review the following:

a. Product and System Installers.

b. Equipment Type and Operation.

c. Bypass Pumping Plan.

d. Sequencing.

e. Scheduling.

1.4 ACTION SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit for each product and system stating that the product or system is in compliance with the requirements of this specification and with applicable standards (ASTM, AASHTO, etc.) for production and testing.

C. Product Data/Shop Drawings: Submit product data/shop drawings for rehabilitation and replacement materials, products, and systems.

1. Product and system material type and manufacturer, including catalog data sheets, ASTM references, material composition, manufacturer's recommended specifications, component physical properties, and chemical resistance.

2. Manufacturer's recommended procedures for handling and storing materials, including a proposed method for monitoring temperatures of the storage location, if applicable, to the specific product or system.

3. Manufacturer's detailed description of the recommended material installation or application process, including mixing, additives, set time, cure time (return to service), and equipment required for quality product delivery.

4. Technical data sheets describing each rehabilitation component to be applied or installed, stating the expected longevity of the component in a wastewater environment. Data shall be based on independent third party tests.

5. Manufacturer's detailed description of required field testing processes and procedures.

6. Copies of independent testing performed on the rehabilitation component, indicating that the product meets the requirements of the Contract Documents and the manufacturer's design.

7. Project specific data for manhole repair materials to be used in conjunction with each rehabilitation component(s), including application cure time and surface preparation procedures.

8. Certification that backup installation equipment is available on the job site or can be delivered to the job site by the morning of the next business day.

9. Shipping information, including shipped item, manufacturer, stock and lot number, date shipped, origination and delivery locations, shipping method, and carrier.

10. All shipping, storage, and safety requirements, including MSDS documents.

11. Date delivered to project site, including name and signature of receiver.

D. Qualification Statements:

1. Submit information to document the experience of the Contractor, proposed project manager, superintendent, and other lead personnel performing work on this contract, as described in under Qualifications below. Submit ten projects completed in the last three years by both contractor and on-site superintendent to

include owner name, address, telephone number, contact person, date and duration of work, location, and product information.

2. Current documentation from the product manufacturer certifying that the installer's training, personnel, and equipment comply with their product Quality Assurance requirements.

3. Certified statement from the manufacturer that the Contractor and installer are approved installers of the products and systems. Include certificates of completed training for each crew member involved in each product.

E. Delegated Design Submittals: Where structural rehabilitation is required by the Contract Documents, provide design calculations, sealed by a registered Professional Engineer, indicating that the rehabilitation product or system is designed for the existing project site conditions and conditions the structure will be exposed to during the service life. Design calculations shall be supported by third party material testing. Structural rehabilitation consists of application of build-back materials or liners that support a portion or all of the earth, hydrostatic, and dynamic loadings.

F. Test and Evaluation Reports: Provide testing data that documents product service life.

G. Bypass Pumping Plan: In accordance with Construction Specification Section 01 51 39.10, Temporary Bypass Pumping of Wastewater Pipelines or Construction Specification Section 01 51 39.11, Temporary Bypass Pumping of Wastewater Pump Stations as applicable.

H. Installation Plan:

1. Describe procedures for cleaning and preparing the manhole structure prior to application or installation, pre-inspections, substrate testing, verification of acceptability of the products and systems to be applied, sewage flow maintenance, traffic control, installation procedures, and quality control.

2. Indicate tools and equipment required for a complete application or installation. Identify which tools and equipment will be redundant on the job site in the event of equipment breakdown. Outline the mitigation procedure to be implemented in the event of key equipment failure during the installation process.

I. Installation Schedule: A detailed installation schedule that includes components of the installation plan.

J. Quality Control Plan (QCP): A detailed plan including the following:

1. Detailed descriptions of the proposed quality controls to be performed by the Contractor.

2. Defined responsibilities of each of the Contractor's personnel for assuring that quality control requirements are met.

3. Proposed procedures for quality control, product sampling, and testing shall be defined.

4. Proposed methods for product performance controls, including method of and frequency of product sampling and testing both in raw material form and cured product form, as applicable.

5. Schedule for performance and product test result reviews at progress meetings.

6. Inspection forms and guidelines for quality control inspections prepared in accordance with these specifications.

7. A checklist containing key elements of the product or system criteria, represented in the QCP, for the Owner's representative to ensure that quality control and testing requirements are performed in accordance with the Contract Documents.

8. Proposed methods and procedures for product or system repair or replacement in the event of product defects or total failure.

K. Product or System Repair or Replacement:

1. Manufacturer shall outline specific repair or replacement procedures for potential issues and defects that may occur during the application of the products and systems. Repair or replacement procedures shall be as recommended by the product or system manufacturer, subject to the approval of the Engineer.

2. A detailed step-by-step repair procedure, resulting in a finished product meeting the projected service life of the product or system and requirements of these Contract Documents, shall be provided by the manufacturer

3. Issues and defects that will not affect the operation and long-term life of the product shall be identified and defined by the manufacturer and subject to the approval of the Engineer.

4. Un-repairable issues or defects shall result in the removal and replacement of the product or system.

5. Contractor shall receive no additional compensation for the repair or replacement of products or systems deemed non-conforming to the requirements of the Contract Documents by Engineer and unacceptable by Owner.

L. Installation Records: For each manhole rehabilitation, a complete and accurate record of products and systems installed or applied. The record shall include identifying manhole number, location, and quantities of rehabilitation components installed.

M. Field Quality Control Submittals: Submit quality assurance documentation and test reports for products and systems installed or applied.

1.5 INFORMATIONAL SUBMITTALS

A. Safety Plan:

1. Submit a Safety Plan to Engineer prior to beginning any work. Engineer will forward it to Owner without review.

2. Plan shall identify competent persons, equipment, operating procedures, and emergency procedures to be implemented in the event of a safety incident. The Plan shall provide a description of a daily safety program and regular safety meeting for the project. Work shall be conducted in accordance with the Contractor's submitted Safety Plan.

3. Conform to work safety requirements of pertinent regulatory agencies and secure the site for working conditions in compliance with the same. Erect signs and other devices as necessary for the safety of the work site.

4. Perform Work in accordance with applicable OSHA safety standards. Emphasis shall be placed upon the requirements for entering confined spaces and with the equipment being utilized for manhole rehabilitation components.

5. Maintain on the project site at all times the following minimum safety equipment:

   a. Gas monitor capable of testing and detecting for combustible gas, oxygen deficiency, and hydrogen sulfide.

   b. Confined space access and retrieval winch system.

   c. Ventilating fans with large diameter ventilating hose.

   d. Supplied air respirator, MSHA/NIOSH-approved type.

   e. Safety harness and life lines.

   f. Other equipment as required for a specific project.

6. All equipment shall be available for use in sufficient quantity by Contractor, Engineer, and Owner for the duration of the project.

7. All entries into or work within confined spaces shall be conducted in accordance with the U.S. Department of Health and Human Services/National Institute for Occupational Safety and Health [DHHS (NIOSH)] Publication No. 87-113, A Guide to Safety in Confined Spaces.

1.6 CLOSEOUT SUBMITTALS

A. Record Documentation: Installation records.

1.7 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Manhole rehabilitation shall be accomplished by the application or installation of rehabilitation components either individually or together as a system. When installed, the rehabilitation component or system shall seal the manhole from infiltration and inflow, rebuild it structurally where structural integrity has been lost, and provide chemical resistance and protection from damage during the specified service life.

C. Rehabilitation shall eliminate water infiltration into the manhole and prevent water or vapors to leak out of the manhole through pin-holes or other defects. If leakage occurs through a rehabilitation product, the product shall be repaired or removed and replaced as required by the Engineer. Repair materials shall have the same estimated life expectancy as the initial installed product.

D. Rehabilitation systems shall be completely integrated and compatible.

E. Rehabilitation products and systems shall be designed for a 30-year service life unless otherwise specified. Products and systems shall be free of defects that will affect the service life and operation of the manhole.

F. Manhole rehabilitation shall cause no adverse effects to Owner’s facilities and processes either during or after application. Product installation shall not result in the formation or production of detrimental compounds or by-products in the wastewater collection system and treatment system. Notify Owner if by-products are produced as a result of installers

operations. Identify by-products, test and monitor levels, and comply with Owner requirements to rectify the situation. Comply with local waste discharge requirements.

G. Qualifications:

1. Products:

a. For a manhole coating or lining product to be accepted, a minimum of 5,000 vertical feet of installation shall be documented in the previous 3-year period.

b. For products other than coatings or linings, a minimum of 3 years of successful installation shall be documented.

2. Contractors / Installers / Applicators:

a. Fully qualified, trained, experienced, and equipped to complete the installation expeditiously and in a satisfactory manner.

b. Certified and licensed by the product manufacturer to install the product.

c. A minimum of 10 project references indicating the successful application of the rehabilitation products and systems shall be provided. For a project to be accepted as a reference, it shall include the same products proposed for this project applied in a similar project environment.

H. Field Samples:

1. Field samples shall be taken and maintained in accordance with manufacturer requirements and in an environment that best replicates the installed product.

2. Failure to properly take and maintain field samples will not be an acceptable excuse for failed testing.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements, for transporting, handling, storing, and protecting products.

B. Delivery and Acceptance Requirements:

1. Deliver materials to job site in undamaged, unopened containers bearing manufacturer's original labels.

C. Handling and Storage Requirements:

1. Handle and store materials in accordance with manufacturer recommendations and their material safety data sheets.

2. Keep rehabilitation component materials dry. Protect from weather. Store under cover.

3. Store polymer and cementitious protective coating materials at temperatures as recommended by the manufacturer. Do not store near flame, heat or strong oxidants.

1.9 WARRANTY

A. The materials used for the project shall be certified by the manufacturer for the specified purpose. The manufacturer shall warrant the products and systems to be free from defects in raw materials for one year after installation and from the date of acceptance by the Owner.

B. Warrant the installation of the products and systems for a period of one year. During the one-year warranty period, if the products and systems fail, delaminate, peel, or show any defect which may materially affect the integrity, strength, function, and/or operation of the manhole structure, it shall be repaired at the Contractor's expense. Repairs shall be made in accordance with the procedures included in Product or System Repair or Replacement found in Part 1 of this construction specification.

C. Visual warranty inspections shall be performed by the Owner and Contractor to determine integrity of product and system materials and water-tightness three months before the expiration of the guarantee period. If possible, inspections should be performed in the spring during high groundwater and frequent rainfall events. Twenty-five percent of the manholes renewed shall be inspected at locations randomly selected by the Owner. No infiltration or inflow shall be visible in the renewed manhole. If any product or system fails the warranty inspection, clean and inspect all product and systems installed with Owner.

PART 2– PRODUCTS

2.1 GENERAL

A. Products shall be designed for exposure to typical chemicals found in or released from domestic sewage and the project conditions.

2.2 CHEMICAL GROUTS:

A. In accordance with ASTM F2414, Standard Practice for Sealing Sewer Manholes Using Chemical Grouting.

B. Specifically define the type(s) of chemical grout proposed for the project with justification for use. Furnish either acrylic or urethane (hydrophobic or hydrophilic) based grout depending on the specific application and project conditions. The type(s) of grout shall be in accordance with the manufacturer's recommendation for the specific application subject to the approval of the Engineer.

C. Provide a chemical sealant solution containing principal chemical sealant constituent, initiator (trigger), and catalyst specifically recommended for the purpose of sealing leaks in manholes. Chemical sealant constituent, initiator, and catalyst shall be compatible when mixed. The solution shall have ability to tolerate dilution and react in moving water. After final reaction, it shall be a stiff, impermeable, yet flexible gel. The grout proportions shall be such that dilute aqueous solutions, when properly catalyzed, will form stiff gels. Materials provided shall gel in a predetermined time period when exposed to normal groundwater pH ranges and be capable of formula adjustments to compensate for changing conditions. Final reaction shall produce a continuous, irreversible, impermeable stiff gel and shall not be rigid or brittle.

D. Grout shall exhibit the following properties:

1. Controllable reaction times and shrinkage through the use of chemicals supplied by the same manufacturer. The minimum set time shall be established so that adequate grout travel is achieved.

2. Resistance to chemicals, most organic solvents, mild acids, and alkali.

3. Non-toxic in its cured form.

4. Sealing material shall not become rigid or brittle when subjected to a dry environment. The material shall be able to withstand freeze/thaw and moving load conditions as verified by third-party testing.

E. Identify additives to be used and furnish references of successful use in similar applications. Select grout and additives based on the chemical and physical properties and depending on the specific application, project conditions, and requirements of the Contract Documents.

F. Adjust grout conditions for catalyzing the reaction, inhibiting the reaction, lowering the freezing temperature of the grout solution, adding fillers, providing strength, and inhibiting root growth in accordance with the grout manufacturer's recommendations.

G. Mix and handle chemical grout in a manner that minimizes hazards to personnel and in accordance with the manufacturer's recommendations. Provide appropriate protective measures to ensure that chemicals are handled only by trained, authorized personnel. Equipment used to install the grout shall be as recommended by the manufacturer. Only personnel thoroughly familiar with the grouting material and meeting the qualification requirements specified herein, shall perform the actual grouting operation.

2.3 CEMENTITIOUS RESTORATION AND COATING MATERIALS

A. General:

1. Cementitious restoration material designed for structural build-back, infiltration and inflow abatement, corrosion resistance, and repair of inverts.

2. Materials applied to a structure shall be compatible.

3. Mix and apply in accordance with manufacturer's recommendations.

B. Infiltration Control – Cementitious Material:

1. Fast-setting materials, designed specifically for leak control in manholes or related structures, applied in dry powder form directly to active leaks under hydrostatic pressure with no prior mixing of water.

2. Minimum Physical Properties:

a. Compressive Strength (ASTM C109):

i. 1 day: 2,500 psi
ii. 28 days: 5,000 psi
iii. Standard Test Method for Comparing Concretes on the Basis of the Bond Developed with Reinforcing Steel

b. Pull-out Strength (ASTM C1583): 14,000 lbs

c. Shrinkage (ASTM C596): 0 % @ 90% RH

d. Freeze Thaw Resistance (ASTM C666): 100 cycles, no loss

e. Set Time at 70 degrees F: 90 seconds maximum

C. Infiltration Control - Oakum Water Plugs:

1. Rapid-setting, oil-free oakum meeting Federal Specification HH-P-117 and hydrophilic grout to seal active water leaks prior to application of other rehabilitation materials.

2. Two-part Urethane Resin.

3. Initial Set Time: 5 – 10 minutes

D. Invert Repair and Patching Materials:

1. Designed to fill large voids in manhole walls and repair or reconstruct inverts where no hydrostatic pressure exists. Materials shall consist of rapid-setting cements, monocrystalline quartz aggregates, and accelerating agents, and contain no chlorides or metallic particles.

2. Minimum Physical Properties:

a. Compressive Strength (ASTM C109)

i. 1 day: 3,500 psi
ii. 28 days: 5,000 psi

b. Bond Strength (ASTM C321)

i. 1 day: 140 psi
ii. 28 days: 2,000 psi

c. Shrinkage (ASTM C596): 0 % @ 90% RH

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Verify that the size, location, and invert of the existing sanitary sewer manholes are as indicated on the Drawings.

B. Evaluation and Assessment:

1. Inspect and evaluate the condition of the manhole prior to rehabilitation and notify the Engineer, in writing, of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work where unsatisfactory conditions have been identified until a plan has been developed to resolve the unsatisfactory conditions.

3.2 PREPARATION

A. Protect in-place conditions in accordance with Construction Specification Section 02 01 00, Maintenance of Existing Conditions.

B. Bypass wastewater flow around the manhole in accordance with the Bypass Pumping Plan. Plug pipes entering manhole to prevent debris from entering pipes. If work inside of a manhole is approved without bypassing flow, install a straining device or catch bucket,

acceptable to the Engineer, prior to performing any work to prevent construction debris from entering down-stream pipes.

C. Clean manhole in accordance with Construction Specification Section 33 01 30.42, Cleaning of Manholes.

D. Demolish irregularities in walls and invert. Remove invert where indicated on the Drawings.

E. Re-inspect manhole to determine methods of stopping leaks and applying patch repairs. Notify the RPR immediately if proposed methods differ from the Drawings.

F. Confirm that materials proposed for the rehabilitation of the manhole are compatible with each other. Do not use materials that have not been verified for compatibility.

3.3 GENERAL

A. Install rehabilitation products and systems with equipment recommended by manufacturer and in strict accordance with manufacturer's installation procedures.

3.4 CHEMICAL GROUTING

A. Install chemical grouts in accordance with ASTM F2414, Standard Practice for Sealing Sewer Manholes Using Chemical Grouting.

B. Grouting operations shall be performed in the manner prescribed in the manufacturer's published data during periods with acceptable temperatures.

C. Grouting shall only be performed on a structurally sound manhole unless the grout is used to prevent water from entering the manhole during application of a lining or coating system. Structural repairs, adjustments to the frame and cover, and installation of grade rings shall be completed prior to beginning the grouting operation.

D. Seal manhole from individual points of infiltration/inflow or curtain grout to seal the entire manhole structure. If the entire manhole is to be sealed, grouting shall include corbel, wall, pipe seals, bench, and invert.

E. Drill grout injection holes in the manhole in strategic locations to re-direct flow coming through cracks and other defects in the wall, or to seal the entire exterior surface of the manhole, in accordance with the recommendations of the grout manufacturer.

F. Inject grout through the drilled holes using the recommended probe and application pressures that will effectively inject the grout, but not damage the manhole structure or the surrounding area.

G. Typically, inject grout through the lowest holes first, working the grout higher until the manhole is externally sealed with grout. Additional holes may be required to verify that the grout has encompassed the entire outside of the manhole.

H. Clean and patch the injection holes as recommended by the grout manufacturer.

I. Testing and Acceptance:

1. Visually inspect manhole for signs of infiltration. Eliminate infiltration into the manhole.

2. Vacuum test manholes that have been entirely sealed by curtain grouting.

3.5 CEMENTITIOUS RESTORATION

A. Sealing Active Leaks:

1. Cementitious sealing of active leaks consists of hand applying a dry quick-setting cementitious mix designed to instantly stop running water or seepage in concrete and masonry structures.

2. The area to be repaired shall be clean and free of debris.

3. Prepare crack or hole by chipping out loose material to the minimum depth recommended by the manufacturer.

4. Place a generous amount of the dry quick-setting cementitious material to the active leak, with a smooth fast motion, maintaining external pressure for 30 seconds, repeat until leak is stopped. Apply material in accordance with manufacturer's recommendations.

5. Proper application shall not require special mixing of product or special curing requirements after application.

6. Use of Oil-free Oakum Water Plugs:

a. Saturate oakum with resin, place, and cure in accordance with manufacturer's recommendations.

b. Use additives as required.

B. Wall and Invert Patch Repair:

1. Wall and invert patch repair consists of hand-mixing and applying a rapid-setting, high early strength, non-shrink patching material to fill large voids and repair manhole channels prior to spray lining of the manhole. For invert repairs, flow must be temporarily restricted by inflatable or mechanical plugs prior to cleaning.

2. The area to be repaired shall be clean and free of debris.

3. Mix water shall be clean and potable and require no additives or admixtures for use with cementitious patching materials.

4. Cementitious material shall be mixed with water in a mortar tub or five gallon pail per manufacturer's recommendations. Material should be mixed in small quantities to avoid setting prior to placement in voids or channels.

5. Once mixed to the proper consistency, the materials shall be applied to the invert or wall void areas by hand or trowel. In invert applications, care should be taken to not apply excessive material in the channel, which could restrict flow. Once applied, materials should be smoothed either by hand or trowel in order to facilitate flow.

6. Flows in channels shall be re-established when material has cured enough to withstand the flow as determined by the manufacturer.

3.6 FIELD QUALITY CONTROL

A. General:

1. Upon completion of manhole restoration, the Owner or Engineer shall inspect the work and observe testing to verify that the work has been completed in accordance with the Contract Documents.

2. Inspection and final testing shall be performed in the presence of the Owner or Engineer. The Owner shall be notified at least 48 hours in advance of testing.

3. Provide the labor, equipment, and materials necessary to perform inspections and tests. Equipment and materials shall be checked and approved by the Owner or Engineer prior to their use.

4. Repair defects and damage and perform work necessary to bring the manholes into conformance with the Contract Documents at no additional cost to the Owner.

B. Preparation:

1. Upon completion of the installation, sewer manholes shall be cleaned with appropriate tools to remove dirt, rock, excess grout, debris, and other items from the manholes. None of these items shall be allowed to enter the existing sanitary sewer system.

2. Keep manholes and structures clean and free of debris.

C. Visual Inspection:

1. Visual inspections shall be performed by the Owner or Engineer.

2. Repair leaks or weeping visible from the inside of the manhole to provide a watertight installation. Where leaks indicate exterior defects and directed by the Owner or Engineer, excavate around the manhole and repair the exterior of the manhole. The extent and type of repairs shall be approved by the Owner or Engineer.

D. Manhole Vacuum Testing:

1. Manholes shall be tested by vacuum test after the manhole is rehabilitated and the cover frame castings are grouted in place.

2. Plug pipes with suitably sized and rated pneumatic or mechanical pipeline plugs. Place plugs a minimum of 6 inches beyond the manhole wall, taking care to securely brace the plugs and pipe. Stub-outs, manhole boots, and pipe plugs shall be secured to prevent movement during testing.

3. Manholes shall be tested from the top of the casting, including the casting-to-cone or adjusting collar joint.

4. Testing devices shall be installed on the iron manhole frame. Installation and operation of vacuum equipment and indicating devices shall be in accordance with manufacturer recommendations.

5. After the testing equipment is in place, a measured vacuum of 10 inches of mercury (Hg) shall be established in the manhole. The time for the vacuum to drop to 9 inches of mercury shall be 90 seconds or more.

6. If the manhole fails the test, locate the leakage, make the proper repairs, and repeat the vacuum test until the manhole passes the test.

7. If a manhole joint mastic material is completely pulled out during the vacuum test, the manhole shall be disassembled, the mastic replaced, and the manhole reassembled.

E. High Voltage Holiday Testing:

1. Perform high voltage holiday testing on pump station wetwells. Voltage shall be per manufacturer's instructions for system installed. Identify defects and repair per manufacturer's instructions to required minimum thickness.

3.7 PROTECTION

A. Protect manholes and appurtenances from damage until accepted into service by Owner.

END OF SECTION

SECTION 33 05 63
CONCRETE VAULTS AND CHAMBERS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Valve Vaults.

2. Meter Vaults.

B. Related Requirements:

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements, for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions: Not Used.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements, for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate installation of concrete vaults and chambers with Owner.

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that precast vaults and chambers, hatches, frames and covers, and appurtenances provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit product data/shop drawings for precast concrete vaults and chambers, hatches, frames and covers, and appurtenances. Submit dimensional drawings for precast concrete vaults and chambers, hatches, frames and covers, and appurtenances. Include installation instructions. Submit dimensional drawings and weights for hatches and frames and covers. Include manufacturer’s installation instructions.

1.5 CLOSEOUT SUBMITTALS

A. Record Documentation:

1.6 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Perform Work in accordance with Owner standards, specifications, and details.

C. Precast concrete vaults and chambers that will be installed within the NCDOT right-of-way shall be stamped with the approval of NCDOT. Make arrangements for NCDOT to be available to inspect structures during manufacturing to confirm NCDOT's requirements are met.

D. For potable water vaults and chambers, comply with North Carolina Department of Environmental Quality Rules Governing Public Water Systems (NCAC Title 15A Subchapter 18C, Water Supplies) and NSF/ANSI Standard 61: "Drinking Water System Components – Health Effects" for materials for water main and service piping and specialties for domestic water.

E. For sewers, comply with North Carolina Department of Environmental Quality, "Minimum Design Criteria for the Permitting of Gravity Sewers."

F. Coating installer shall be a certified installer/applicator of the product being used and shall follow all applicable safety measures for handling and application, as recommended by the manufacturer of the coating.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements, for transporting, handling, storing, and protecting products.

B. Transport, receive, store, and handle precast concrete vaults and chambers, hatches, frames and covers, and appurtenances in accordance with manufacturer recommendations.

C. Inspect precast concrete vaults and chambers, hatches, frames and covers, and appurtenances thoroughly upon arrival for damage. Remove damaged or rejected materials from the site immediately.

D. Do not place precast concrete vault and chamber materials on private property or in areas obstructing pedestrian or vehicle traffic.

PART 2– PRODUCTS

2.1 UNDERGROUND PRECAST CONCRETE VAULTS AND CHAMBERS:

A. Designed and manufactured in accordance with ASTM C913, "Standard Specification for Underground Precast Concrete Water and Wastewater Structures," with preformed butyl rubber joint sealant meeting ASTM C990, "Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed flexible Joint Sealants."

B. Concrete used in the construction of the utility structures shall have a minimum 28-day compressive strength of 4000 psi and shall be air entrained (with 4 to 6 percent air). Materials shall conform to ASTM C33, "Standard Specification for Concrete Aggregates," and ASTM C94, "Standard Specification for Ready-Mixed Concrete."

C. Reinforcing steel shall conform to the requirements of ASTM C857, "Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures." Design for H20-44 loading in road rights-of-way.

D. Unless shown otherwise on the Drawings, concrete vaults and chambers shall not have steps.

2.2 FRAMES AND COVERS

A. Comply with ASTM A48 Standard Specification for Gray Iron Castings, Class 35B, traffic rated frame and cover. Cover shall read “WATER” or “SEWER” in the center as appropriate. Cover shall be solid without vent holes except at locations of air release or combination valves. Standard cover shall include two non-penetrating pick holes.

B. Weights shall not vary more than 5% +/- from the weight shown on the Drawings.

C. Acceptable Manufacturers and Models are:

Manufacturer	Standard	Watertight
Capitol Foundry	-	MH-2001-WT
US Foundry	700-KL	669-KL-BWT
Sigma Corporation	2001	
East Jordan Iron Works	-	V-2384-3 Bolt Down

2.3 ACCESS HATCHES

A. Non-Traffic Areas:

1. Vault access hatches shall be aluminum frames and covers, manufactured with 1/4-inch thick, one-piece aluminum extruded frame with a continuous concrete anchor as part of the one-piece extrusion. Door panels shall be 1/4-inch thick aluminum diamond plates, designed to withstand a live load of 300 psf, with a safety factor of 1.5. Doors shall have stainless steel hinges with tamper-proof fasteners. Hardware and springs shall be stainless steel. Doors shall open to 90 degrees and lock automatically in that position with a stainless steel positive locking arm and a stainless steel release handle. Doors shall be provided with a stainless steel lifting handle and stainless steel locking bar or stainless steel snap-lock with removable key handle. Two key handles shall be provided with each door. Doors shall close flush with the top of the frame and rest on a 1/2-inch wide lip around the entire inside of the frame for additional support.

2. Provide a protective grating panel as an integral part of the hatch. Grating shall be 1 inch (25 kg.) aluminum “I” bar grating with safety orange powder-coated finish. Grating shall be hinged with tamper proof stainless steel bolts, and shall be supplied with a positive latch to maintain unit in an upright position. Grating shall have a 6-inch (152mm) viewing area on each lateral unhinged side for visual observation and limited maintenance. Grating support ledges shall incorporate a nut rail with a minimum of four stainless steel spring nuts. A padlock hasp for Owner-supplied padlock shall be provided.

B. Traffic Areas:

1. Low traffic areas are defined as Low Density Traffic H-20 Loading – 12,000 lb. wheel load on an 8 1/2-inch x 20 1/2-inch wheel area.

2. Aluminum access frames and covers shall be provided with a 1/4-inch thick structural grade aluminum channel frame with flanges acting as a continuous concrete anchor. The inside of the frame shall have a continuous door support angle that shall have a full bed of Class "A" concrete under both the frame and support angle. Door leaves shall be a minimum of 1/4-inch thick aluminum diamond plate structural grade aluminum. Door reinforcing shall withstand an H-20 live load. Doors shall have lifting aids of aluminum tubular construction with

stainless steel compression springs to assist in opening and closing of the doors. Doors shall have heavy-duty stainless steel hinges with tamper-proof fasteners. Hardware shall be stainless steel. Doors shall open to 90 degrees and lock automatically in that position with a stainless steel positive locking arm and a stainless steel release handle. Doors shall have a stainless steel lifting handle and stainless steel snap-lock with removable key handle. Two key handles shall be provided with each door. Door leaves extend to the outside perimeter of the frame for added support.

3. Provide a protective grating panel as integral part of the hatch. Grating shall be 3 inch aluminum “I” bar grating with safety orange powder-coated finish. Grating shall be hinged with tamper proof stainless steel bolts and shall be supplied with a positive latch to maintain unit in an upright position. Grating shall have a 6-inch viewing area on each lateral unhinged side for visual observation and limited maintenance. A padlock hasp for Owner-supplied padlock shall be provided.

C. Guarantee and Manufacturer

1. Aluminum access frames and covers shall carry a 10-year guarantee against defects in materials and workmanship. Acceptable manufacturers include Halliday Products, Inc., The Bilco Company, or equal.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that existing utility main size, location, and invert are as indicated on Drawings.

B. Verify proper location of vaults and chambers, in accordance with Drawings.

3.2 PREPARATION

A. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers, as indicated on Drawings to indicate its intended use.

B. Inspect precast concrete vaults and chambers immediately prior to placement in excavation to verify that they are internally clean and free from damage; remove and replace damaged units.

3.3 INSTALLATION

A. Precast Concrete Vaults and Chambers:

1. Excavate as specified in Construction Specification Section 31 23 33, Trenching and Backfilling.

2. If groundwater is encountered, prevent accumulation of water in excavations; place manhole or structure in dry trench.

3. Lift precast components at lifting points designated by manufacturer.

4. Vaults and chambers shall be placed on a level 6-inch bed of compacted Class 57 stone.

5. Lower, set level, and firmly position base section on Class 57 stone before placing additional sections.

6. Install wall sections plumb and level.

7. Install Ramneck joints between precast sections according to manufacturer's recommendations. Remove foreign materials from joint surfaces and verify sealing materials are placed properly.

8. Voids around the pipe joints, grade rings, and other openings in the vault or chamber shall be thoroughly and neatly grouted inside and outside with a non-shrink grout to prevent infiltration.

9. A maximum of two grade rings or one grade ring and one course of concrete bricks will be allowed to bring the rim and cover to finished grade. If additional height is required, a riser must be installed.

10. Backfill excavations for vaults and chambers as specified in Construction Specification Section 31 23 33, Trenching and Backfilling.

B. Precast Concrete Vaults for Large Meters:

1. Precast concrete utility meter vaults for 3-inch and larger meters shall be placed level on a 6-inch bed of Class #57 stone that has been thoroughly and firmly consolidated. Meters and fittings shall be supported by pipe stands. Vault doors shall be centered over the meter. Provide drains in meter vaults.

C. Frames and Covers:

1. Install frames and covers in accordance with standard details.

3.4 FIELD QUALITY CONTROL

A. Inspect vaults and chambers for leaks. Repair visible leaks.

3.5 CLEANING

A. Clean and remove debris from vaults and chambers immediately after construction. Keep vaults and chambers clean and free of debris.

3.6 PROTECTION

A. Protect concrete vaults and chambers and appurtenances from damage until accepted into service by Owner.

END OF SECTION

SECTION 33 14 17
WATER UTILITY SERVICE CONNECTIONS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Water Service Connections 3/4-inch to 2-inch.

B. Products Furnished [OR] Supplied but Not Installed Under This Section

C. Products Installed But Not Furnished [OR] Supplied Under This Section

D. Related Requirements:

1.2 REFERENCES

A. Abbreviations and Acronyms:

1. The following is a partial list of typical abbreviations and acronyms used in this section. See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

CTS Copper Tube Size

B. Definitions – Not Used

C. Reference Standards:

1. The following is a partial list of reference standards used in this section. See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

CDA Copper Development Association

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Do not operate valves on existing mains or interrupt water service without prior approval of the water system owner.

2. Coordinate sequencing and scheduling of Work with Owner and Engineer.

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that pipe, fittings, corporation stops, curb stops, meter setters, meter boxes, meters, backflow preventers, couplings, adapter pieces, and appurtenances provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit product data/shop drawings for pipe, fittings, corporation stops, curb stops, meter setters, meter boxes, meters, backflow preventers, couplings, adapter pieces, and appurtenances. Submit dimensional drawings for materials. Include manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Perform Work in accordance with water service provider standards, specifications, and details.

C. Comply with North Carolina Department of Environment and Natural Resources Rules Governing Public Water Systems (NCAC Title 15A Subchapter 18C, Water Supplies).

D. The manufacturer shall factory-test valves, fittings, service saddles, and meter setters to meet the system pressure requirements. Service saddles shall be tested for casting integrity between seal and outlet surface.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Manuals: Submit operation and maintenance manuals in accordance with Construction Specification Section 01 78 00, Closeout Submittals.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

B. Transport, receive, store, and handle pipe, fittings, and appurtenances in accordance with manufacturer recommendations and AWWA M55 PE Pipe – Design and Installation.

C. Transport, receive, store, and handle materials in accordance with manufacturer recommendations.

D. Do not place materials on private property or in areas obstructing pedestrian or vehicle traffic.

E. Inspect each truckload of materials thoroughly upon arrival at the site. Examine materials for damage and verify conformance with approved submittals. Pipe shall be protected during handling against impact shocks and free fall. Pipe that has been damaged either in transit or during unloading shall be plainly marked and immediately removed from the project site.

PART 2– PRODUCTS

2.1 GENERAL

A. Comply with ANSI/AWWA C800 and NSF 61.

B. Pressure Rating: 200-psi working pressure.

C. Materials shall comply with the requirements of the Safe Drinking Water Act and other federal, state, and local regulations as applicable.

D. Castings in contact with potable water: Made from copper alloy CDA No. C83600, No. C89833, No. C89836, or No. C89520, in accordance with the chemical and mechanical requirements of ASTM B584. Use CDA No. C83600 only if the product is in compliance

with or exempted by US Public Law 111-380, and the product is in compliance with or exempted by the USEPA Safe Drinking Water Act.

E. Valves, fittings, service saddles, and meter setters shall be free of metal chips and filings in the waterway. Lubricated valves shall be free of excess lubricants in the waterway. Castings shall be clean and sound and without defects that could impair their service.

F. Water services materials shall be in accordance with Town of Holly Springs Standard Water Service Details.

2.2 HIGH DENSITY POLYETHYLENE SERVICE PIPE

A. In accordance with the following:

1. ASTM D2737 - Standard Specification for Polyethylene (PE) Plastic Tubing or ASTM D2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter.

2. NSF 14 – Plastics Piping System Components and Related Materials.

3. AWWA C901 – Standard for Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in. through 3 in., for Water Service.

B. Manufactured from a PE 4710 resin which meets ASTM D 3350 with a minimum cell classification of 445574C, to the dimensions of ASTM F 714. Provide a minimum pressure rating of 200 psi (DR 11). The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. Pipe shall be UV stabilized for protection from sunlight deterioration.

C. Joints shall be bronze AWWA C-800 compression fittings with solid stainless-steel stiffener inserts which provide a seal and full pipe restraint against pullout.

2.3 CROSS-LINKED POLYETHYLENE SERVICE PIPE

A. In accordance with the following:

1. ASTM F876 – Standard Specification for Crosslinked Polyethylene (PEX) Tubing

2. ASTM F2023 – Standard Test Method for Evaluating the Oxidative Resistance of Crosslinked Polyethylene (PEX) Tubing and Systems to Hot Chlorinated Water

3. ASTM F2080 – Standard Specification for Cold-Expansion Fittings with Metal Compression-Sleeves for Crosslinked Polyethylene (PEX) Pipe

4. ASTM F2657 - Standard Test Method for Outdoor Weathering Exposure of Crosslinked Polyethylene (PEX) Tubing

5. NSF/ANSI 14 – Plastic Piping System Components and Related Materials

6. NSF/ANSI 61 – Drinking Water System Components – Health Effects

7. AWWA C904 – Cross-Linked Polyethylene (PEX) Pressure Pipe, 1/2 In. through 3 In., for Water Service.

8. AWWA C800 – Underground Service Line Valves and Fittings

B. Provide a minimum pressure rating of 200 psi.

C. Joints shall be bronze AWWA C-800 compression fittings with solid stainless-steel stiffener inserts which provide a seal and full pipe restraint against pullout.

D. Cross-linked Polyethylene Service Pipe shall be MUNICIPEX (PEXa) as manufactured by REHAU.

2.4 COPPER WATER TUBE

A. Seamless copper tubing suitable for underground water services, type K and type L, in conformance with ASTM B88, Standard Specification for Seamless Copper Water Tube, type K or type L.

2.5 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

A. PVC pipe shall be designed in accordance with AWWA M23 PVC Pipe – Design and Installation and the Unibell Handbook of PVC Pipe Design and Construction by the PVC Pipe Association.

B. PVC pipe and fittings shall be Schedule 40 or 80 as specified on the Drawings and manufactured in accordance with ASTM D1785, “Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120”. The PVC compound shall meet the requirements of ASTM D1784 with a minimum cell class of 12454B. Pipe shall comply with ASTM D1784, D2122, D1598, D1599, and D2152.

C. Schedule 40 fittings shall be manufactured in accordance with ASTM D2466. Schedule 80 fittings shall be manufactured in accordance with ASTM D2467.

D. Joints shall be solvent cement weld. Solvent cement shall be in accordance with ASTM D2564. Joints shall be made in strict accordance with the pipe manufacturer’s recommendations including necessary field cuttings, sanding of pipe ends, joint support during setting period, etc. Unions are required adjacent to valves and equipment.

2.6 SERVICE SADDLES

A. Service saddles shall be used with all taps. Saddle shall have a threaded outlet, seal, and a strap (or straps) to connect to the main. Provide for outside diameter and material of water main being tapped. Provide a drip-tight connection to the main.

B. Cast service saddles: Materials include copper alloy CDA No. C83600 in accordance with the chemical and mechanical requirements of ASTM B584; ductile iron, in accordance with ASTM A395 or ASTM A536, Grade 65-45-12 or 60-40-18; and stainless steel, in accordance with ASTM A703, Casting Designation Grade CF8 (18-8).

C. Fabricated service saddles: Materials include stainless-steel ASTM A240 Type 304, 304L, 316, or 316L, and mild steel with a minimum of 25,000-psi yield strength.

D. Seals shall be attached to the outlet portion prior to shipment in a ready-to-use condition. Seal materials shall be suitable for water supply service with pH ranging from 5.5 to 10.

2.7 CORPORATION STOPS

A. Comply with ASTM B62.

B. The minimum inside diameter of the waterway through a corporation stop and overall body dimensions shall conform to AWWA C800, Tables 1 and 2.

2.8 CURB STOPS

A. Comply with ASTM B62.

B. Dimensional requirements for the head of valves to be compatible with shutoff rods or stationary rod attachment shall comply with Figure 1 and Table 3 of AWWA C800.

2.9 SERVICE LINE CHECK VALVES

A. Check valves shall have good fluid-flow characteristics. The spring shall resist opening with a 1-psi pressure in the direction of flow. The check valve shall be field repairable without removing the valve body from the service line.

2.10 METER SETTERS OR YOKES

A. Meter setters or yokes shall copper or brass configured to accommodate the described height and position of the meter shown in the Drawings. Factory test for water-tightness.

B. Acceptable meter setters or yokes: Ford Customsetters, Mueller, or approved equal.

2.11 METER BOXES

A. Non-Traffic Bearing, 3/4-inch and 1-inch Services: Polyethylene box of appropriate size to fit meter and setter or yoke dimensions with plastic with cast iron reader.

B. Non-Traffic Bearing, 2-inch Services: Polymer concrete and hand layup fiberglass.

2.12 METERS

A. Residential up to 1-inch service: Provided and set by Town of Holly Springs.

B. 2-inch: Provided by Town of Holly Springs, set by Contractor.

2.13 CROSS-CONNECTION CONTROL

A. Refer to the Owner’s Cross-Connection Control Ordinance for hazard classification and requirements for backflow device.

PART 3– EXECUTION

3.1 EXAMINATION

A. Verify that water main size, location, and elevation are as indicated on the Drawings prior to installation of services.

3.2 PREPARATION

A. Confirm exact location of services with Owner prior to installation.

B. Prior to making the tap:

1. Confirm materials for a complete installation are at the site.

2. Cut pipe and tube ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

3. Remove scale and dirt on inside and outside before assembly.

3.3 INSTALLATION

A. Water Service Connections 3/4-inch to 2-inch:

1. Install water services in accordance with Town of Holly Springs Standard Water Service Details.

2. Contractor shall make tap, install service pipe with appurtenances, set meter box and setter, and complete water service. See Article 2.11 for requirements for setting meters.

3. Water services shall be one continuous run of PE pipe from main to meter with no joints or couplings in between.

4. Water services shall extend perpendicularly to the main in a straight line from the main to the meter box at the property served. Sharp bends are not permitted.

5. Provide a firm bedding with at least 30 inches of cover from the water service pipe to the top of the front of the concrete gutter or to the centerline of the drainage ditch.

6. Backfill shall be free of rocks or large objects that could crimp or damage the water service pipe. Water service trenches in traffic areas shall be tamped to achieve 95% Modified Proctor Density. In landscaped areas, the surface shall be left smooth and uniform with the adjacent surface.

7. Tapping Water Mains:

a. Tap main at a 45° angle above horizontal on the upper half of the pipe. Provide a long-radius bend or “gooseneck” in the service pipe where the service leaves the corporation stop to provide for expansion/contraction and flexibility.

b. Cast or ductile iron pipe: Install taps in accordance with AWWA C600 – Installation of Ductile Iron Water Mains and Their Appurtenances and the recommendations of the tapping machine manufacturer.

c. Taps shall be no closer than 24 inches from the end of pipe up to 16-inch diameter. Taps shall be no closer than 24 inches apart and shall be staggered such that they are not on the same longitudinal plane.

3.4 FIELD QUALITY CONTROL

A. All taps and services shall be pressure tested with the water mains in accordance with Specification Section 33 14 13 – Water Utility Distribution Piping.

B. Flush services after hydrostatic testing.

3.5 PROTECTION

A. Protect water services and appurtenances from damage until accepted into service by Owner.

B. Keep meter boxes clean and free of any foreign matter until acceptance of the project.

END OF SECTION

SECTION 33 31 23
SANITARY SEWERAGE FORCE MAIN PIPING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wastewater force main pipe.

2. Related appurtenances.

B. Related Requirements:

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for abbreviations and acronyms used throughout the Contract Documents.

B. Definitions: Not used.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Maintain service continuously to customers except for the minimum amount of time required to make connections.

2. Coordinate interruption of service and pipeline shutdowns in accordance with Construction Specification Section 01 14 00, Work Restrictions.

3. Contact Owner to obtain approval for and coordination of operation of valves.

4. The Engineer and Owner shall be notified at least 72 hours in advance of testing. Testing and inspections for final approval shall be performed in the presence of the Engineer or the Owner’s representative.

5. Contact North Carolina 811 by calling 811 or 1-800-632-4949 before digging for locates of existing utilities in accordance with NC 811 requirements. Confirm utilities have been located prior to excavating.

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that all pipe, fittings, and other products provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit product data/shop drawings for pipe, fittings, couplings, adapter pieces, restraints, bolts, gaskets, supports, and appurtenances. Submit dimensional drawings for piping. Submit dimensional drawings and weights for all fittings. Include manufacturer’s installation instructions.

1.5 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Perform Work in accordance with Owner standards, specifications, and details.

C. Relation of Force Mains to Water Mains:

1. Lateral Separation of Force Mains and Water Mains:

a. Force mains shall be laid at least 10 feet laterally from existing or proposed water mains, unless local conditions or barriers prevent a 10-foot lateral separation – in which case:

i. The water main is laid in a separate trench, with the elevation of the bottom of the water main at least 18 inches above the top of the force main; or

ii. The water main is laid in the same trench as the force main with the water main located at one side on a bench of undisturbed earth, and with the elevation of the bottom of the water main at least 18 inches above the top of the force main.

2. Crossing a Force Main Under a Water Main:

a. Whenever it is necessary for a force main to cross a water main, the force main shall be laid at such an elevation that the bottom of the water main is at least 18 inches above the top of the force main, unless local conditions or barriers prevent an 18-inch vertical separation, in which case both the water main and the force main shall be constructed of ferrous materials and with joints that are equivalent to water main standards for a distance of 10 feet on each side of the point of crossing.

3. Crossing a Force Main over a Water Main:

a. Whenever it is necessary for a force main to cross over a water main, both the water main and the force main shall be constructed of ferrous materials and with joints equivalent to water main standards for 10 feet on each side of the point of crossing. A section of force main pipe shall be centered at the point of crossing.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

B. Transport, receive, store, and handle pipe, fittings, and appurtenances in accordance with manufacturer recommendations and the following:

1. PVC pipe: AWWA M23 PVC Pipe – Design and Installation.

2. DI pipe: AWWA M41 Ductile Iron Pipe and Fittings.

3. PE pipe: AWWA M55 PE Pipe – Design and Installation.

C. Exercise special care in handling pipe during transportation, delivery, storage, and distribution to avoid damage and unnecessary stress. Support pipe to prevent sagging or bending. Damaged pipe will be rejected and shall be replaced at the Contractor's expense.

D. Inspect each truckload of materials thoroughly upon arrival at the site. Examine materials for damage and verify conformance with approved submittals. Protect pipe during handling against impact shocks and free fall. Take care when unloading pipe to avoid damaging the pipe lining. Pipe that has been damaged either in transit or during unloading shall be plainly marked and immediately removed from the project site.

E. Protect pipe coating during handling using methods recommended by the manufacturer. The use of bare cables, chains, hooks, metal bars, or narrow skids in contact with coated pipe is not permitted.

F. Store PE and PVC materials out of sunlight.

G. Block individual and stockpiled pipe to prevent unintentional movement.

H. Do not place pipe or pipe materials on private property or in areas obstructing pedestrian or vehicle traffic.

I. Keep pipe, fittings, and appurtenances clean. Store to prevent entry of water, dirt, and foreign matter into pipe, bells, and fitting flanges. If pipe is provided with end protectors, do not remove until ready for inspection or installation. Replace protectors after inspection.

PART 2– PRODUCTS

2.1 DUCTILE IRON PIPE AND FITTINGS

A. Pipe:

1. Designed in accordance with ANSI/AWWA C150/A21.50. Minimum pressure class shall be 350 psi through 12-inch diameter and 250 psi above 12-inch diameter unless noted otherwise on the Drawings.

2. Manufactured in accordance with ANSI/AWWA C151/A21.51. Each pipe shall be subjected to a hydrostatic pressure test of at least 500 psi at the point of manufacture.

3. Provide in minimum nominal 18 or 20-foot laying lengths.

4. The interior of the pipe shall have a ceramic epoxy lining consisting of an amine cured novolac epoxy containing at least 20% by volume of ceramic quartz pigment. The interior of the pipe shall receive 40 mils nominal dry film thickness. Due to the tolerances involved, the gasket area and spigot end up to 6 inches back from the end of the spigot end must be coated with 6 mils nominal, 10 mils maximum of a joint compound provided by the liner manufacturer. The joint compound shall be applied by brush to ensure coverage. Care should be taken that the joint compound is smooth without excess buildup in the gasket seat or on the spigot ends. Coating of the gasket seat and spigot ends shall be done after the application of the lining. The lining shall have a permeability rating of 0.00 when tested according to Method A of ASTM E-96-66, Procedure A with a test duration of 30 days. The interior lining shall be tested for pinholes with a non-destructive 2,500-volt test. Any defects found shall be repaired prior to shipment. Interior lining shall be Protecto 401™ Ceramic Epoxy or equal. The joint compound shall be used for touch-up or repair in accordance with manufacturer's recommendations.

5. Pipe shall have standard 1–mil asphaltic coating on the exterior in accordance with ANSI/AWWA C151/A21.51.

6. Each length of pipe shall be cast or stamped with the class or nominal thickness, net weight without lining, casting period, the manufacturer's mark, country where cast, year in which the pipe was produced, and the letters "DI" or "Ductile".

B. Joints:

1. Push-on Type Joints:

a. Rubber gasket push-on type joints in accordance with ANSI/AWWA C111/A21.11, such as Tyton® or Fastite® except at specific locations indicated on the drawings or as approved by the Owner. Furnish complete with accessories.

2. Mechanical Joint Pipe:

a. ANSI/AWWA C111/A21.11 and FS WW-P-421. Installed only at the specific locations indicated on the drawings or as approved by the Owner. Furnished complete with accessories.

b. Glands, gaskets and bolts shall conform to ANSI/AWWA C111/A21.11. Bolt length shall be sufficient for all threads of the nut to be engaged.

3. Restrained Joint Pipe:

a. Boltless push-on type as follows or equal:

Table 333123.1

Restrained Joint Pipe Approved Products

Manufacturer	Product
United States Pipe and Foundry Company	TR Flex or Tyton Field Lok 350
American Cast Iron Pipe Company	Flex-Ring or Lok-Ring or Fast-Grip Gasket with Fastite® Joint Pipe

4. Mechanical Joint Restraint:

a. Ductile iron conforming to ASTM A536, working pressure rating equal to the pipe on which it is used, and designed with a factor of safety of 2.

b. Subject to hydrostatic pressure testing in accordance with AWWA C600 or ASTM D2774.

c. Joint restraint system as follows:

Table 333123.2	
Mechanical Joint Restraint Approved Products	
Manufacturer	Restraint Make/Model
EBAA Iron Sales, Inc.	Megalug Series 1100
Romac Industries, Inc.	RomaGrip
Ford	wedge action restrainer gland/UFR Series 1400
US Pipe and Foundry Co.	MJ Field Lok
American Cast Iron Pipe Company	Mechanical Joint Coupled Joint Pipe

d. Restraints which employ wedge action retainers shall have wedge activating bolt. Bolt heads shall be designed to be “auto-torque” twist off.

2. Flanged Joint:

a. ANSI/AWWA C115/A21.15 with facing and drilling identical to ASME/ANSI B16.1, class 125 flanges.

b. Firmly bolted with machine bolts; however, where valves or special fittings are attached to a flange pipe, stud or tap bolts may be used, providing the number used and diameter for each joint is the same for each respective size of pipe or special, or valve, as recommended by the AWWA Standard for flanged drilling. Bolts shall be in accordance with ANSI B18.2.1. Nuts shall be in accordance with ANSI B18.2.2. Bolts and nuts shall be cold-worked 304 stainless steel meeting ASTM F593 Standard Specification for Stainless Steel Bolts, Hex Cap Screws and Studs for sizes up to 1.5 inches. Stainless steel bolts and nuts shall have a minimum yield strength of 45,000 psi. Bolts shall be of sufficient length to pass through two flanges and the nut threads shall be accurately cut, close fitting, and the prevailing standard. Bolt heads shall be cut square and nuts hexagon in shape, both the heads and nuts being chamfered. Gaskets to be of 1/8-inch thick plain rubber (Styrene Butadiene [SBR]) per AWWA C110/ANSI A21.11 or equal as approved by the Public Services Director.

C. Fittings:

1. Ductile iron conforming to either ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53. Mechanical-Type Joints in accordance with ANSI/AWWA C111/A21.11.

2. Minimum working pressure rating of 250 psi.

3. Interior lining shall be the same as the pipe, 1–mil asphaltic exterior coating in accordance with ANSI/AWWA C151/A21.51.

4. Glands, gaskets, and bolts shall conform to ANSI/AWWA C111/A21.11. Bolt length shall be sufficient for all threads of the nut to be engaged.

5. Acceptable manufacturers are American Cast Iron Pipe Company, United States Pipe and Foundry Company, Sigma Corporation, Star Pipe Products, Napac, Union Foundry, or equal.

2.2 POLYVINYL CHLORIDE (PVC) PIPE – ASTM C900

A. Designed in accordance with AWWA M23 PVC Pipe – Design and Installation.

B. 4-inch through 60-inch PVC: AWWA C900, “Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 in. through 60 in. for Water Distribution.” Minimum of DR 18 with a pressure rating of 235 psi.

C. Pipe joints shall be gasket, push-on type. Elastomeric gaskets shall be part of a complete pipe section and purchased as such. Lubricant shall be as recommended by the pipe or fitting manufacturer and shall not adversely affect the potable qualities of the water to be transported. The gasketed joint shall meet the laboratory performance requirements specified in ASTM D3139.

D. Standard laying length shall be 20 feet.

E. Ductile iron fittings shall be installed on all PVC pipe.

F. Joint Restraint:

1. Ductile iron conforming to ASTM A536, with a working pressure rating equal to the pipe on which it is used, and designed with a safety factor of 2.

2. Subject to hydrostatic pressure testing in accordance with AWWA C600 or ASTM D2774 and shall meet the requirements of ASTM F1674.

3. Joint restraints shall be as follows or equal:

Table 333123.3

PVC Joint Restraint Approved Products

Pipe - Type	Restraint Make/Model
C900 PVC - MJ restraint	EBAA Iron Sales, Inc./Megalug Series 2000/2200 Romac Industries, Inc./PVC RomaGrip Ford Series 1500 Stargrip® (acceptable only where pressure rating equals the pipe)
C900 PVC - MJ Split Restraint	EBAA Iron Sales, Inc./Megalug series 19MJ00
C900 PVC - Bell Restraint	EBAA Iron Sales, Inc./Series 1900 and 2800 (acceptable only where pressure rating equals the pipe) Romac 600 Series Ford Series 1390 Star Pipe Series 1100

4. Integral retrained joint: C900 Certa-Lok, Eagle Loc 900, or pre-approved equal.

5. Fusible C900 PVC DR18.

2.3 HIGH DENSITY POLYETHYLENE PIPE (HDPE)

A. Designed in accordance with AWWA M55 PE Pipe – Design and Installation and the Handbook of PE Pipe by the Plastics Pipe Institute.

B. Manufactured from a PE 4710 resin which meets ASTM D 3350 with a minimum cell classification of 445574C to the dimensions of ASTM F 714.

C. Contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, voids, or other injurious defects.

D. Meet the requirements of ANSI/AWWA C901 (3/4-inch to 3-inch) or ANSI/AWWA C906 (4-inch to 65-inch).

E. Provide a minimum classification of DR 11 with a pressure rating of 250 psi. For pressure pipelines, provide an allowable total pressure during recurring surge conditions equal to 1.5 times the pipe pressure class and an allowable total pressure during occasional surge conditions equal to 2.0 times the pipe pressure class. The outside diameter of the pipe shall be based upon the IPS or DIPS sizing system as indicated on the drawings.

F. Provide identification markings that will remain legible during normal handling, storage, and installation. Markings shall include nominal size and outside diameter basis, dimension ratio, AWWA pressure class, AWWA designation for standard AWWA C901 or AWWA C906, and manufacturer’s name or trademark and production-record code.

2.4 COUPLINGS

A. ANSI/AWWA C-219, ASTM A-536, grade 65-45-12 ductile iron. Minimum working pressure equal to pipe pressure rating. Gaskets shall be specially compounded new rubber polymer suitable for use on water and force mains designed for a temperature range of -40ºF to 150º F. Bolts are to be Type 304 stainless steel. Coating shall be fusion-bonded powder epoxy coating per ANSI/AWWA C-213.

B. Accommodate IPS PVC, C-900 PVC, Ductile Iron Pipe, Cast Iron, and Asbestos Cement Classes 100/150/200.

2.5 TIE RODS

A. Tie rods shall be stainless steel.

PART 3– EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Verify that existing main size, location, and invert are as indicated on Drawings.

B. Evaluation and Assessment:

1. Prior to installing pipe, carefully examine each section of the pipe for damage and conformity with approved submittals and these specifications. Pipes in which spigots and bells cannot fit together properly, or pipes that have chipped bells or spigots, will be rejected. Pipes damaged or deemed not to conform to these specifications shall be plainly marked and immediately removed from the project site.

2. The faces of all spigot ends and all shoulders on the bells must be true, without lumps or rough edges, and be brought in fair contact. Examine bell and spigot for uniformity and smoothness of liner and barrel.

3.2 PREPARATION

A. String pipe sections along the route of the mains to interfere least with pedestrian and vehicular traffic and to protect the pipe. String pipe along the road shoulder and not in ditches. String out no more pipe than can be installed in one day.

B. Excavate trench in accordance with Construction Specification Section 31 23 33, Trenching and Backfilling.

C. Verify that polyethylene encasement is in place, where required, before placing bedding.

D. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, and remove burrs. Use only equipment specifically designed for pipe cutting. The use of chisels or hand saws is not permitted. Grind edges smooth with beveled end for push-on connections.

E. Remove scale and dirt on inside and outside before assembly.

F. Prepare pipe connections to equipment with flanges or unions.

3.3 INSTALLATION – BURIED PIPE AND FITTINGS

A. General:

1. Carefully lower pipe, fittings, valves, and appurtenances into the trench using a backhoe, crane, ropes, or other suitable tools or equipment, in such a manner as to prevent damage to force main materials and protective coating and linings. Under no circumstances shall force main pipe, fittings, valves, and materials be dropped or dumped into the trench or be allowed to drop against the pipe or fitting already in the trench. Take great care to prevent the pipe and coating from being damaged. Do not install any damaged pipe.

2. Install pipe in locations and at the alignment and grades shown or specified, except as otherwise permitted or ordered by Engineer to avoid existing or proposed utility lines or other obstructions encountered; to secure a more readily accessible position for trenching; or to facilitate the location of various pipe appurtenances.

3. When temporary supports are used, insure that sufficient rigidity is provided to prevent shifting or distortion of pipe.

4. Lay pipe with bell ends upgrade and facing the direction of laying. Lay pipe by installing the spigot plain end of the pipe into the previously laid socket.

5. Do not expose gaskets to oil, grease, ozone, extensive heat, sunlight, or other elements that would degrade the gasket. Store gaskets in a cool, dark place until installation.

6. Provide a minimum of 3 feet of cover. Measure depth of cover from final surface grade to top of pipe. In the event that site conditions prevent adherence to minimum cover requirements, approval of an alternate design by the Engineer is required.

7. Do not install pipe with high and low points in the main other than those specifically shown. If unforeseen field conditions arise that necessitate high points, notify Engineer before proceeding with installation. Install additional air release valves as directed by Engineer.

8. Holes for pipe bells shall be excavated into the trench bottom at each joint and shall be no larger than necessary for joint assembly and assurance that the pipe barrel will lie flat on the trench bottom. Bell-hole depressions for push-on type joints shall only be large enough to ensure that the pipe is not resting on the bells and is supported by the full length of the pipe barrel.

9. Install pipe to allow for expansion and contraction without stressing pipe or joints.

10. Deflect pipe joints in strict accordance with pipe manufacturer's instructions.

11. Locate pipe to maintain a minimum clearance of 18 inches in all directions, with respect to other utilities, to allow for taps to be inserted.

12. Flanged joints shall not be used in underground installations except within structures.

13. To prevent gasket displacement and leaking joints, remove all sand, dirt, grit, excess coating, ice, and other foreign material from the plain end and the gasket recesses of the bell.

14. Before any length of pipe is lowered into the trench, inspect it for damage and inspect the inside of the pipe for loose dirt and foreign objects such as tools, clothing, etc. If mud and trench water have been permitted to stand or flow through the pipe, scrub the inside with a strong chlorine solution and wash or flush the pipe out. No debris, tools, clothing, or other materials shall be placed in the pipe at any time.

15. Prevent foreign material from entering the pipe during placement. Keep pipes clean during and after laying and seal the pipe end with a water-tight plug at the end of the day's work and when pipe laying is stopped for any reason. Do not use the pipe as a means of draining groundwater from the area.

16. Excavate and backfill the trench in accordance with Construction Specification Section 31 23 33, Trenching and Backfilling.

17. Install pipe identification in accordance with Construction Specification Section 33 05 97 – Identification and Signage for Utilities.

18. Provide access fittings to permit testing, air release, and disinfection.

B. Surface Water Crossings:

1. Surface water crossings shall be perpendicular to the channel and either buried below the invert of the channel or aerial above the high-water mark of the channel. Surface water crossings shall be designed and installed in accordance with all federal, state, and local regulations.

2. For buried surface water crossings other than horizontal directional drills, the pipe shall be either encased in concrete or placed in a steel casing. Concrete encasement and steel casings shall extend horizontally from top of stream bank to top of stream bank.

3. For aerial surface water crossings, the pipe shall be supported on piers or steel girders, which shall adequately support surface water crossings. Kraft paper shall be placed between pipe and all points of contact with concrete and stainless-steel straps.

4. Disturbed banks shall be stabilized with rip rap placed over a non-woven fabric.

C. DUCTILE IRON PIPE

1. Pipe, fittings, and accessories shall be installed and tested in accordance with ANSI/AWWA C600: Installation of Ductile Iron Water Mains and Their Appurtenances.

2. The trench laying condition shall be as designed in accordance with ANSI/AWWA C150/A21.50 and ANSI/AWWA C600 and as specified on the Drawings. See Construction Specification Section 31 23 33, Trenching and Backfilling for laying condition requirements. The maximum depth of cover shall be as follows:

Table 333123.4

Ductile Iron Pipe Trench Laying Condition

Size (in.)	Pressure Class (psi) (100 psi surge, FS 2)	Nominal Thickness (in.)	Laying Condition (min. depth of cover 2.5 ft.)				
			Type 1 Trench	Type 2 Trench	Type 3 Trench	Type 4 Trench	Type 5 Trench
			Maximum Depth of Cover (ft.) (Single H-20 truck with 1.5 impact factor.)				
3	350	0.25	78	88	99	100+	100+
4	350	0.25	53	61	69	85	100+
6	350	0.25	26	31	37	47	65
8	350	0.25	16	20	25	34	50
10	350	0.26	11*	15	19	28	45
12	350	0.28	10*	15	19	28	44

* minimum depth of cover = 3 feet

3. Verify that polyethylene encasement is in place, where required, before placing bedding.

4. Push-On Joint Assembly:

a. Thoroughly clean the groove and the bell socket of the pipe or fitting; also clean the plain end of the mating pipe or fitting. Using a gasket of the proper design for the joint to be assembled, make a small loop in the gasket and insert it in the socket. For pipe sizes larger than 20 inches, it may be necessary to make two loops in the gasket (6 and 12 o'clock). Make sure the gasket faces the correct direction and that it is properly seated. In cold weather, it may be necessary to warm the gasket to facilitate insertion.

b. Apply lubricant to the exposed surface of the gasket and plain end of the pipe or fitting in accordance with the pipe manufacturer's recommendations. Do not apply lubricant to the bell socket or the surface of the gasket in contact with the bell socket. Lubricant is furnished in sterile containers and every effort shall be made to keep it sterile. For underwater or very wet joint assemblies, use relatively insoluble underwater joint lubricant that is manufactured for that application.

c. Bevel the plain end per the manufacturer's recommendations; square or sharp edges may damage or dislodge the gasket and cause a leak. When pipe is cut in the field, bevel the plain end with a heavy file or grinder to remove all sharp edges. Refer to a shop-manufactured bevel as a guide for proper shape.

d. Push the plain end into the bell socket of the mating pipe or fitting, keeping the joint straight while pushing. Make deflection after the joint is assembled.

e. Small pipe can be pushed into the bell socket with a long bar. A jack, lever puller, or backhoe shall be used for larger pipe. Use a timber header between the pipe and the jack or backhoe bucket to avoid damage to the pipe.

f. Maximum horizontal deflections for push-on ductile iron pipe shall meet AWWA C600 as follows:

Table 333123.5

Ductile Iron Pipe Allowable Joint Deflection

Size (inches)	Nominal Laying Length (feet)	Maximum Allowable Deflection	
		Offset per Length (inches)	Deflection Angle (degrees/radius, ft.)
3	18	19	5°/205
4	18	19	5°/205
6	18	19	5°/205
8	18	19	5°/205
10	18	19	5°/205
12	18	19	5°/205
14	18	11	3°/340
16	18	11	3°/340
18	18	11	3°/340
20	18	11	3°/340
24	18	11	3°/340
30	18	11	3°/340
36	18	11	3°/340
42	18	11	3°/340
48	20	12	3°/380

5. Mechanical Joint Assembly:

a. Wipe clean the socket and the plain end. Brush both the gasket and plain end with soapy water or an approved push-on joint lubricant meeting the requirements of ANSI/AWWA C111/A21.11 immediately before slipping the gasket onto the plain end for joint assembly. Lubrication is required for assembly of all mechanical joints.

b. Place the gland on the plain end with the lip extension toward the plain end, followed by the gasket with the narrow edge of the gasket toward

the plain end. In cold weather, it is preferable to warm the gasket to facilitate assembly of the joint.

c. Insert the plain end into the socket and press the gasket firmly and evenly into the gasket recess. Keep the joint straight during assembly.

d. Push the gland toward the socket and center it around the plain end with the gland lip against the gasket. Insert bolts and hand tighten nuts. Make deflection after joint assembly but before tightening bolts.

e. Tighten the bolts to the normal range of bolt torque (as indicated in the table below) while constantly maintaining approximately the same distance between the gland and the face of the flange at all points around the socket. This consistency can be accomplished by partially tightening the bottom bolt first, then the top bolt, then the bolts at either side, and finally the remaining bolts. Repeat the process until all bolts are within the appropriate range of torque.

(excerpt from AWWA C600-99 Table 2):

Table 333123.6

Ductile Iron Pipe MJ Bolt Torque Requirements

Joint Size (in.)	Bolt Size (in.)	Torque (ft. – lbs.)
3	5/8	45-60
4-24	3/4	75-90
30-36	1	100-120
42-48	1 1/4	120-150

Tighten nuts on alternate sides of the gland until pressure on the gland is equally distributed.

f. Permissible deflection in mechanical joint pipe shall not be greater than listed in Table 4 of AWWA C600-99 as follows:

Table 333123.7			
Allowable Joint Deflection			
Size (inches)	Nominal Laying Length (feet)	Maximum Allowable Deflection	
		Offset per Length (inches)	Deflection Angle (degrees/radius, ft.)
3	18	31	8°-18’/125
4	18	31	8°-18’/125
6	18	27	7°-07’/145
8	18	20	5°-21’/195
10	18	20	5°-21’/195
12	18	20	5°-21’/195
14	18	13.5	3°-35’/285
16	18	13.5	3°-35’/285
18	18	11	3°-00’/340
20	18	11	3°-00’/340
24	18	9	2°-23’/450

6. Cutting Ductile Iron Pipe:

a. Cut ductile iron pipe using an abrasive cut-off saw, a rotary wheel cutter, a guillotine pipe saw, or a milling wheel saw. No welding, flame cutting, or flame tapping will be allowed.

b. The ANSI/AWWA standards for ductile iron pipe require factory gauging of the spigot end. Accordingly, pipe selected for cutting shall be field-gauged. A mechanical joint gland inserted over the barrel of the pipe might serve as a convenient indicator for field gauging. When glands are not available, pipe can be selected by measuring with a tape in accordance with the manufacturer's recommendation. Some pipes, especially in the larger diameters, may be out-of-round to the degree that they will need to be rounded after cutting by jacking, or by other methods to facilitate making the joint. When rounding the pipe by jacking, be careful not to over jack the pipe. Instructions for rounding pipe products can be obtained from the pipe manufacturer.

c. Grind all cut ends and rough edges smooth and, for push-on type connections, bevel the cut end slightly in accordance with the manufacturer’s recommendations.

D. POLYVINYL CHLORIDE (PVC) PIPE

1. PVC pipe shall be installed in accordance with the following:

a. AWWA C605: Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings.

b. AWWA M23: PVC Pipe – Design and Installation.

c. Unibell Handbook of PVC Pipe Design and Construction by the PVC Pipe Association.

2. Embedment Type:

a. The embedment requirements for PVC pipe shall be in accordance with AWWA Standard C605 for “Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.”

b. The embedment type shall be as specified on the Drawings. See Construction Specification Section 31 23 33, Trenching and Backfill for embedment type requirements.

3. Field cuts:

a. Cut pipe only as recommended by the manufacturer. Cuts shall be at a right angle to the longitudinal axis of the pipe. Debur and bevel the pipe spigot to provide a smooth end and re-mark with insertion line. Field bevels shall match factory bevels.

4. Push-on Joint Assembly:

a. Assemble joints in accordance with manufacturer’s recommendations.

b. Do not lubricate the gasket or the gasket groove in the bell because the lubrication could cause gasket displacement.

c. Push the spigot until the reference mark on the spigot end is flush with the end of the bell. If undue resistance to insertion of the spigot is encountered or the reference mark does not reach the flush position, disassemble the joint and check the position of the rubber gasket.

d. Do not “over-bell” the pipe by inserting the pipe past the manufacturer’s recommended mark.

5. Longitudinal Bending:

a. Do not bend pipe longitudinally without approval of the Engineer.

b. Pipes larger than 12 inches in diameter shall not be bent.

c. Embedment types 1 and 2 shall not be permitted for longitudinally bent pipe segments.

d. Block and brace pipe joints to ensure that bending does not result in axial deflection that exceeds the manufacturer’s recommendations in the gasketed or mechanical joints.

e. The longitudinal bending in the PVC pipe barrel must meet 125% of the minimum bending radius requirements at every point.

f. Construction machinery shall not be used to bend PVC pipe.

E. THRUST RESTRAINTS

1. Thrust blocking or restraint system shall be provided to prevent movement of pipe or appurtenances in response to thrust. Provide concrete thrust blocking unless restrained joints are specifically called for on the drawings.

2. Provide thrust blocking or restraint system at:

   a. Changes in direction (bends, tees, etc.).

   b. Changes in size (reducers, change in pipe diameter, etc.).

   c. Dead ends (caps, plugs, etc.).

   d. Valves.

3. Do not encase pipe and fitting joints to flanges. Ensure that pipe and fitting joints will be accessible for repair.

4. Pour concrete thrust blocks against undisturbed earth.

5. Install tie rods, clamps, setscrew retainer glands, or restrained joints.

6. Protect metal-restrained joint components against corrosion by applying a bituminous coating or encasing metal area using concrete mortar.

7. Thrust Blocking:

   a. Thrust blocks shall be constructed from 3,000 psi concrete (at 28 days). Concrete thrust blocking shall be constructed in accordance with standard detail 15-33. Concrete anchors may be unformed but minimum dimensions must be maintained. All fittings and pipe shall be wrapped in plastic prior to installation of concrete to ensure that bolts and nuts are free of concrete and debris to allow accessibility for future repairs. When soft, mucky, unsuitable, or unstable soils are encountered, thrust shall be resisted by running tie rods to solid foundations by removing the soft materials and replacing it with ballast of sufficient size and weight to resist thrust.

   b. Follow pipe manufacturer’s installation manuals for the anchoring of valves and fittings unless superseded by the requirements of these specifications.

   c. Concrete thrust blocking is not allowed where the blocking may bear on other utilities or where the area behind the block may be excavated in the future.

   d. The RPR or Owner inspector must inspect all blocking and anchoring prior to backfilling.

8. Rodding:

   a. 4-inch and larger valves and assemblies of fittings shall be secured to a blocked fitting by threaded rods with eyebolts. Refer to standard details 15-30,15-31, and 15-32 for the minimum size and number of rods needed for 200 psi test pressure. No more than one coupling shall be allowed between rods. Rodding length between fittings shall not exceed

20 feet. When the length between fittings exceeds 20 feet, place a thrust collar on the line and rod to the thrust collar.

b. All eyebolts and plain or galvanized threaded steel rods shall be coated with a minimum of 12 mils of a 2-component coal tar epoxy meeting ASTM D3359. Coal tar epoxy coating shall meet or exceed Benjamin Moore M47/M48, EpoxySystems Product #216, or equal. Rods are to be thoroughly clean and dry before coating.

c. A restraint flange system may be used in lieu of rodding.

9. Thrust Collars:

a. The thrust collar shall consist of a wedge action restrainer gland placed around a joint of ductile iron pipe encased in a reinforced 3000 psi concrete block. Where the blocking provides thrust resistance for fittings, threaded rods shall be connected to the restraint flange fitting secured to a full joint of ductile iron pipe. On dead end lines, the thrust collars must be placed on a full joint of ductile iron pipe just after the terminal end line valve.

b. Vertical upward thrust at fittings or vertically deflected joints shall be resisted with thrust collars of adequate size and weight to resist thrust.

F. COUPLINGS

1. Install couplings in accordance with manufacturer recommendations.

3.4 PREPARATION FOR USE

A. Prior to filling, flushing and testing, confirm all thrust restraints are properly installed and that concrete thrust blocks/collars have been allowed sufficient time to develop the required strength. As a minimum, all concrete thrust blocks/collars shall have set for 7 days for standard concrete and 3 days for high early strength concrete (min 4,500 psi). Temporary bracing will not be allowed.

B. All trenches shall be backfilled. All construction activities which require excavation in proximity to force mains shall be complete.

C. Pressure test prior to installation or restoration of pavement.

D. Valves shall be properly located, operable, and at the correct elevation.

E. When existing water mains are used to supply test water, provide cross-connection control between the test and supply mains in accordance with Owner requirements. Remove connections to existing mains to isolate the mains to be tested.

F. Pressure and Leakage Test:

1. Subject all mains to a pressure and leakage test before connecting to existing mains.

2. Testing shall be performed in the presence of the RPR or Owner. Schedule with Owner and Engineer a minimum of 48 hours in advance. Do not proceed until granted approval by the Owner.

3. Test each valve-to-valve section separately. If Contractor elects to test more than one valve-to-valve section, the allowable leakage for the test will be based upon the shortest valve-to-valve section in the test.

4. Perform in accordance with AWWA C600 and C605 and the following:

   a. Isolate main from adjacent existing main, and apply pressure by pumping clean water into the main via 1-inch corporation stops.

   b. The Contractor shall ensure that the pipe is full of water and that the air has been removed before testing. Confirm all air is vented from high points.

   c. Each pipeline section shall be filled with water and pressurized to the test pressure for a period of no less than 24 hours prior to the pretest.

   d. Test pressure shall be at least 1.5 times the working pressure at the point of testing with a minimum of 200 psi. Test pressure shall not be less than 1.25 times the working pressure at the highest point along the test section. Test pressure shall not exceed the pipe or thrust restraint design pressure. Test pressure shall not vary by more than +/- 5 psi for the duration of the test.

   e. Test pressure shall not exceed the rated pressure of the valves.

   f. The Contractor shall pretest all mains for a period of 2 hours before notifying the Owner that the main is ready for a final pressure test. No final pressure test will begin after 2:00 pm.

   g. At the end of the 2-hour period, pump water from a container into the main and measure the water used.

   h. Loss by leakage shall not exceed that as determined by the following formula:

$$L = \frac{ND\sqrt{P}}{7{,}400}$$

      in which L is the allowable leakage in gallons per hour; N is the number of joints in the length of pipe tested; D is the nominal diameter of the pipe in inches; and P is the average test pressure during the leakage test in pounds per square inch gage.

   i. When testing against closed metal-seated valves, allow an additional leakage per closed valve of 0.0078 gallons/hour/inch of nominal valve size.

   j. Pressure test at each side of intermediate valves by shutting each valve, exhausting the pressure on one side, and applying the test pressure to the main on the opposite side of the valve for approximately 10 minutes as determined by Engineer. Repeat this procedure for each intermediate valve.

5. If main and valves do not pass the leakage test, locate and repair the leak or leaks and repeat testing procedure until successful. Repair visible leaks regardless of the amount of leakage.

6. Pressure and leakage testing is the responsibility of the Contractor, who shall provide all materials, labor, and equipment, and pay for the total volume of water used.

7. Install air release valves upon completion of pressure testing.

3.5 PROTECTION

A. Protect distribution piping and appurtenances from damage until accepted into service by Owner.

3.6 FINAL ACCEPTANCE

A. Upon completion of force main installations and prior to final acceptance, the Contractor shall provide adequate and competent personnel to conduct, in conjunction with the Owner or RPR, an inspection of each valve on the newly completed main. The purpose of this inspection shall be to insure the operability and location of each valve and to further insure that all valves are left in the open position.

3.7 ACTIVATION OF FORCE MAINS

A. Upon receipt of Final Approval from the State, the force main shall be placed into service by the Owner.

B. No further Work on the main, valves, and appurtenances will be permitted without full knowledge of the Owner and Engineer.

END OF SECTION

SECTION 33 32 11
FIELD-ERECTED WASTEWATER PUMPING STATIONS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Submersible Wastewater Pumping System

2. Pump Control Panel

3. Related Appurtenances

B. This is an existing pump station. Two existing pumps will be removed and four pumps will be installed in two (connected) wet wells. A new pump control panel will control all four pumps.

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions: Not used.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination

B. Preinstallation Meetings

C. Sequencing

D. Scheduling

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Furnish performance affidavits from manufacturers stating that all pumps and other products provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit product data/shop drawings for pumps, rails, electrical, fittings, couplings, adapter pieces, restraints, bolts, gaskets, supports, and appurtenances. Submit dimensional drawings for piping. Submit dimensional drawings and weights for all fittings. Include installation instructions.

D. Pump Certification: Submit a certified pump test curve from pump manufacturer prior to shipment.

E. Manufacturers' Instructions.

F. Manufacturer Reports.

1.5 CLOSEOUT SUBMITTALS

A. Provide submittals in accordance with Section 01 78 00 – Closeout Submittals.

B. Operation and Maintenance and Parts Data: Furnish three hard copies and one electronic copy in PDF format of the Operation and Maintenance and Parts Manuals for:

1. Pumps/motors

2. Pump controls

C. Warranty Documentation

D. Record Documentation

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts

B. Tools

1.7 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Materials used for the construction of pump stations and appurtenances shall be new, free of defects,

C. All materials and appurtenances shall be clearly, legibly, and appropriately marked for identification purposes. Qualifications

1. Manufacturers

2. Suppliers

3. Fabricators

4. Contractors / Installers / Applicators / Erectors

5. Testing Agencies

6. Licensed Professionals

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

B. Delivery and Acceptance Requirements

C. Storage and Handling Requirements

1. Store equipment and materials in accordance with manufacturer’s instructions.

D. Packaging Waste Management

PART 2– PRODUCTS

2.1 PRE-CAST CONCRETE VAULTS

A. Comply with Section 33 05 63 – Concrete Vaults and Chambers.

2.2 WETWELL AND VALVE VAULT ACCESS HATCHES

A. Comply with Section 33 05 63 – Concrete Vaults and Chambers.

2.3 SUBMERSIBLE PUMPING SYSTEM

A. Pumping system consists of pumps, pump control panel, discharge elbow, two 316 SS guide rails for each pump, 316 SS chain pump retrieval system, and all other equipment for a complete pump station installation.

2.4 SUBMERSIBLE PUMPS

A. Pumps shall be submersible sewage pumps fitted with motors that are compatible with the electrical service to be provided at the station. The pumps shall be clockwise rotation and connect to the discharge piping when lowered into place by means of a permanently installed stainless steel guide rail system.

B. Pumps shall be non-clog type capable of passing a 3-inch solid. Impeller shall be cast iron trimmed to operating condition and dynamically balanced. Cast iron volute, stainless steel shaft, stainless steel or hardened chrome wear rings, tungsten carbide or silicon carbide seals, and stainless steel hardware.

1. There will be two parallel FMs but will be different alignments resulting in different system curves for each FM. The pumps shall be interchangeable and may operate in wet well 1 or wet well 2 and pump to FM 1 or FM 2. The duty conditions below are the result of the operational flexibility.

2. Quantity: 4 installed, 1 spare (5 total)

3. Duty conditions:

a.

GPM (each pump)	TDH (feet)	GPM Total	No. of Pumps	FM
1,225	181	2,450	2, Parallel	Existing
1,415	173	2,830	2, Parallel	New
1,500	168	4,500	3, Parallel	Interconnect Open
1,600	162	1,600	1	Existing
1,850	148	1,850	1	New

b. Minimum efficiency at primary duty condition: 66%

4. Static Head: 134 feet – existing FM alignment
112 feet – new FM alignment

5. Duty condition flowrates shall be within 70% to 120% of pump capacity at BEP.

6. Speed: 1,800 RPM, nominal

7. Motor: 125 HP (maximum), 460 volt, 3 phase, 60 Hz

8. Weight: The lift-out weight of the pump and motor shall not exceed 4,000 pounds.

9. Provide one spare pump and deliver it to Owner at Utley Creek WRF located at 150 Treatment Plant Road, Holly Springs, NC 27540.

C. Pumps shall meet the hydraulic operating conditions as specified.

D. Motors shall be squirrel cage induction motor, 1.15 service factor, explosion proof and UL Listed for installation in Class 1, Division 1, Group D space.

E. Pump motor horsepower shall be sized so that the pump is non-overloading throughout the entire pump performance curve from shut-off through run-out.

F. Spare parts: Provide a spare impeller, key, nut, washer, and mechanical seal for each pump.

G. Pump manufacturer shall be ABS/Sulzer, Flygt/Xylem, or Fairbanks Morse/Pentair.

2.5 PUMP LIFT-OUT RAIL SYSTEM

A. The installation shall include a rigid discharge base-elbow to support the total weight of the pumping unit. The base is to be bolted directly to the floor with the 90 degree elbow having a 125 lb. ANSI flange discharging vertically.

B. A slide away coupling shall be provided for each pump to allow the pump to be installed or removed without requiring personnel to enter the wet well. The coupling shall consist of the discharge elbow, a movable bracket that bolts to the pump discharge flange and mates with the discharge elbow, and a system of guide pipes to guide the pump and movable bracket from the discharge elbow to the access cover in the top of the wet well.

C. The guide pipe system shall consist of heavy duty stainless steel pipes of required size and length. These pipe(s) shall terminate on the discharge elbow and a bracket provided by the pump manufacturer attached to the access cover. None of the pump weight shall bear on the guide pipes.

D. Each pump shall be fitted with a stainless steel lifting chains for pump installation and removal. The cable or chain shall have a minimum safe working load of 2.5 times the pump weight but not less than 1/4 inch diameter chain links. All hardware shall be 316 stainless steel.

2.6 PIPING

Provide pump station piping in accordance with Section 33 31 23 – Sanitary Sewage Force Main Piping.

2.7 VALVES

Provide valves in accordance with Section 40 05 60 – Wastewater Utility Valves.

2.8 FLOAT LEVEL CONTROLS

A. The Contractor will furnish and install non-mercury mechanical float level switches. Each level switch shall be encased in a solid polyurethane float and attached to 16/2 SJO

cable. Each level control shall be supplied with a stainless steel bank clamp to facilitate mounting in the wetwell.

B. Float control cables between the wetwell and control panel shall be routed through a terminal cabinet.

C. Float bracket shall be 316 stainless steel with at least 12-inch between hooks.

D. Provide floats for each wet well. The pump control panel shall have a switch to choose which wet well floats will be active for level control.

2.9 OPERATION OF PUMPING SYSTEM

A. There are two existing wetwells that are connected and operate as a single wetwell. Each wetwell will contain two pumps. The pumps in each wetwell will pump to separate but parallel force mains. The wetwells can be isolated by a slide gate and the force mains can be interconnected by opening valves; however, the general operation below is for normal operation with the wetwells operating as a single wetwell and the force mains operating in parallel but separate operation.

1. Wetwell 1 will contain pumps 1 and 2. Wetwell 2 will contain pumps 3 and 4.

2. Wetwell 1 and 2 are connected with a slide gate to isolate the wetwells. Normal operation is to operate as a single (larger) wetwell with the slide gate open.

3. Pumps 1 and 2 will pump to the existing 16-inch force main. Pumps 3 and 4 will pump to the new 16-inch force main. If maintenance is necessary, one force main can be shut down using site valves.

4. Floats will turn pumps on/off. Each wetwell will have floats. The pump control panel will have a selector to choose which set of floats to use for water level control.

5. As water level rises in the wet well, a float switch will trigger the lead pump to run.

6. If the water level continues to rise a float switch will trigger the lag pump to run.

7. If the water level continues to rise, a float switch will trigger the lag-lag pump to run. The pump station is at firm capacity with three pumps running.

8. If the water level continues to rise, a float switch will energize and signal the alarm. This float shall also trigger the remaining pump to run. All four pumps will be running in this scenario.

9. When the water level falls to the “pumps off” level, a float will turn all pumps off. Pumps shall turn off sequentially and not all at one time.

B. A single pump control panel will operate all pumps and automatically alternate lead and lag pumps in sequence to distribute run time evenly across all pumps.

C. If any pump should fail for any reason, the alternator circuitry shall provide means to start the next available pump.

D. A time delay switch shall be provided, to prevent any two pumps from starting at the same time.

E. An adjustable time delay between pump stops shall be provided to prevent multiple pumps from stopping at the same time.

2.10 PUMP CONTROL PANEL

A. The layout and required cabinet face components (lights, switches, meters, etc.) are illustrated on a plan detail sheet. The following push buttons, switches, and indicators shall be included on panel face:

1. Floats:

a. WET WELL 1 or 2 selector switch

b. Indicator light: Yellow (HIGH FLOAT ALARM)

c. Indicator light: White (LAG-LAG FLOAT)

d. Indicator light: White (LAG FLOAT)

e. Indicator light: White (LEAD FLOAT)

f. Indicator light: White (PUMPS OFF FLOAT)

g. Indicator light: Yellow (LOW FLOAT ALARM)

2. Required for each pump:

a. HAND-OFF-AUTO (HOA) selector switch

b. Run time meter

c. Indicator light: Green (ON)

d. Indicator light: Red (OFF)

e. Indicator light: Red (MOTOR OVERTEMP)

f. Indicator light: Red (BEARING OVERTEMP)

g. Indicator light: Red (SEAL FAILURE)

h. Reset pushbutton (ALL ALARMS RESET)

B. Description of Operation:

1. The control panel shall control the operation of the pumps with automatic alternation of each time the pumps stop.

a. The control panel shall operate pumps in a lead/ lag/ lag-lag configuration. The fourth pump shall run if the high alarm is triggered.

2. A HAND-OFF-AUTO selector switch for each pump controls how the pumps operate.

3. Selector switch in “HAND” position:

a. Pump will run when selector switch is turned to HAND.

b. Pump off float will be ignored when in HAND.

c. Pump will stop when Low Float Alarm float is reached.

4. Selector switch in “AUTO” position:

a. Each pump is started and stopped based on wet well floats.

C. General: Control panel shall consist of main input terminals, digital three-phase ammeter for each pump, phase monitor, surge protector, control power transformer, selector switches, pushbutton operators, auxiliary relays, indicator lights, elapsed time meters, circuit breakers, alternator, strip heater with thermostat, circuitry, and terminal blocks with all components mounted in one common enclosure. The controls assembly shall provide means to operate each motor manually or automatically. Power supply shall be as indicated on the drawings. Control power shall be 480 volts.

D. Accept all motor alarm monitoring inputs and combine with common output failure to RTU.

E. Monitoring Outputs to SCADA/RTU:

1. Provide the following output capabilities. Output may not be used at startup. Owner may incorporate some outputs to SCADA/ RTU in future.

2. Common motor alarm (for each pump)

3. HOA switch in AUTO (for each pump)

4. Pump fail (for each pump)

5. High wet well level

6. Low wet well level

7. Pump run (for each pump)

F. Enclosure:

1. Interior Location: The electrical control equipment shall be mounted within a NEMA type 12, enclosure of welded and seamless construction.

a. Switches, lights, meters, etc. shall be mounted and visible on the front panel.

2. Exterior Location: The electrical control equipment shall be mounted within a NEMA 4X stainless steel, dead front enclosure of welded and seamless construction.

3. Dead front / interior swing panel for mounting selector switches, pushbutton operators, and LED indicators: Continuously hinged dead front held closed with two slotted nickel plated brass captive panel screws with knurled edges to allow for finger or screwdriver tightening.

4. Control compartment shall incorporate a fixed, rigid back panel on which control components shall be mounted. Back panel shall be secured to enclosure with collar studs. The back panel shall be 12 gauge galvanized steel, painted with heavy-duty epoxy enamel after fabrication. Back panel shall be tapped to accept

all mounting screws. Self-tapping screws shall not be used to mount any component.

5. Mounting provisions: Mounting lugs shall be provided for rack mounted panels. Mounting feet shall be provided for self-supported panels.

G. Components:

1. All switches, pushbuttons, and indicators shall be “gloved hand” type, Square D SK type, or equal.

2. A phase monitor shall be connected to the main power input terminals to prevent motor operation upon phase loss, phase reversal, under-voltage, and phase imbalance conditions. Upon restoration of satisfactory input voltage, the unit shall automatically reset after a user programmable time delay. Phase monitor leads shall be fused in accordance with the manufacturer’s requirements.

3. A time delay relay shall be provided to prevent motors from starting at the same time.

4. A surge protection device for the control panel shall be connected to the main power input terminals.

5. A 120V control power transformer shall be provided, sized in accordance with the loads to be supplied, plus 20% additional capacity.

6. Selector switches shall be heavy-duty, oil tight, manual return with standard knob. Switches shall be clearly labeled according to function.

7. Pushbutton operators shall be heavy-duty, oil tight, watertight, NEMA 4, momentary position, fully guarded type.

8. Auxiliary and control relays shall be enclosed, general purpose relays with plug-in bases and transparent polycarbonate dust cover.

   a. Continuous rated coils with AC pickup voltages of 85% of nominal. Coil voltage as required.

   b. Contacts rated at 120 VAC, 80 percent P.F., 10 amperes continuous, 30 amps make, 3 amps break.

   c. Relays shall feature an LED indicator that is lit when the coil is energized.

9. Panel indicators shall be heavy-duty, oil tight, push-to-test with 120V LEDs.

10. Running time meters for each motor shall be provided.

    a. Non-resettable, hour indicating, with 6 digit registers.

    b. ¼” high numbers, white on black background. Last digit for tenths of an hour shall be of contrasting color.

11. Individual magnetic, instantaneous trip circuit breakers shall be provided for each motor. Breakers shall be lockable in the OFF position. Breakers shall be sized in accordance with the nameplate rating of the motor provided.

12. Labeling:

a. All switches, pilot lights, control devices, major components, etc., shall be clearly labeled according to function with engraved plastic plates, black with white core. Minimum letter size shall be 1/8 inch.

b. All conductors and terminal strips shall be labeled, matching schematic and wiring diagrams.

c. Identification labeling shall match the bill of materials, schematic diagram, and wiring diagram.

d. Schematic and wiring diagrams shall be displayed via a placard mounted to the inside surface of the panel door.

13. All other components necessary for a completely operable system performing the functions required shall be supplied.

H. Operating Controls and Instruments: All operating controls and instruments shall be securely mounted in such a manner that any or all standard options specified may be added without rearrangement of existing controls and instruments. All controls and instruments shall be clearly labeled to indicate function.

I. Spare Parts:

1. One complete set of fuses.

2. Manufactured recommended spare parts.

J. Cleaning: Clean internally, on completion of installation, according to manufacturer's written instructions. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

K. Start-Up Testing:

1. Test instrumentation system for proper function and sequencing of all motors, indication, and remote notification capabilities.

2. Conduct a test for observation by the Owner’s representative to demonstrate operation in accordance with the drawings and specifications.

L. Demonstration:

1. Train Owner's maintenance personnel to adjust, operate, and maintain components in the pump control panel including variable-frequency drives (if applicable).

2. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment.

3. Review data in maintenance manuals.

4. Schedule training with Owner, through Engineer, with at least seven days' advance notice.

2.11 MAGNETIC FLOW METER

A. Contractor shall furnish an electromagnetic flow meter suitable for fixed-site measurement of water flow in a full pipe. The flow meter shall consist of a flow tube containing two sensors and a remote flow transmitter. The sensors shall be field-

interchangeable. Meters that require removal of the flow tube for sensor replacement or maintenance or flowrate verification are not acceptable.

B. The quantities and nominal diameter of the flow tube shall be as listed below. The spool piece flow tube shall be made of 304SS for wastewater service or carbon steel or 304SS for potable water service. Carbon steel tubes shall be protected inside and outside with a fusion bonded epoxy coating that conforms to AWWA C213 and National Sanitation Foundation Standard NSF 61. Flange material shall match flow tube material, Class 150 unless noted otherwise. The flow tube assembly shall be indefinitely submersible to 30 feet water column to NEMA 6 and IP68.

1. Two – 12-inch diameter

C. Electrodes shall be 316 SS. Sensors shall contain a reference coil, which measures and compensates for magnetic entrainments in the media, exciter coils to completely fill the flow tube cross section with magnetic flux electrodes to measure the flow signal.

D. Liner shall be PTFE or Neoprene.

E. The flow meter shall be capable of processing signals from fluids moving in either direction at a velocity range between 0.04 and 30 feet per second at a minimum. Meter accuracy shall be within 0.5% for flows greater than 1.5 feet per second.

F. Grounding rings shall be 316SS.

G. Transmitter shall receive the signal from the flow tube and shall indicate the corresponding flow rate on a waterproof and backlit LCD display. The flow transmitter shall be mounted in location as shown on Construction Drawings. The transmitter housing shall be capable of wall mounting and shall be UV resistant, watertight, dust proof, and corrosion resistant to NEMA 4X and IP65.

H. The meter assembly shall operate on a 120V, single-phase power source.

I. If meter technology requires a separate field communicator device for reprogramming the meter's sensors, one shall be provided with the meter.

J. Flow meters shall have positive (+) and negative (-) sign convention for flow direction.

K. The meter shall be Badger M-3000 or equal by ABB, EMCO, or Fisher-Rosemount.

2.12 FREEZEPROOF EYE WASH AND SHOWER

A. Floor mounted, freeze proof emergency eyewash and shower combination unit meeting ANSI Z358.1 and consisting of 1-1/4" minimum diameter 304 SS pipe and fittings, SS ball valves, 11" SS bowl with dust cover, and SS shower head which are fabricated as a complete unit. Eye wash valve shall be stay-open, simple flag push type. Shower valve shall be stay-open, pull lever with chain connected to drench valve.

B. Provide with water strainer and universal emergency sign. Mount unit on a concrete footing with showerhead 82" to 96" above surface floor.

C. Locate unit with 10 seconds of and on the same level as hazard per ANSI Z357.1.

D. Manufacturer shall be Haws, Guardian, Encon, or equal.

2.13 EMERGENCY PUMP CONNECTION

A. A ductile iron emergency bypass pump connection shall be installed at each pump station with 304 SS quick connect as shown on the Drawings.

B. Protect above grade connection from damage from vehicles with painted steel bollards or similar protection device.

2.14 SAFETY PLACARDS

A. Provide safety placards as required for structure (e.g. confined access entry) and equipment as required by OHSA.

B. Exterior signs shall be engraved stock, melamine plastic laminate, minimum 1/16 inch thick for signs up to 20 sq. in. and 1/8 inch thick for larger sizes. Engraved legend with black letters on white face.

C. Mount signs with self-adhesive, double-sided tape. Clean surfaces before applying.

D. Each placard shall be posted and readily visible.

2.15 ARC FLASH ANALYSIS

A. For three phase power systems, perform an arc flash study on electrical gear in accordance with NFPA 70E – *Standard for Electrical Safety in the Workplace* and IEEE 1584 – *Guide for Performing Arc-flash Hazard Calculations*. Study shall clearly define safety placards and personal protective equipment required.

B. Install safety placards in accordance with analysis recommendations.

PART 3– EXECUTION

3.1 EXAMINATION

A. Verify that existing pump station location and invert are as indicated on the Drawings. Field verify the size, type material, etc. of the existing and proposed pipes to be connected prior to ordering materials. Coordinate the size and location of all wetwell penetrations with the manufacturer.

B. Verify proper location of pump station in accordance with Drawings.

3.2 PREPARATION

A. Protect and maintain existing conditions in accordance with Construction Specification Section 02 01 00, Maintenance of Existing Conditions.

B. Clear and grade site in accordance with Construction Specification Sections 31 10 00, Site Clearing and 31 22 00, Grading.

C. Excavate with equipment suitable for size of structure and depths of excavation required. Construct sides of excavation as vertical as possible taking into account the type of soils encountered and safety requirements. Utilize appropriate excavation wall support systems.

D. Dewater excavation as required to obtain suitable and firm base. Once final grades are obtained, protect excavation from entry of water and foreign materials and prevent from freezing.

E. Notify Engineer if unsuitable soils are encountered.

F. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers as indicated on Drawings to indicate its intended use.

G. Inspect precast concrete manholes and structures immediately prior to placement in excavation to verify that they are internally clean and free from damage. Remove and replace damaged units.

3.3 INSTALLATION

A. Construct in accordance with the requirements of NCAC Title 15A 2T Waste Not Discharged to Surface Waters, and other rules and guidance by the NC Department of Environment and Natural Resources, Division of Water Resources.

B. Install wetwells and vaults plumb and level at the grades shown in accordance with Construction Specification Section 33 39 00, Sanitary Sewerage Structures. Install connecting pipes at the grades and slopes indicated. Place wetwells and vaults on 6 inches minimum bedding of class 57 or 67 stone unless otherwise noted.

C. Equipment and controls shall be installed per manufacturer's instructions.

D. Backfill in accordance with Construction Specification Section 31 05 00, Common Work Results for Earthwork.

3.4 FIELD QUALITY CONTROL

A. Test backfill in accordance with Construction Specification Section 31 05 00, Common Work Results for Earthwork.

3.5 SYSTEM STARTUP AND ADJUSTING

A. Comply with Construction Specification Section 01 75 00, Starting and Adjusting for starting of equipment and systems.

B. Witnessed Testing: Witnessed testing shall be performed in the presence of the Engineer and the results of the testing maintained as part of the construction record documentation. Witnessed testing shall include start-up assistance by a qualified factory representative and certification of field pump results. Prior to acceptance, the Contractor shall demonstrate, an operational test of all pumps, generator, drive, and control systems to demonstrate that the installed equipment meets the purpose and intent of the specifications. Tests shall demonstrate that all equipment is electrically, mechanically, structurally, and otherwise acceptable; if it is safe and in optimum working condition; and if it conforms to the specified operating characteristics.

C. After construction debris and foreign material has been removed from the wet well, the Contractor shall supply an adequate amount of clear water volume to operate station through several pumping cycles. Observe and record operation of pumps, suction (if applicable) and discharge gage readings, ampere draw, pump controls, and liquid level controls. Check calibration of all instrumentation equipment, test manual control devices, and automatic control systems. Be alert to any undue noise, vibration, or other operational problems.

D. Drawdown test: The Contractor shall conduct a drawdown test to confirm that the pump is operating at the required design operating point and to determine the actual pumping rate of each pump. This test shall be conducted in the presence of the Engineer or his

representative, the Contractor and a representative of the pump manufacturer. Test shall be performed for each pump and the rates recorded for each pump and included as part of the record in the certified pump test.

E. Manufacturer Services

1. The manufacturer's representative shall be present at pump start up. Co-ordinate station start-up with manufacturer's technical representative. The representative or factory service technician shall inspect the completed installation. He shall calibrate and adjust instrumentation, correct or supervise correction of defects or malfunctions, and instruct operating personnel in proper operation and maintenance procedures.

3.6 CLEANING

A. Provide cleaning and waste management in accordance with Construction Specification Section 01 74 00, Cleaning and Waste Management.

3.7 CLOSEOUT ACTIVITIES

A. Comply with Construction Specification Section 01 79 00, Demonstration and Training.

B. Demonstration

C. Training

3.8 PROTECTION

A. Protect pump stations and appurtenances from damage until accepted into service by Owner.

3.9 MAINTENANCE

A. Maintain pump stations and appurtenances from damage until accepted into service by Owner.

END OF SECTION

SECTION 40 05 60
WASTEWATER UTILITY VALVES

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Valves for wastewater utilities

2. Related appurtenances

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for additional abbreviations and acronyms used throughout the Contract Documents.

B. Definitions: Not used.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination

B. Preinstallation Meetings

C. Sequencing

D. Scheduling

1.4 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that valves and appurtenances have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit product data/shop drawings for valves, adapter pieces, supports, and appurtenances. Submit dimensional drawings and weights for valves. Include manufacturer’s installation instructions.

D. Field Quality Control

1. Force Main Pressure Test Reports

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Manuals: Submit operation and maintenance manuals in accordance with Construction Specification Section 01 78 00, Closeout Submittals.

B. Warranty Documentation

C. Record Documentation

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Spare Parts

B. Tools

1.7 QUALITY ASSURANCE

A. Perform Work in accordance with Owner's standards, specifications and details.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

B. Transport, receive, store, and handle valves, hydrants and appurtenances in accordance with manufacturer recommendations.

C. Exercise special care in handling valves and appurtenances during transportation, delivery, storage, and distribution to avoid damage.

D. Inspect valves and appurtenances thoroughly upon arrival for damage. Remove damaged or rejected materials from the site immediately.

E. Valves and appurtenances shall be kept clean. Valves shall be stored to prevent entry of water, dirt, and foreign matter into valves. Seal valve and ends to prevent entry of foreign matter.

PART 2– PRODUCTS

2.1 PLUG VALVES

A. Non-lubricated, eccentric plug type with resilient seat seal. The port area for valves shall be 100% full pipe area. Valve bodies shall be of ASTM A-126 Class B cast iron or ASTM A536 ductile iron. The valve bonnet/cover shall be removable for inspecting the plug and seat while the valve is installed in the pipeline. All exposed nuts, bolts, washers, springs, etc. shall be type 304 stainless steel.

B. Resilient seat seals shall be of Buna-N or Neoprene, suitable for use in sewage service. Seats shall be of non-metallic with seat coating thermally bonded and in full conformance to AWWA Standard C550. Valves shall be furnished with permanent corrosion resistant bearing surfaces in the upper and lower journals designated to withstand full rated bearing loads and provide long life in sewage service. Nominal valve pressure ratings, body flanges and wall thicknesses shall be in full conformance to ASME B16.1.

1. Buried Service: supply with 2" operating nut. When nut is more than 2' below grade, provide extension to bring operating nut to within 2' of grade.

2. Above grade, inside vault, or inside structure: Supply with Floor Stand Operator with hand wheel unless noted otherwise.

C. Valve seats shall be tested and provide leak-tight shut-off to 175 psi for valves 3"-12" and 150 psi for valves 14"-72", with pressure in each direction. A hydrostatic shell test at twice rating shall be performed with plug open to demonstrate overall pressure envelope integrity.

D. Body seat materials shall be welded nickel alloys with a minimum nickel content of 95% or type 316 stainless steel.

E. Buried valves shall be mechanical joint ends in accordance with ANSI/AWWA C111/A21.11 or, for bodies made from ductile iron, mechanical-joint ends shall be manufactured to the dimensions of ANCI/AWWA C153/A21.53 .

F. Above grade and in-vault valves shall be ASME B16.1, Class 125 flanged joint ends with hand wheel operator, unless otherwise shown. Valves shall open by turning counterclockwise. Flanged joint connection bolts and nuts shall be type 304 stainless steel.

G. Valves six inches (6") and larger shall have gear actuators. All gearing shall be fully enclosed in a suitable housing and be suitable for running in a lubricant with seals provided on all shafts to prevent entry of dirt and water into the actuator. A suitable stop shall be set to provide water tight shut off in the closed position at full rated pressure.

2.2 AIR RELEASE VALVE ASSEMBLY

A. Single body combination air valve, rated for raw sewer use, automatic float-operated valve designed to exhaust large quantities of air during the filling of a piping system and close upon liquid entry. The valve must perform the functions of both air/vacuum and air release of accumulated air from the force main while the system is in operation and under pressure.

B. Infinitely variable automatic air and vacuum valve designed to allow escape of air for an operating range from 0 through 250 psi, close watertight when liquid enters the valve even when the fluid is rising without pressure (no minimum operating pressure required), allow air to enter in the event of a vacuum, and soft working behavior as water hammer inhibition realized by roll-on diaphragm and spring mechanism. When the sealing device of the valve is closed an air cushion is trapped between the fluid and sealing area, a mud deflector made of PE allows no contact between fluid and sealing area. The valve body and spindle spring shall be designed to facilitate disassembly for cleaning and maintenance.

C. Valve materials must be as follows:

Component	Material
Body	Stainless Steel 316Ti
Spindle spring	Stainless Steel 316Ti
Diaphragm	Buna HNBR
Debris shield	Homopolymer (PP)
Debris screen	Delrin® (POM)
Float	Delrin® (POM)
Diaphragm holder	Delrin® (POM)
Upper air valve part	Delrin® (POM)

D. Valves shall be equipped with the necessary attachments, including ball valve and cam-lock fitting to permit back flushing after installation without dismantling the valve.

E. 2-inch inlet with FNPT threads.

F. Pipe connection:

1. Valve may be attached to the pipe using a double strap stainless steel service saddle. Saddle must be manufactured in compliance with ANSI/AWWA C800 with brass components conforming to ASTM B62 and ASTM B584 and dual 304L stainless steel straps with 5/8” studs with stainless steel nuts and washers. Provide an EPDM o-ring. Service saddle must be A.Y. McDonald Model 3855, or equal. Components connecting the two shall be 316 stainless steel.

2. Valve may be attached to a mainline tee with a threaded or flanged outlet.

G. Provide a stainless steel ball valve to isolate ARV from the main.

H. Combination air valve shall be H-TEC Model #986-01 or approved equal.

2.3 SURGE RELIEF VALVES

A. Main valve body shall be cast iron conforming to ASTM A126 Class B, with integral flanges. The valve body shall be inherently self-cleaning and have a net flow area through the valve no less than the area of the nominal pipe size. The body shall have a removable SS seat.

B. The valve disc shall be steel with a Buna-N resilient seat ring retained by a stainless steel follower ring. The valve stem shall be SS with dual seals where valve stem asses through the valve body.

C. Valve sizes through 8” shall have dual compression springs. Valve sized greater than 8” shall have a single compression spring. The valve shall have an integral hydraulic system that shall permit quick opening and adjustable, slow closing. The valve shall be fully functional operating in any position.

D. The valve shall be factory tested and set to open at 160 psi. Springs shall permit field adjustment from near 0% to 110% above factory setting.

E. Flanged connection bolts shall be 304SS.

2.4 CHECK VALVES

A. Swing check valves shall be in accordance with ASTM A536 Standard Specification for Ductile Iron Castings Grade 65-45-12and ANSI/AWWA C-508. Valves shall be certified to NSF 61.

B. Check valves shall be iron-body, bronze-mounted, with either mechanical joint or flanged ends as indicated on the Drawings. Mechanical joint ends shall be furnished with bolts, glands, and rubber gaskets and in accordance with ANSI/AWWA C111/A21.11. Flanged ends shall meet the dimensional requirement of ANSI B16.1, class 125 and shall be provided with bolts and gaskets.

C. Check valves shall be non-slamming type. Check valves shall be equipped with an outside lever and weight. Valves up to 12 inches shall have a minimum operating pressure of 175 psi. Valves 16" to 24" shall have a minimum non-shock cold-water pressure rating of 250 psi.

D. The disk seat bolt shall be 304 stainless steel and the body seat ring shall be bronze with an easily replaceable resilient disc seat. The valve shall be tight seating.

E. Check valves shall have an epoxy coated interior & exterior for corrosion resistance.

F. Check valves shall have an O-ring sealed stuffing box.

G. When check valves are used in vault applications, a ball drip valve is to be provided.

H. Check valves shall be furnished with an arrow cast into the body indicating the direction of flow during system operation.

I. Acceptable manufacturers are as follows: G.A. Industries, DeZurik, APCO/ValMatic, American, Clow/M&H, Mueller, or equal.

2.5 BALL VALVES

A. Ball Valves shall be 150 psi working pressure rated with NPT ends, 316 SS body, ball, and lever handle.

2.6 PRESSURE GAUGE ASSEMBLIES

A. Assembly consists of threaded 304 stainless steel piping, bronze body gate valve or stainless steel ball valve, and pressure gauge. All components shall be rated for 200 psi working pressure. Gauges shall be installed with a gage isolator. Isolator shall be Red Valve Series 40 (1" – 8") or Series 42 (12" diameter and larger main) or equal.

B. Gauge shall be 4 ½" diameter dial unit, white face, black units, glycerin filled, stem or flush mounted.

1. Gauge range shall be 200% of normal system operation, unless otherwise shown.

2. Pump suction gauges shall be compound type with range of -10 psi to +10 psi unless noted otherwise.

C. Field Calibrate gauges per manufacturer's instructions. Insure 1% accuracy of full range.

D. Install gauges so that dial is easily readable, yet located out of harm's way.

2.7 VALVE BOXES

A. Adjustable 2-piece valve boxes shall be US made gray cast iron. Lids shall be heavy-duty traffic weight with the word "sewer" cast into the lid. Provide cast-iron telescoping slip type top section of length required for depth of burial of valve and bottom section with base of size to fit over valve. Valve boxes shall be coated inside and out with asphalt. Acceptable valve boxes are: Sigma Corporation Model V-8459, Capitol Foundry of Virginia, Inc. Model VB-FCWA-#3435, or equal.

PART 3– EXECUTION

3.1 EXAMINATION

A. Verify that force main size, location, and elevation are as indicated on the Drawings prior to excavation and installation of valves and appurtenances.

3.2 PREPARATION

A. Confirm exact location of valves, and services with Owner prior to installation.

B. Prior to making the tap:

1. Confirm materials for a complete installation are at the site.

2. Cut pipe ends square, ream pipe ends to full pipe diameter, remove burrs.

3. Remove scale and dirt on inside and outside before assembly.

4. Prepare pipe connections to equipment with flanges or mechanical joints, as indicated on the Drawings.

3.3 INSTALLATION

A. General

1. Install valves at the locations indicated on the Drawings in accordance with manufacturer's recommendations.

2. For valves set above grade: set valves plumb and level and with proper support. For smaller valves, proper support may be provided by connected piping.

3. For buried valves: set valves plumb and on solid bearing; center and plumb valve box over valve; set box cover flush with finished grade; provide expansion joint material around portion of box in concrete pavement or sidewalks.

4. Install polyethylene encasement for all buried valves even if not provided for adjacent piping. Comply with AWWA C105 Method A and manufacturer's instructions. Completely tape all overlaps and seams. Repair all rips, punctures, and other damage to the polyethylene.

B. Air Release Valves

1. Pressure air release valves shall be located as shown on the Drawings and as otherwise directed by the Owner. The valve shall be housed in a precast concrete eccentric manhole and shall be installed in accordance with standard detail. Pipe and fittings used to attach the valve to the main shall be brass.

C. Check Valves

1. Install check valves as detailed on the Drawings and in accordance with manufacturer's recommendations.

D. Valve Boxes

1. All underground valves without gearing or operators shall be equipped with a valve box with lid per standard detail. Valve boxes shall be centered and plumb over the operating nut of the valve. Valve boxes shall be fitted together securely and set so that the cover is flush with the finished grade of the adjacent surface. Contractor shall adjust valve boxes to final grade at the time designated by the Owner.

2. Valve boxes shall be installed so as not to transmit shock or stress to the valve and shall be centered. The ground in the trench upon which the valve boxes rest shall be thoroughly compacted to prevent settlement.

3. A 4-inch thick, 2-foot x 2-foot concrete stabilizing pad shall be installed around the valve box in unpaved areas and set flush with grade and valve box.

4. When valve box tops project more than 1 inch above the unfinished road surface, install a temporary layer of asphaltic concrete around the valve box. The

asphaltic concrete shall be feathered to provide a smooth transition from the unfinished road surface to a level no more than 1 inch below the edge of the rim and cover. The exposed sides of the valve box shall be painted bright orange.

5. Valve boxes in easements shall be provided with a valve box marker post as manufactured by Pipeline Supply, Sanford, NC, or equal.

3.4 FIELD QUALITY CONTROL

A. Pressure test valves with the force main in accordance with Construction Specification Section 33 31 23 – Sanitary Sewerage Force Main Piping.

3.5 PROTECTION

A. Protect valves and other installed components and appurtenances from damage until accepted into service by Owner.

B. Keep valve boxes clean and free of any foreign matter until acceptance of the project.

3.6 FINAL ACCEPTANCE

A. Upon completion of force main installations and prior to final acceptance, the Contractor shall provide adequate and competent personnel to conduct, in conjunction with the Owner or RPR, an inspection of each valve on the newly completed force main. The purpose of this inspection shall be to ensure the operability and location of each valve and to further insure that all valves are left in the open position.

END OF SECTION

SECTION 46 24 33
OPEN CHANNEL GRINDERS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Open channel grinders with submersible motors.

2. Controllers.

3. Related appurtenances.

1.2 REFERENCES

A. Abbreviations and Acronyms: See Construction Specification Section 01 40 00, Quality Requirements for abbreviations and acronyms used throughout the Contract Documents.

B. Definitions: Not used.

C. Reference Standards: See Construction Specification Section 01 40 00, Quality Requirements for a list of reference standards used throughout the Contract Documents.

1.3 SUBMITTALS

A. Provide submittals in accordance with Construction Specification Section 01 33 00, Submittal Procedures.

B. Manufacturer's Affidavits: Manufacturers shall furnish a performance affidavit stating that material, and other products provided have been manufactured and tested in accordance with the requirements of the applicable referenced Standards.

C. Product Data/Shop Drawings: Submit equipment descriptions, functional descriptions, dimensional and assembly drawings, catalog data, and job specific drawings. Include manufacturer’s installation instructions.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data

1. Provide three hard copies of Operation & Maintenance manuals for equipment supplied and an electronic copy. The manuals shall include equipment descriptions, operating instructions, drawings, troubleshooting techniques, a recommended maintenance schedule, and the recommended lubricants.

B. Warranty Documentation

C. Record Documentation

1.5 MAINTENANCE MATERIAL SUBMITTALS:

A. Spare parts and special tools.

1.6 QUALITY ASSURANCE

A. Comply with Construction Specification Section 01 40 00, Quality Requirements.

B. Manufacturer Qualifications

1. Manufacturers shall submit certified documentation including equipment drawings, flow performance curves, electrical schematics and cut sheets, draft operation and maintenance documentation, and a list of the most recent 20 installations of the equipment to be provided with phone numbers showing compliance with these specifications.

2. Manufacturer shall be ISO9001 certified and have a minimum of 5 years of experience as a manufacturer of municipal wastewater equipment and a minimum 250 prior installations of similar equipment.

C. Factory test grinders, motors, and control equipment and verify proper operation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with Construction Specification Section 01 60 00, Product Requirements for transporting, handling, storing, and protecting products.

B. Storage and Handling Requirements: Handle and store equipment in accordance with manufacturer's recommendations.

1.8 SITE CONDITIONS

A. Existing Conditions: Grinder will be installed in an existing grinder vault. Coordinate grinder supplied with existing vault.

1.9 WARRANTY

A. Provide a 12-month warranty on materials and equipment plus a 5-year special warranty on the wet end of the grinder including coverage for failure from excessive wear of the cutters, spacers, seals, bearings, and shafts.

PART 2 – PRODUCTS

2.1 GRINDER

A. Description

1. Grinder shall reduce or shred influent solids for protection of downstream equipment. Provide fine grinding of solids in the raw wastewater stream. Solids shall be ground to a uniform fineness, allow particles to be retained in the influent stream, while maintaining rated flow.

2. The grinder shall have two rotating screen drums that shall collect solids too large to pass through the screen drums and direct them to the cutters for solids reduction.

3. The system shall be of modular construction with a frame mounted to the channel and designed to receive the rotating screen and grinder assembly separately.

4. Grinder shall be two shafted design consisting of individual cutters and spacers of equal diameter on both shafts. Grinder shall have high flow or slotted side rails. Grinder shall have a motor and speed reducer for cutter drive.

5. The grinder system shall be complete with rotating screen, grinder, immersible motor, control panel, frame, and overflow bar screen.

6. The equipment shall be provided complete with accessories, special tools, spare parts, mountings, anchor bolts and other appurtenances as specified and as may be required for a complete and operating installation.

B. Performance

1. Minimum processing capacity: 4,300 GPM (6.2 MGD).

C. Materials:

1. Stainless steel shall be 316 unless noted otherwise.

D. Components

1. Wipes Cutters and Spacers:

a. Cutting stack shall be a nominal height of 32 inches.

b. Perforated drum diameter shall be a nominal diameter of 10 inches.

c. Cutter shall be an individual disk constructed of AISI alloy steel surface ground to thickness of 0.310-inches.

d. Wipes Cutters: Heat treated to a hardness of 45-52 Rockwell C, 11 cam shaped teeth.

e. Spacers: Individual disk, constructed of AISI alloy steel surface ground to a thickness of 0.319-inches, hardness of 34-52 Rockwell C.

2. Shafts: AISI 4140 alloy steel with a minimum tensile strength of 170,000 PSI, a nominal 2-inches across flats of hex, and hardened to 38-42 Rockwell C.

3. Intermediate Shaft Collars:

a. Intermediate shaft collars, AISI 304 stainless steel housing, SAE 660 bearing bronze bushing and 17-4 PH rotating element.

b. AISI 304 stainless steel grease fittings.

c. Bushing and rotating element factory lubricated with high temperature marine grade grease.

4. Seal Cartridges:

a. Shall be rated for severe duty.

b. Pressure rating: 150 PSI.

c. Seal cartridges shall not require flushing.

d. Dynamic and rotating seal faces shall be tungsten carbide with 6% nickel binder.

e. O-rings shall be constructed of Viton (Fluorocarbon).

f. Radial and axial loads shall be borne by sealed, oversized, deep-groove ball bearings.

5. Housings, Covers, and Gaskets:

a. Top cover and end housings shall be ASTM A536 65-45-12 ductile iron.

b. Bottom cover shall be ASTM A36 steel.

c. End housing shall have integral bushing deflectors to guide solids away from seal cartridges with directional flow arrows cast into the external side walls.

d. Gaskets shall be cork and neoprene rubber.

6. Side Rails:

a. Solid face baffle around portion of rotating screen drum to guide water and solids.

b. Flange and mounting housing holes for brush.

c. Brush: Nylon bristles with PVC Base.

d. Brush holding plate: AISI 304 stainless steel.

e. Integral guide slot for installing into channel frame allows install and removal without removing any fasteners or disassembly.

f. Cast ASTM A536 65-45-12 ductile iron.

7. Gears:

a. Grinder gears shall be heat treated and hardened AISI 4140 alloy steel.

b. Number of teeth on gears creates ratio of cutter tip speed on low-speed to cutter tip speed of high-speed shaft greater than 0.90 and less than 1.00 to promote cleanout of processed material in cutting stack.

8. Couplings:

a. Low speed couplings shall be hardened AISI 4140 allow steel and two-piece 3-jaw interlocking design.

b. High speed couplings shall be Buna-N spider and type L 3-jaw with elastomer.

9. Hoist Rings:

a. Hoist rings shall be allow steel, nickel plated to AMS-C-26074 Class 1 Grade B.

b. Working load: 2500 lb.

c. Four (4) hoist rings installed on top cover of grinder.

10. Speed Reducers:

a. Grinder: Grease lubricated cycloidal design Cyclo Series 6000 with 29:1 reduction ratio.

b. Integrated Rotating Screen Drums: Grease lubricated cycloidal design Cyclo Series 6000 with 377:1 reduction ratio.

11. Immersible Motor - Grinder:

a. Operate in air continuously without a cooling fan and to 40 feet of continuous submergence for a period of 40 days.

b. Frame: NEMA C-Face XPNV (Explosion Proof Non-Ventilated).

c. U.L. Rated NEMA 6P (IP68).

d. Horsepower: 5.

e. Voltage: 480 volt, 3 phase, 60 Hz.

f. Minimum service factor of 1.15, 91% minimum efficiency factor at full load, minimum 76% power factor at full load.

i. Full Load Torque with Reducer: 435 lb-ft.

ii. Full Lead Force at Cutter Tip: 2,217 lbf.

g. Housings:

1) Cast iron with Class F insulation allows 167°F temperature rise.

2) Rated as Class I, Div. I, Groups C&D, Class II Div. II, Groups F&G, and Class III, Div. I, Zone 1.

3) C-Face mounting with standard NEMA frame sizes.

h. Shaft Seal shall be ceramic requiring no external lubrication or oil chamber to maintain integrity in dry operating conditions.

12. Immersible Motor – Integral Rotating Screen Drums:

a. Operate in air continuously without a cooling fan and to 40 feet of continuous submergence for a period of 40 days.

b. Frame: NEMA C-Face XPNV (Explosion Proof Non-Ventilated).

c. U.L. Rated NEMA 6P (IP68).

d. Horsepower: 1.

e. Voltage: 480 volt, 3 phase, 60 Hz.

f. Minimum service factor of 1.15, 91% minimum efficiency factor at full load, minimum 76% power factor at full load.

g. Housings:

1) Cast iron with Class F insulation allows 167°F temperature rise.

2) Rated as Class I, Div. I, Groups C&D, Class II Div. II, Groups F&G, and Class III, Div. I, Zone 1.

3) C-Face mounting with standard NEMA frame sizes.

h. Shaft Seal shall be ceramic requiring no external lubrication or oil chamber to maintain integrity in dry operating conditions.

13. Frame and Supports:

a. Provide a method for securing the grinder in a wet well. The frame shall allow installation or removal without any disassembly of the frame or grinder.

b. Frame and supports shall be custom design and constructed of AISI 316L stainless steel.

c. Frame shall provide proper support and interface to prevent unwanted bypass.

d. Frame shall utilize guides that insert into the side rail slots to properly position and locate grinder.

e. Provide proper support and interface to guide influent flow into the grinder.

14. Identification:

a. Equipment shall be identified with a corrosion resistant nameplate affixed in a conspicuous location.

b. Nameplate information shall include manufacturer's name and address, equipment model number, serial number, capacity, maximum psi, weight, and manufactured date.

15. Finishes:

a. Tnemec 1095 Polyurethane paint in the color Hunter Green.

b. Paint Coatings for Previously Coated Components (Motors, Speed Reducers, etc.): Prepared to SSPC-SP1 (Solvent Cleaning).

c. Paint Coatings for Ferrous Materials: Prepared to SSPC-SP6 (Commercial blast Cleaning) and coated with a minimum 3 to 5 mils TDFT (total dry film thickness).

E. Spare Parts and Maintenance Items

1. Furnish spare parts as recommended by the equipment manufacturers in addition to those listed below. Materials shall be properly packed, labeled and stored where directed by the Owner.

a. One complete set of cutters.

b. Three of each type of fuse found in the system.

c. Three of each type of lamp bulb found in the system.

2. The spare parts which are identical and interchangeable with the original parts shall be furnished in clearly identifiable and labeled containers.

3. Furnish special tools necessary to disassemble, service, repair and adjust the equipment.

4. Furnish a one-year supply of recommended lubricating oils and greases.

2.2 CONTROLLER

A. Controller shall provide control of the grinder and be designed to control one 5 hp motor and two 1 hp motors at 480 volts, 3 phase, 60 Hz. The controller shall have indicator lights, switches, and other control devices.

B. Components

1. Enclosures: NEMA 4X FRP with hinged lockable door and mounting flanges, housing for the control devices, motor starters, and PLC.

2. Grinder ON-OFF/RESET-REMOTE three-position 22mm type, NEMA 4X selector switch. Selector switch shall be the only method for resetting the controller after a failure.

3. Control Operation:

a. OFF/RESET position: Shall not run.

b. ON position: Run continuously.

c. REMOTE position: Start and stop as controlled by an external device.

4. Pilot Lights: LED type 22 mm, rated NEMA 4X, that indicate POWER ON, RUN, and FAIL.

5. Programmable Logic Controller (PLC)

6. Motor Starter: Full-voltage reversing type with 120 volt operating coils with adjustable overload relays sized to full load amperes (FLA) of the motor.

7. Control Transformer: Minimum 130 VA., primary and secondary shall be fused for over current protection.

8. Current Transducer: Adjustable set point from 1-135A with 200 ms or less response time.

9. Alarm circuits, 120V, shall be provided for grinder RUN and common FAIL for annunciation to the Telemetry/SCADA panel.

C. Performance

1. When a grinder jam obstruction occurs, the controller shall stop the grinder and screen and reverse the rotation to clear the obstruction. If the obstruction is cleared, the controller shall return the grinder to normal operation. If the jam obstruction persists, the controller shall repeat the reversing cycle up to eight additional times within 45-seconds (total of nine cycles) before signaling grinder overload condition. Upon grinder overload condition, the controller shall shut down the grinder and screen and activate the FAIL indicator and relay.

2. When a power failure occurs while the grinder is operating, the grinder will resume operation once power is restored. A 0-60 second adjustable time delay

device shall be included in the control panel to select time delay until restart after power restoration.

3. When a power failure occurs while the grinder is in a fail condition, once power is restored the fail indicator shall reactivate and remain until reset.

4. Reset of the grinder shall be accomplished from the controller only.

2.3 Equipment shall be provided by JWC Environmental, Model CDD3210-XDM2.0 or pre-approved equal.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that the location, elevation, dimensions, and site conditions are as indicated on the Drawings and suitable for installation of the grinder equipment prior to shipping grinder(s).

3.2 INSTALLATION

A. Grinder(s) and controller(s) shall be installed in accordance with supplier's installation instructions, and in accordance with all OSHA, local, state, and federal codes and regulations.

B. Securely mount grinder(s) vertically, plum and level, in the full width of the channel and perpendicular to the direction of flow.

C. Ensure that the equipment and appurtenances furnished and installed are compatible and have the necessary operating clearances with the structural elements and equipment shown on the Drawings.

D. After installation, the equipment shall be aligned, balanced, and adjusted as required for proper operation and proper alignment.

3.3 SITE QUALITY CONTROL

A. Provide the services of a factory trained representative to check installation and review start-up of equipment and controls.

B. Supplier representative shall inspect and approve site installation and supervise a review of the operation of the equipment and provide training on operation and maintenance requirements of the equipment.

3.4 EQUIPMENT START-UP SERVICES

A. Grinder supplier shall provide on-site start up services as required for the specified phased installation of equipment by a competent manufacturer's or supplier's field technician.

B. The equipment shall be field tested in the presence of the Owner, Engineer, and manufacturer's representative, to demonstrate that the equipment can continuously grind materials likely to be encountered in service without vibration, jamming, or overheating and perform its specified function satisfactorily.

C. The test shall demonstrate:

1. Correct alignment and smooth operation.

2. Grinding of typical solid materials in the wastewater stream (disposable diapers, wood, etc.)

3. Fineness of grind and uniformity of resultant particle size.

4. Control systems performance and repeatability (system shall be intentionally jammed to test reversing and alarm system).

D. Furnish oil and grease for initial operation. Grades of oil and grease shall be in accordance with the recommendations of the equipment manufacturer.

E. Furnish labor, materials, and test apparatus necessary for conducting the field acceptance tests at no additional cost to the Owner.

3.5 TRAINING

A. A field training course shall be provided for operation and supervisory staff members. Field instruction shall cover items for successful operation contained in the Operation & Maintenance manuals.

END OF SECTION

INCLUDED FOR GENERAL REFERENCE ONLY - NOT TO SUPERCEDE TECHNICAL SPECIFICATIONS

SECTION 13.00
WASTEWATER PUMP SYSTEMS AND FORCE MAINS

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B. Testing

13.01 PUMP STATION GENERAL

A. GENERAL

1. All aspects of pump station design shall, at a minimum, meet the requirements of the latest version of the:

    a) North Carolina Department of Environmental Quality (NCDEQ) Minimum Design Criteria for the (Fast-Track) Permitting of Pump Stations and Force Mains (Minimum Design Criteria),

    b) Alternative Design Criteria for Minimum Separation for Sewer Systems to Wetlands,

    c) North Carolina Administrative Code Title 15A Chapter 02 Subchapter T Waste Not Discharged to Surface Waters (15A NCAC 02T),

    d) North Carolina (NC) Building Code,

    e) Occupational Safety and Health Administration (OSHA) regulations, and

    f) Town of Holly Springs (Town) Engineering Design & Construction Standards (Standards).

Town Standards identify minimum equipment and construction requirements for a wastewater pump station to be owned and operated by the Town. This section does not address every aspect of pump station design; it is the North Carolina Professional Engineer's (NCPE's) responsibility to supplement these requirements as necessary to produce a complete set of plans and specifications. Requirements in the Town Standards that are more restrictive or exceed the requirements of the Minimum Design Criteria are required by the Town.

2. Gravity sewer shall always be preferred over pump station and force main construction. A request for a pump station in lieu of gravity sewer service requires approval from the Executive Director of Utilities & Infrastructure (Director).

3. The Town reserves the right to disallow pump stations that are not in alignment with the Town's Comprehensive Plan, other adopted long-range plans, or other instances where it is not efficient or desirable to have a pump station.

4. If a pump station is allowed, the following criteria must be met:

    a) The design and construction of the station will be compliant with all applicable federal, state, and local regulations.

b) The design and construction will ensure reliable, continuous, and consistent operation, during all operating conditions, such as flooding or loss of utility system power.

c) The station's design will allow for easy operation and maintenance (O&M) of the installed equipment.

d) The station will provide pumping capacity and configuration to pump all wastewater flows tributary to the station and readily accommodate future expansion, where required.

e) The station will avoid septic conditions and excessive release of odors in the pump station and collection system.

f) The station will minimize impacts on the environment and Town.

5. New development may be required to take upstream/downstream pump stations offline or upgrade pump stations per the Town's Comprehensive Plan, other adopted long-range plans, or as determined by the Director.

6. Pump Stations will not be allowed to discharge to another pump station unless the receiving pump station is identified as a regional pump station in the Town's Comprehensive Plan or other adopted long-range plans, or exception granted by the Director.

7. Private pump stations will require an exception from these Standards. A Basis of Design Report, signed and sealed by a NCPE, should be submitted for review prior to a determination by the Director. Private pump station design is not covered by these Standards, and the applicant should look for guidance from other appropriate agencies, such as NCDEQ, NC Plumbing Code, etc. Documentation of future private pump station maintenance shall be required. Prior to operation, private pump stations shall be equipped with a sign indicating owner, responsible party, and 24-hour on call phone number.

B. PRE-DESIGN

1. Pre-Design Meeting

a) The developer and NCPE shall be required to meet with the Director and/or representative(s) in a "Pre-Design meeting" to discuss the preliminary design report, preliminary site plan, site layout, and other requirements for any proposed pump station, before design begins.

2. Preliminary Design Report

a) A detailed economic analysis consisting of a minimum 20-year present worth evaluation shall be submitted by the NCPE, comparing the extension of gravity sewer with construction of a pump station and force main alternative. The analysis shall include related improvements to the existing gravity collection system required to receive the station's discharge. The Town will consider economic evaluations, service area configuration, O&M costs, the Comprehensive Plan, other adopted long-range plans, and external factors before accepting pump station plan submittals in lieu of gravity sewer extensions.

b) A preliminary design report (PDR), signed and sealed by the NCPE, is required prior to, or with, the submittal of plans and specifications for pump stations. The PDR shall contain, at a minimum, the following criteria:

1) *Total dynamic head (TDH) calculations* for all pumping situations.

2) *Pump selection calculations,* based on survey information and force main diameter and length. System head curves shall be developed for Hazen-Williams "C" factors of 100 and 140, combined with pump curves for the selected pump. Calculations shall indicate flow rates for one and all pump(s) in operation. Pump selection shall be based on a "C" factor of 100, and proposed motor sizing shall be based on power required with a "C" factor of 140 and no utilization of the motor's service factor. Motors shall be non-overloading over the entire range of operation.

3) *Pump station cycle and pump run times* covering high, low, and average flows over the entire expected operating period of the pump station. Calculate minimum cycle time based on inflow rate equal to one-half of the pumping rate.

4) *Emergency Response time* (time between the high water alarm and the first system overflow, at average and peak flow).

5) *Pump station flotation/buoyancy design calculations*. Submerged soil weight on any extended bases should be limited to the soil directly above the extended base.

6) *Minimum velocity within the force main*, including an analysis of the capabilities of the pumps to completely flush any depressed sections of the force main in a single pumping cycle.

7) *Preliminary surge/water hammer analysis* with estimates of the maximum and minimum pressures (including negative pressures) that may occur during pump starts and stops. Depending upon the maximum and minimum estimated pressures, design flow, TDH, force main velocities, force main length, and force

main profile, the Town may require a detailed computer surge analysis be performed by the NCPE.

8) *An evaluation of the receiving sewer system*. Evaluate the receiving sewer (at the force main discharge and downstream) to determine the capacity of the collection system to accept the pumped flow. Identify upgrades required in the existing collection system to accommodate the proposed flow.

9) *Odor Control equipment sizing and chemical dosing calculations*.

10) *Grinder flow capacity and head loss calculations*.

11) *Generator calculations*. The generator must be sized adequately to start and operate all connected loads (pumps to be started sequentially and controls specified).

12) *Number of lots/parcels served, off-site drainage area, zoning, average daily flow, and peak daily flow*.

3. Preliminary Site Plan

a) A preliminary site plan shall be submitted, consisting of the following:

1) *Cover Sheet* with index of drawings and vicinity map

2) *Existing Conditions Plan*

3) *Site Plan*, at minimum, with

a). All property lines, fences, gates, generator, etc.

b). Layout of structures

c). Driveway and access dimensions

4) *Turning Template* for a WB-50 service vehicle

5) *Grading Plan* with existing and proposed contours

6) *Utility Plan* with gravity sewer, force main, water, and storm drainage piping (show pipe size/material and identify the force main discharge location)

7) *Landscape Plan* with plant lists, planting/staking details, and buffers

b) If design changes between PDR approval and Preliminary Stie Plan submittal, a revised PDR should be submitted to the Town.

C. FINAL DESIGN REQUIREMENTS

1. After preliminary design approval, a Final Design Report, detailing final pump station design and signed and sealed by the NCPE, is required. All aspects of pump station design shall be submitted for review and approval to the Town. Pump station review may be more extensive than the typical development site plan process. Materials necessary for review and requiring approval include, but are not limited to, complete plans, specifications, and Final Design Reports.

2. Wastewater flow rates for the entire natural drainage basin upstream of the anticipated pump station location must be accounted for, based upon the Town's proposed land use plan or approved developments, whichever flow is greater.

3. The Town may consider phased construction, if the peak flow rate tributary to the pump station exceeds 1,000 gallons per minute (GPM). If phased construction is allowed, the NCPE shall examine pump selection with impeller sizes sufficient to meet initial and future conditions or design the pump station to accommodate additional pump(s). As a general statement, the initial electrical service, standby power system, solids grinder, equipment hoisting system, and odor control system must be sized for ultimate station capacity (no phasing of these components allowed).

4. All stations shall be submersible pump stations consisting of wet well and other precast concrete structures, piping and valves, pump control systems, SCADA, solids grinder, odor control, jib crane/hoisting equipment, back-up power source, and related appurtenances.

5. All equipment, except for the generator, shall be designed for a sound rating of $\leq$55 decibels A (dBA), 21-feet from the operating equipment. The generator shall include a sound attenuating enclosure and hospital grade silencer. The generator shall have a sound rating of <71 dBA (generators <150 kW), < 73 dBA (generators 150 kW- 250 kW), or <75 dBA (generators > 250 kW), 21-feet from the operating equipment. Sound ratings are based on generator operating at 100% load. Warning horns and sirens have no sound restrictions.

   Pump station design shall minimize sound levels leaving the site. Factors to consider include equipment layout, cumulative sound levels, and walls that reflect sound. Equipment submittals that include the sound ratings for all major equipment shall be supplied and approved by the Town, prior to ordering equipment.

   Pump stations shall not be accepted by the Town until sound testing demonstrates that the above requirements are met. All sound testing shall be performed by reputable personnel to assure accuracy. The Director reserves the right to require certified sound engineers, certified testing equipment, corrections, and/or retesting to demonstrate that the pump station and all components are performing as designed.

6. The Final Design plans shall include, at minimum, the following information:

    a) *Cover Sheet* with index of drawings and vicinity map

    b) *Existing Conditions Plan*

    c) *Site Plan* with all property lines, fences, gates, and locations of driveway and structures

    d) *Grading plan* with existing and proposed contours on 1-foot intervals, storm water measures, and 100-year flood elevations

    e) *Utility Plan and Profile* with gravity sewer, force main, water, and storm drainage piping (show pipe size/material and identify the force main discharge location), valves, and chemical feed

    f) *Landscaping Plan* with plant lists, planting/staking details, and buffers

    g) *Plan and Section drawings* of all precast concrete structures including influent manhole, grinder manhole, wet well, valve vault, and miscellaneous structures

    h) *Building Plan, Section, and Elevations*; typical wall section(s)

    i) *Mechanical drawings* showing pumps, valves, piping, odor control, ventilation, and heating/air conditioning systems

    j) *Electrical plans*, including electrical site plan, one-line diagram, panel schedules, light fixture schedule, wire and conduit sizing, generator details, SCADA inputs and details, and grounding requirements and locations

    k) *Instrumentation and Control (I&C) Plan*

D. CONSTRUCTION PHASE REQUIREMENTS

1. Equipment Submittals

    a) The NCPE (or representative) shall observe construction to allow for preparation of the Engineer's Certification, as required by the NCDEQ. The NCPE shall also review all equipment and material submittals (shop drawings) to confirm that finished construction will comply with approved plans and specifications. The NCPE shall also be responsible for forwarding submittals, as specified herein, to Town staff for review, comment, and approval, prior to the NCPE returning them to the Contractor. Review and approval by Town staff shall not relieve the NCPE from the responsibility of ensuring that all the project components meet these Standards.

b) At a minimum, Equipment Submittals shall include name of manufacturer; model supplied; fabrication and assembly drawings; detailed specifications; and data covering material, parts, devices, and accessories. Submittals shall also include system hydraulic schematics, electrical wiring diagrams, and control panel schematics. Additional information required for specific equipment is listed in the appropriate equipment section. Submittals for the following equipment shall be forwarded to the Town staff by the NCPE:

Table 1: Submittals

SECTION	SUBMITTAL NAME
13.01.C	Site Plan
13.02.B	Fencing and Gates
	Eye Wash/Shower Wash Station
13.02.C	Precast Concrete Wet Wells, Vaults, and Manholes
	Precast Concrete Building
13.02.D	Check Valves and Plug Valves
	Pressure Gauge
	Air Release Valves
	Magnetic Flow Meter
13.03.A	Pumps and Motors
13.03.B	Pump Control Panel
13.03.C	SCADA System
13.03.D	Grinder and Control Panel
13.03.E	Odor Control System
13.03.F	Jib Crane/Hoisting Equipment
13.03.G	Generator
13.03.H	Automatic Transfer Switch (ATS)

c) The table below identifies equipment manufacturers that are considered most suitable for the anticipated service in wastewater pump stations.

Table 2: Equipment/Manufacturer List

SECTION	EQUIPMENT	MANUFACTURER
13.02.B	Reduced Pressure Zone (RPZ) Backflow Prevention	Watts Hersey Wilkens
13.02.C	Access Hatch	Halliday, Bilco
	Manhole/Wet Well Coatings	Duramer 1030 (SewerCote), Cor-Cote SC (Sherwin-Williams), Raven 405 (Raven Lining Systems)
	Precast Concrete Buildings	Easi Span Building
13.02.D	Magnetic Flow Meter	Badger M-3000
	Valves	American Mueller APCO swing check valve (ValMatic)
	Force Main Combination Air Release Valves (ARVs)	Val-Matic (stainless steel isolation ball valve and handle with flushing hardware, model to be determined at time of review)
13.03.A	Pumps and Pump Motors	ABS USA (Sultzer) Fairbanks Morse (Pentair Water) Flygt USA (Xylem)
13.03.B	Electrical Cabinets and Enclosures	Control Interface (pump manufacturer recommended)
	Float Switches	Roto Float (Anchor Scientific, Inc), compatible (SJE Rhombus, Conery)
13.03.C	VT SCADA	Inframark
13.03.D	Grinder	Muffin Monster w/ guide rails (JWC Environmental)
13.03.E	Odor Control System	Evoqua
13.03.F	Jib Crane/Hoisting Equipment	Acco Industries Yale Lift-Tech International
13.03.G	Generator System	Caterpillar, Inc. Cummins Power Generation Onan Division Detroit Diesel Corp. Kohler
13.06.B	Internal Pipe Lining	Protecto (401)

d) Equipment submittals must receive approval from the Director or representative(s) prior to purchasing equipment. Purchasing equipment in no way obliges the Town to accept equipment that does not meet the Standards.

e) Alternative equipment submittals (for manufacturers not listed in Table 2) shall include the following information, at a minimum:

1) Current catalog data sheets and technical data to support compliance with these Standards.

2) A detailed list stating differences between the named item and proposed alternate and a separate list stating all exceptions to these Standards. If no exceptions are listed, then no exceptions will be allowed.

3) Contact name, address, and phone number for five (5) installations where the proposed equipment has been used in a similar capacity for two (2) or more years. The date for placing equipment in service, at each installation, shall be provided.

f) Equipment that meets the Alternative Equipment submittal requirements, the Standards, technical specification requirements, and all other requirements of the Town, will be approved by the Director.

2. Testing Results Submittals

a) Perform drawdown test to verify pump capacity flow rates. Town representatives shall be present during the test. Documentation of the test shall be provided to the Town for approval.

b) Test results shall be submitted for review prior to continuing progress on any equipment. If shop testing is required, results shall be submitted prior to start-up, testing and final acceptance of the equipment.

c) A final, compiled summary of all equipment testing shall be provided upon completion of the project, prior to project closeout and final acceptance. This final, compiled summary shall consist of a single bound printed copy, and an electronic copy.

E. POST CONSTRUCTION PHASE REQUIREMENTS

1. Warranty

a) All components must come with a warranty from the manufacturer that equipment shall be free of defects in workmanship and material, and shall operate as intended under the known conditions, for a minimum of 1-year after acceptance of the

system by the Town. The warranty shall be in printed form and made applicable to the Town (as Warrantee) at the time of acceptance for maintenance.

2. Operation and Maintenance (O&M) Manuals

   a) O&M manuals are required for all equipment and systems. **An electronic copy shall be supplied to the Town prior to startup of the subject equipment or systems.** The O&M manuals shall contain all necessary information for proper operation and maintenance of the subject equipment and systems. At a minimum, the O&M manuals shall contain the following:

      1) *Cover Sheet* listing the following: Pump manufacturer, source of repair parts with address and phone number, operating conditions (rated capacity and TDH of each pump), model number, serial number, impeller diameter, data plate information, and data on all other equipment included as components in the pump station

      2) *Pump Performance Design Curve* with operating conditions and manufacturer's Certified Pump Curve

      3) *Detailed dimensional drawings of the pump and pump base elbow*

      4) *Detailed dimensional drawings of the pump and pump motor*

      5) *Wiring diagram and logic diagram for each control panel*

      6) *Pump and Motor Installation and Service Manual*

      7) *Detailed information related to other components of the pump station* including, but not limited to, solids grinder, odor control, generator, ATS, jib crane/hoist, and HVAC systems

      8) *Mylar as-built* drawings showing all changes to approved construction plans made during construction

      9) *Annotated hard copy and downloadable electronic copy of application program for all field programmable equipment* (e.g. PLCs, operator interfaces, etc.)

      10) *P.E. certification*

      11) *Warranty letter*

      12) *Documentation of recorded site plus access easement and/or right-of-way (ROW) dedicated to the Town*

      13) *Copy of vendor reports for the start-up testing of their equipment*

14) *Operating instructions*

15) *Troubleshooting techniques*

16) *Maintenance schedules*

17) *Assembly and disassembly instructions*

18) *Instructions for start-up/shutdown, calibration, and adjustment*

b) A final, compiled O&M manual covering all equipment and systems supplied, shall be provided to the Town upon completion of the project, prior to project closeout and final acceptance. This final, compiled summary shall consist of **three printed copies and an electronic copy (Flash Drive) of the subject equipment or systems.**

c) Any spare parts listed in the O&M manuals and/or recommended by the manufacturer shall be provided to the Town. At minimum, Contractor shall furnish one (1) set of spare parts as follows:

1) One (1) spare pump with guide rail bracket attached to pump discharge flange

2) One (1) lower seal assembly

3) One (1) upper seal assembly

4) One (1) set of bearings

5) One (1) set of wear rings (unless an adjustable wear plate is provided)

6) One (1) complete set of O-rings

7) One (1) float switch with 50-feet of cable

8) One (1) chain grip device with each pump (that can be lowered to the bottom of the pump lifting chain, engage a chain link, and hoist the pump out of the wet well without re-positioning the hoist hook)

9) One (1) stainless steel chain with each pump (to guide and engage the chain grip device, provided by the pump supplier and rated for the weight of the pump/motor/manufacturer's standard safety factor)

3. Inspections

   a) All equipment must be verified for compliance with the Standards by Town staff prior to installation. Non-conforming materials or equipment shall be immediately removed from the job site.

   b) Compliance with plans, Standards, and specifications shall be verified on a regular basis throughout the duration of construction by a representative from the Town.

13.02 PUMP STATION SITE AND STRUCTURES

A. GENERAL

1. Pump station sites shall be conveyed to the Town via deed and/or recordation for Town ownership and operation. A preliminary site plan for all pump stations shall be discussed in the Pre-Design meeting.

2. The site shall be directly connected to a dedicated public ROW or have a dedicated access easement to a public ROW.

3. The Town requires solids grinders, on-site backup power, and odor control facilities at all pump stations. Sizing of these items will be based on expected flow volumes and characteristics.

4. All stations shall have a minimum of three (3) pumps of equal capacity; two (2) operational and one (1) uninstalled spare. Duplex pump stations shall be capable of handling flows exceeding the expected peak flow. The design peak flow shall be a minimum of 2.5 times the average daily flow. If the pump exceeds 1,000 GPM, or motor size exceeds 100 Horsepower (hp), the NCPE shall investigate duplex and triplex pump station requirements. Where three pumps are required, two pumps should have capacity to pump the peak sewage flows. Stations that require more than three pumps shall utilize dual wet wells, with the ability to isolate each for maintenance. Pumps and force mains shall be sized to provide a minimum force main velocity of 3.5 feet per second (ft/s) with one pump operating and a maximum velocity of 8 ft/s at firm capacity. The Town reserves the right to require a larger force main, at no cost to the Town, based upon operating (power) costs.

B. SITE WORK

1. The site shall be graded to drain away from the pump station, and to remove stormwater runoff in a non-erosive manner. Drainage swales shall be incorporated, if necessary.

2. The site shall be stabilized and consist of compacted subgrade, low maintenance vegetative ground cover, or other suitable materials in accordance with Town Standards and Details. Visual screening and landscaping shall be provided.

3. Access

    a) The site shall feature adequate turnaround for a WB-50 service vehicle. If chemical feed systems are included, additional turning radii may be required.

    b) Access shall be a minimum 16-foot wide all-weather road, on a minimum 25-foot wide easement (or ROW) with grades ≤10%. Shoulders and side ditches should be included.

    c) Access shall be standard concrete curb tie and apron through the ROW and transition to an asphalt-concrete section, with an 8-inch stone base and 3-inch surface course, in accordance with Section 3 of the Town Standards and Details.

    d) Alternatively, after 40-feet of asphalt section, the access may transition to 12-inch of crushed stone over minimum 98% compacted subgrade.

4. Fencing, Gates, and Landscaping

    a) Fencing shall be provided around the entire perimeter. The site shall be secured by an 8-foot high black UV resistant vinyl coated chain link fence with 3-wire vinyl coated barb arms, set at an outward facing 45-degree angle and located at the top of each post (the 8-foot height does not include the barb arms). Each wire is to be 3 strand barb wire Class III galvanized or aluminized. The outer barbed wire shall hold a load of 250-pounds (lbs). All fence posts shall be black vinyl coated over the galvanized steel. The pump station address must be labeled in 6-inch lettering and clearly posted on the fence.

    b) Manual swing gates for pump stations shall permit 180-degree opening and be minimum 16-feet wide (minimum two 8-foot-wide swing gates). All gate posts and corner posts shall be minimum 4-inch diameter. Fence gates shall be black vinyl coated with privacy slats rated for a minimum life span of 12-years.

    c) Fence shall be screened with an opaque buffer, in accordance with the Town's Unified Development Ordinance (UDO). If site conditions do not allow an opaque buffer, privacy slats across the entire surface area of the fence, including gates, may be allowed, at the discretion of the Director.

    d) Buffers shall be provided along both sides of the access road and surrounding the gravel vehicular area. Buffers shall extend 50-feet from the gravel vehicular area, 25-feet along the sides of the access easement. Opaque buffers shall be planted as defined in Town's UDO.

    e) The Town shall reserve the right to establish other appearance requirements.

    f) Developer shall maintain the buffers for 2-years from the date of final (end of year) acceptance of the pump station.

5. The site shall feature locks and security features, as dictated by the Town, along with all necessary OSHA signage. Additionally, signage shall be provided on the gate which provides the name of the station, address, and emergency number of 919-557-9111 (blue lettering on a utility sign).

6. An LED light equivalent to a high-pressure sodium vapor light with a minimum 600-watt capacity is required. The light shall be mounted on a utility pole that retracts or pivots for bulb maintenance from the ground level. The light shall be at a height of 30-feet and controlled by means of a photocell and a Hand-Off/Reset-Auto (HOA) switch located on the light pole (with the photocell wired through the Auto position of the switch). All area lighting shall be provided in a downward projecting fixture, such as shoe box type light or approved equal. Open globe lighting shall be prohibited.

7. A minimum 2-inch public water service shall be provided [minimum 50 GPM with a residual pressure of 30 pounds per square inch (psi)]. A Town water meter and an above-ground Reduced Pressure Backflow Preventer (RPZ) in a heated hot box shall be required. Any, and all, water connections shall be made downstream of the RPZ. A freeze proof yard hydrant ($\geq$50 GPM) shall be provided to allow the wet well and grinder manhole to be washed down periodically. A freeze proof eyewash and shower wash station with tepid water system (including water heater) shall be provided adjacent to the chemical storage facility.

8. A grounding electrode system shall be provided for all wiring systems and shall be connected to the fence, generator, and electrical service.

C. STRUCTURES

1. General

   a) The submersible pump station structures shall consist of, at minimum, a grinder manhole, a wet well, and a valve vault. Large, integrated structures are permissible, however, there shall be walls separating the portions of the structure listed above. Electric motor operated grinders will be required at all stations. Pump station structures, other than the wet well, shall be provided with a means to remove accumulated water and wastewater from the structure.

   b) Wastewater pump stations, all related structures, and controls shall be protected from physical damage by the 100-year and 500-year local and FEMA flood plains and shall be elevated to 2-feet above the most restrictive elevation. Flood elevations shall be supported by a flood study on the tributary basin based on future land uses in accordance with the Town's Comprehensive Plan. Pump stations shall remain fully functional, operational, accessible, and free from physical damage during a 100-year flood. All structures not meeting the elevation requirement shall be sealed watertight with a vent elevated a minimum of 2-feet above the 100-year flood elevation.

c) Cover slabs for wet well and valve vaults shall be reinforced concrete with integral cast in place access hatch covers. Cover slabs shall be reinforced as per ACI Code and specially reinforced around openings.

d) Access covers for wet well and vaults shall be square lockable hatch, aluminum diamond pattern plate with stainless steel hinges and hardware capable of withstanding 300 pounds per square foot (psf), on an aluminum frame cast in place in the cover slab. All access covers shall be centered over equipment to accommodate service and removal. Access covers shall be double leaf or single leaf (as required) aluminum diamond pattern floor hatch capable of withstanding 300 psf without permanent damage. Each leaf shall open 90 degrees and be attached to the frame by stainless steel hinges and hardware. The door shall have a lock in the open position and vinyl grip handle to release lock for closing.

e) Fall protection grating shall be installed at all access hatches. The system shall be a grate consisting of two leafs made of 6061-T6 aluminum hinged on the same side of the hatch. The grate shall be designed to withstand a minimum pedestrian load of 300 psf. The grate openings shall be 4-inch x 6-inch force to allow both visual inspection and limited accessibility for maintenance purposes when the grate is closed. The leafs will pivot on aluminum hinge devices with 316 stainless steel hardware that permit them to rotate upward 90 degrees and automatically lock in place. Aluminum pull rods will be attached to the grate's leafs, so the operator is positioned with the grate between him and the hatch's opening whenever he raises a leaf. Each grate leaf will have a rod made from 316 stainless steel that automatically engages to secure the leaf in open position and can be lifted upward to permit the grate leaf to close. The hatch cover will not be able to shut until the grate is closed, thereby ensuring the grate is in position when the next operator opens the hatch cover. The grate shall have an OSHA safety yellowish finish to increase visual awareness of the safety hazard.

f) All structures shall be designed to withstand hydrostatic forces, including uplift, and shall be equipped with anti-floatation.

2. Wet Well

a) The wet well shall have a minimum inside dimension of 6-feet and shall be large enough to easily accommodate the removal of each pump. The wet well shall be designed to have an operating volume sufficient to provide pump operating cycles to match the manufacturer's recommendations. The pump operating cycles must be between two and eight times per hour at design daily flow (without being excessively deep). All wet wells must be concentric. Well point is required when setting wet well structure and must be utilized to accept a minimum 8-inch pipe to accommodate a portable sump pump. Avoid conflicts, particularly with electrical equipment. Upon completion it shall be capped and left in place for future use.

b) The wet well shall be constructed of precast concrete manhole sections or cast-in-place concrete. Extended bases or another foundation shall be used to provide adequate bearing surface and floatation protection, if needed. All concrete shall have a minimum 28-day compressive strength of 4000 psi. Design must be per manufacturer specifications and engineered design requirements.

c) Precast concrete manhole wet wells shall conform to ASTM C-478. Manhole section joints shall be of a durable mastic sealing material and be watertight in accordance with ASTM C-443. The precast sections for the wet well and valve vault shall be further waterproofed on the outside of the wet well by sealing the exterior of the joints with ConSeal CS 212 polyolefin-backed exterior joint wrap – 6-inch minimum width – with compatible primer.

d) Cast-in-place wet wells shall be properly designed by a NCPE and include appropriate structural support, waterproofing, exterior coating, structure covers, access hatches, etc.

e) At a minimum, wet wells shall have a vent made from ductile iron (DI) with flanged joint pipe fittings. A bronze or aluminum insect screen shall be included at the exposed end of the vent pipe.

f) Wet wells and wet well piping shall be coated with a monolithic epoxy coating system per Table 2 and installed in accordance with manufacturer specifications, in no more than 2 applications, with no runs and no holidays. High voltage holiday testing shall be utilized to verify there are no voids in the coating. Epoxy coatings shall only be applied to adequately cured concrete structures that have been sufficiently washed and prepared for epoxy coating installation. Properly applied coating shall provide a smooth finish and fill all pores in concrete substrate.

g) Care will be taken to ensure no epoxy coating is applied to the pump coupling face, the guide rails, or any other part that needs to allow movement or replacement on a regular basis.

h) Each wet well that is 6-feet in depth or deeper, shall be equipped with a removable extension ladder and ladder cover protection to enable access. The Town shall designate the location during the review process.

i) All bolted connections, including pipe flanges, inside the wet well shall be made using stainless steel bolts, nuts, and washers.

3. Valve/Meter Vaults

a) The valve/meter vault shall consist of a custom-built section, or a precast concrete rectangular structure at least 6-feet square. Maintain 18-inches or 24-inches clearance from the sidewalls to the nearest edge of pipe or valve. The valve/meter vault shall be complete with a drain that goes to the wet well, or where a gravity

drain cannot be included, a sump with a minimum ½-hp mercury float switch activated sump pump discharging to the wet well. The valve vault shall include an access ladder attached to the vault wall and access cover cast in the top slab with an extendable/retractable grab bar. The drainpipe between the valve vault and the wet well shall be made of PVC and have a PVC back water valve at the wet well end. Stainless steel stands shall be used to support valves and other appurtenances requiring support.

4. Manholes

    a) Any manholes installed on the pump station site need to meet requirements of Section 7 of these Standards. The exterior of all manholes within the 100-year flood elevation and in wetland areas shall be coated per Table 2 to prevent weepage or attack by acidic soils. Individual joints shall be wrapped with Conwrap, Conseal, or approved equal and approved by the Town prior to backfilling.

5. Buildings

    a) Pump motors ≥10-hp shall have a precast concrete building to house the control and electrical panels. Buildings shall have climate control systems to provide air conditioning (for dehumidification) and heating. Pump stations with ultimate pump motor sizes <10-hp may utilize an aluminum backplate, under a weather hood and mounted on galvanized posts, to mount all control and electrical panels.

D. PIPING AND VALVES

1. Piping: Discharge piping shall be minimum Class 53 DI flanged pipe as manufactured under AWWA specification C151. Discharge piping shall be flanged ductile pipe (Class 53 minimum) sized to produce a minimum head loss while maintaining a minimum velocity. All exposed piping shall be painted/coated and have adequately sized and located thrust restraint.

2. Pump piping: The discharge connection elbow shall be a straight through fitting with no flap valve and shall be permanently installed in the wet well along with the discharge piping. The pumps shall be automatically connected to the discharge connection elbow when lowered into place. The entire weight of the pump shall bear upon the guides and base support with no part of the pump bearing directly on the floor of the wet well. All hardware used shall be 316 stainless-steel.

3. Force Main: The force main within the pump station site shall be constructed of ductile iron pipe (DIP) and fittings with interior coating. The site shall also include an emergency bypass with a flanged connection for a portable, diesel driven pump. The bypass connection shall be the same size as the force main and shall include a gate valve to isolate the flange connection from the force main. The NCPE shall submit calculations confirming that the anticipated operating and surge pressures will be within the pressure ratings of the proposed DI force main and fittings.

4. All piping, couplings, fittings, valves, etc. shall be Class 125 for flanges meeting ANSI B16.1, unless Class 250 flanges are required for high head installations.

5. Check valve: An external weighted lever check valve shall be provided for the discharge pipe of each pump, in conformance with AWWA C508 standards. Check valves shall be cast iron/DI bodied, double bronze side plug construction with resilient seated disc assembly and replaceable rubber disc. The valve shall be capable of being mounted in the horizontal position with a minimum of 3-feet of separation between each valve body and the outside walls. All valves shall be centered on the vault door for maintenance access and valve removal. For valve sizes $\leq$12-inches, provide a minimum of 200 psi working pressure rating and 400 psi hydrostatic pressure rating; for valves >12-inches, provide minimum 150 psi working pressure rating with 300 psi hydrostatic pressure rating.

6. Plug Valve: A plug valve shall be provided on the discharge pipe from the valve vault (beginning of the force main). Plug valves shall be eccentric action and resilient plug facing with heavy-duty stainless-steel bearings and welded-in corrosion resistant nickel seat. Pump station plug valves shall be "full port" cross sectional area perpendicular to the flow of at least 100% of the adjoining pipe.

   Plug valves and check valves on the discharge side of each pump shall be in a valve vault separate from and adjacent to the wet well. A restrained flanged coupling adapter shall be installed on each discharge main between the wet well and the valve vault. An isolation plug valve shall be installed downstream approximately 50-feet from the valve/meter vault to isolate the force main from the vault and equipment. Valves shall be rated for a minimum of 175 psi working pressure and be able to pass a 3-inch solid.

7. Pressure gauge: $^{+}/_{-}$ 2% accuracy pressure gauges with a 3-inch or larger liquid filled dial, stainless steel case, and graduated to 150% of the force main static pressure shall be provided on each discharge pipe. A pressure gauge shall be installed on the pump side of the check valve and on the static side of the check valve. Isolation seals and the cut-off ball valve shall be provided between the gauge and force main. The gauges shall be easily visible and legible from the valve vault hatch opening. The gauges shall also be capable of delivering an electronic remote signal compatible with SCADA.

8. Air Release Valve (ARV): There shall be an ARV installed in a manhole on the force main, outside of the valve vault, prior to the main leaving the pump station site.

9. Magnetic Flow Meter: The NCPE may propose a meter with a smaller diameter than the force main to improve the velocity profile, if the projected flows allow. The magnetic (mag) flow meter shall be installed in a precast concrete manhole with sump pump, as indicated on the plans. A restrained flanged coupling adapter is to be provided to facilitate the mag meter removal/replacement. The amplifier should be remotely mounted in the building (or electrical rack). There shall be valved bypass piping (3 valves required) around the mag meter manhole, to allow the meter to be serviced or replaced without interrupting the pump station's operation. Submit shop drawings that

include information on the construction of the flow tube and liner, junction box, and amplifier.

10. Anchor Bolts

    a) Anchor bolts and nuts shall be furnished for each item per the manufacturer's specification in accordance with Table 2. Anchor bolts and associated hardware shall be 316 stainless steel.

    b) Anti-seize compound will be applied to the threads of all stainless-steel bolts before assembly.

E. ELECTRICAL – GENERAL

1. All electrical systems shall meet all applicable electrical standards and code requirements, including, but not limited to: ANSI, ASTM, NEMA, IEEE, EEI, HEI, ISO, NFPA, SAE, NEC, UL508, as well as any other federal, state, or local codes.

2. Electrical service to all pump stations shall be appropriately sized 3 phase power, 480-VAC with ATS to automatically start on-site emergency generators. The electrical power entrance shall be through a meter base, followed by a NEMA 3R heavy duty, single throw, and circuit breaker. This shall be followed by a heavy-duty ATS. There shall be a NEMA 3R heavy-duty single throw fusible safety switch between the main power and the ATS.

3. Electrical equipment inside the wet well shall meet the requirements for Class I, Division I, and Group C/D service.

4. All electrical components shall be suitably sized to be capable of service with all electrically powered equipment running.

5. All electrical components, including panels, shall be sealed off from the wet well in accordance with the latest editions of the NEC and NFPA 820 requirements for electrical service to Class I Division I.

6. The use of rigid conduits is required. Generally, PVC shall be used below ground and aluminum shall be used above ground. All conduits from the wet well shall extend to disconnect switches or junction boxes, with the conduits terminated 24-inches below the switch/box, providing an air gap above the classified space. All cables shall be supported with liquid tight cord connectors with strain relief grips.

7. Pump station electrical and control equipment shall be in a building as described above, or under a weather hood for small pump stations <10-hp. An aluminum weather hood with a clear height of 7-feet, an overhang of at least 4-feet and a thickness of 3/16 inch shall be provided for control equipment exposed to the weather (the back panel and side panel shall also be 3/16-inch-thick aluminum). The support structure shall be

structural steel members assembled to provide individual, direct support to the control equipment panel, transfer switch, safety switches, meter base and the weather hood. The steel frame shall be painted with a two component, high build epoxy polyamide paint system designed for severe service. All weather hoods shall be provided with a light and GFI protected 120V outlet. Weather hoods shall be installed to eliminate runoff to the front side.

8. All electrical equipment, including non-submersible motors, electrical panels, control panels, backup generators, etc., shall be located a minimum of 2-feet above the 100-year flood elevation. All electrical enclosures shall have hinged doors/covers. The control panel shall include a concrete pad, minimum 8-feet X 4-feet X 6-inch thick.

9. A non-fused electrical disconnect is to be supplied and installed mid-way from the wet well and the pump control panel. This disconnect shall be NEMA type 4X suitably sized to house all pump power and control wiring. Rigid metal conduit shall be utilized with the necessary seal-off fittings. Terminal strips shall be provided to properly split the power termination to facilitate pump removal from the disconnect and not the pump control panel.

   Exposed outlet boxes for the outdoor and indoor wet process areas used for lighting fixtures, switches, and receptacles shall be aluminum with rubber neoprene gasketed covers of similar metal. Junction and pull boxes shall be NEMA 4X stainless steel construction and of ample size to house the required devices. Boxes shall be provided with hasps.

   The minimum size of boxes shall be according to the NEC. No box shall be filled to more than 40% capacity.

   Where control wires must be interconnected in a junction box, terminal strips consisting of an adequate number of screw terminals shall be installed. Current carrying parts of the terminal blocks shall be of ample capacity to carry the full load current of the circuits connected. Approximately 20% of the terminals provided shall consist of spare terminals. Terminals shall be lettered and/or numbered to conform with the wiring diagram.

13.03 PUMP STATION EQUIPMENT

A. PUMPS

1. General

   a) Submersible pumps and major accessories shall be supplied by a single manufacturer per Table 2.

b) Each pump unit shall be complete with a closed-coupled, submersible electric motor, and other appurtenances required for proper operation.

c) The equipment shall be suitable for the service conditions and shall be capable of meeting all operating requirements of the pump system.

d) Each pumping unit including motor and all integral controls shall be rated and labeled for use in a Class I. Division I. Group C/D area as defined by the NEC.

e) Each item shall be identified with indelible markings for the intended service. Tag numbers shall be clearly marked on all shipping labels and on the outside of all containers.

2. Submittals

a) Complete fabrication and assembly drawings, together with detailed specifications and data covering materials, parts, devices, and accessories, shall be submitted in accordance with the submittals section. The data and specifications for each unit shall include, but are not limited to, the following:

1) Pumps

a). Name of manufacturer

b). Type and model

c). Rotating speed

d). Size of discharge elbow outlet or nozzle

e). Net weight (mass) of the pump and motor only

f). Complete performance curves showing capacity versus head, brake horsepower (bhp) (kW), NPSH required, and efficiency

g). Data on shop painting

2) Motors

a). Name of manufacturer

b). Type and Model

c). Type of bearings and method of lubrication

d). Rated size of motor, hp (kW), and service factor

e). Insulation class and temperature rise

f). Full load rotative speed

g). Net weight

h). Efficiency at full load and rated pump condition

i). Full load current

j). Locked rotor current

b) O&M Manuals shall include, at a minimum, the following information:

1) Equipment function, normal operating characteristics, and limiting conditions

2) Assembly, installation, alignment, adjustment, and checking instructions

3) Operating instructions for startup, routine and normal operation, regulation and control, shutdown, and emergency conditions

4) Lubrication and maintenance instructions

5) Guide to troubleshooting

6) Parts list and predicted life of parts subject to wear

7) Outlined, cross-section, and assembly drawings; engineering data; and wiring diagrams

8) Test data and performance curves

3. Pumps

a) Pumps shall be submersible, non-clog sewage pumps capable of passing a 3-inch sphere. Pumps shall be capable of handling raw, unscreened sewage. Major pump components shall be of gray cast iron devoid of burrs, pits, or other irregularities.

b) The impeller casing shall have well-rounded water passages and smooth interior surfaces free from cracks, porosity, blowholes, or other irregularities. The discharge nozzle shall be flanged and sufficiently rigid to support the pumping unit under all operating conditions.

c) All mating surfaces of major components shall be machined and fitted with O-rings where watertight sealing is needed. Sealing shall be accomplished by O-ring contact on four surfaces and O-ring compression in two planes, without reliance on

a specific fastener torque or tension to obtain a watertight joint. The use of elliptical O-rings, gaskets, or seals requiring a specific fastener torque value to obtain and maintain compression and watertightness will not be acceptable. The use of secondary sealing compounds, gasket cement, grease, or other devices to obtain watertight joints will not be acceptable.

4. Pump Motors

   a) Motor shall be provided by the pump manufacturer; air-filled, totally submersible; and appropriately sized 3 phase power, 60-Hertz (Hz) motors with a maximum speed of 1800 revolutions per minute (RPM). The motors shall meet the requirements of Class I, Division I, and Group D for hazardous locations, and shall be sized to non-overloading throughout the entire operating range of the selected impeller. The motor shall meet the requirements of NEMA MG1 Part 30 and 31 for operation on pulse width modulation (PWM) type Variable Frequency Drives (VFD).

   b) A heat sensor thermostat shall be attached to and embedded in the winding and be connected in series with the motor starter contactor coil to stop motor if temperature of winding is more than 200 degrees Fahrenheit (F). Thermostat shall reset automatically when motor cools to safe operating temperature. The common pump motor shaft shall be of 416 stainless steel.

   c) The motor shall be protected by a mechanical seal system. A double electrode shall be mounted in the seal chamber to detect any water entering the chamber through the lower seal. Water in the chamber shall cause a red light to turn on at the control panel. This signal shall not stop the motor but shall act as a warning only.

   d) Power cables to pumps shall be American Wire Gauge (AWG) (min) Hypalon jacketed type silver plated copper (SPC) cable a minimum of 50-feet in length.

   e) Motor nameplate rating shall exceed the maximum power required by the pump in the operating head range. Each motor shall have a voltage, frequency, and phase rating as required and shall have a service factor of 1.15. The stator housing shall be an air-filled, watertight casing. A cooling jacket shall encase the motor housing for each pump where needed to maintain adequate cooling. Cooling jacket shall require no external source of cooling water. Motor insulation shall be moisture resistant, Class F, 180 degrees Celsius (C). Each motor shall be NEMA Design B for continuous duty at 40 degrees C ambient temperature and designed for at least 10 starts per hour.

   f) Each motor housing shall be provided with a moisture detection system provided by the motor manufacturer, complete with all sensors, control power transformer, intrinsically safe control modules, and relays.

g) The motor bearings shall be antifriction, permanently lubricated type. The bearing shall be fixed to carry the pump thrust and the upper bearing free to move axially. The bearings shall have a calculated ABMA L10 Live Rating of 40,000 hours when operating at maximum operating head. Maximum shaft runout at the mechanical seals shall not exceed 2 mils at any point in the operating head range.

h) Thrust bearings shall be protected by bearing temperature switches. The switches shall be normally closed automatic reset type rated 5-amperes (amps) at 120V AC.

i) Each motor shall be capable of continuous operating in air (unsubmerged) for at least 24-hours under pump full load conditions, without exceeding the temperature rise limits for the motor insulation system.

j) Each pump shall be equipped with one or more multiconductor cable assemblies for power and control. Each multiconductor assembly containing power cables shall be provided with a separate grounding conductor. Each cable assembly shall bear a permanently embossed code or legend indicating the cable is suitable for submerged use. Cable sizing shall conform to NEC requirements.

k) All cables shall be of sufficient length to terminate in a junction box outside the wet well, with 10-feet of slack that shall be coiled on a cable hook at the top of the wet well. Each cable shall be supported by AISI Series 300 corrosion-resistant PVC Style woven Kellem Grips to prevent damage to the cable insulation. Mounting of cable supports in the wet well shall be coordinated to prevent damage to the cable.

l) The cable entry water seal shall include a strain relief and a grommet type seal designed so that a specific fastener torque is not required to ensure a watertight submersible seal. The cable entry junction box and motor shall be separated by a stator lead sealing gland or a terminal board. The junction box shall isolate the motor interior from moisture gaining access through the top of the stator housing.

m) Motors with an adjustable frequency speed controller shall be derated to compensate for harmonic heating effects and reduced self-cooling capability at low-speed operation so the motor does not exceed Class B temperature rise when operating in the installed condition at load with power received from the adjustable frequency drive. All motors driven by adjustable frequency drives shall be supplied with full phase insulation on the end turns and shall meet the requirements of NEMA MG 1, Part 31. In addition, motors shall be designed to be continually pulsed at the motor terminals with a voltage of 1600-volts AC.

n) Adjustable Speed Drives: Adjustable frequency drives shall be provided as specified by the Director or if the projected flow $\geq$.5 MGD.

o) Station pumps 15-30-hp shall have a 30-hp rated reduced voltage soft starter (RVSS). Stations with pumps > 30-hp shall utilize variable frequency drives with appropriately sized RVSS.

5. Appurtenances

a) The lift out systems shall consist of a straight elbow that bolts on the bottom of the basin, a combination disconnect assembly with a seal flange that mounts to the pump, rail support guides that fasten to the wall of the basin, and guide and support brackets that mount to the pump. The guide rails shall be type 316 stainless steel, 2-inch minimum diameter, schedule 40.

b) Guiderail Mounted Base. A discharge base and discharge elbow shall be furnished by the pump manufacturer. The base shall be sufficiently rigid to firmly support the guiderails, discharge piping, and pumping unit under all operating conditions. The base shall have one or more integral support legs or pads suitable for bolting to the floor of the wet well. The face of the discharged elbow inlet flange shall be perpendicular to the floor and shall contact the face of the pump discharge nozzle flange. The diameter and drilling of the elbow outlet flange shall conform to ANSI B16.1, Class 125. The pump and motor assembly shall be automatically connected to and supported by the discharge base and guiderails so that the unit can be removed from the wet well and replaced without the need for operating personnel to enter the wet well.

c) Sliding Bracket. Each guiderail mounted pumping unit shall be provided with an integral, self-aligning guiderail sliding bracket. The bracket shall be designed to obtain a wedging action between flange faces as final alignment of the pump occurs in the connected position. The bracket shall maintain proper contact and a suitably sealed connection between flange faces under all operating conditions. The sliding bracket shall be non-sparking.

d) Guiderails. Each guiderail mounted pumping unit shall be equipped with one or more guiderails. Guiderails shall be sized to fit the discharge base and the sliding bracket and shall extend upwards from the discharge base to just below the bottom of the access hatch. An upper guiderail bracket shall be provided at the pump access opening. Guiderails shall be made of stainless steel.

e) Lifting Chain. Each guiderail mounted pumping unit shall be provided with a chain suitable for removing and installing. The chain shall be stainless steel with 4X6 lifting eyes at 10-foot intervals starting at the top. A suitable chain hook shall be provided at the top of the wet well. The pump shall be equipped with an open lifting hoop suitable for attachment of standard chain fittings, or for hooking from the wet well surface. The hoop shall be ductile cast iron ASTM A536 (60-40-18) and shall be rated to lift a minimum of four times the pump weight. A 6-foot length (minimum) stainless steel chain shall be attached to the bail with a stainless steel shackle. Pump lift chains are required to be stainless steel and must extend a minimum of 5-feet above normal wet well operating level.

f) Special Tools and Accessories. Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments, and accessories

required for proper maintenance. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices.

g) A replica of the nameplate with serial number, model number, manufacturer, operating conditions, etc. shall be provided for each pump.

6. Shop Painting

a) All iron and steel parts which will be in contact with pumped liquid or submerged after installation, including the inside of the casing, the impeller, and the discharge elbow, shall be shop cleaned in accordance with the coating manufacturer's recommendations and painted with the epoxy coating system specified. At least 1 quart of the finished coat material shall be furnished with each pump for field touchup.

b) All other iron and steel surfaces, except stainless steel and machined surfaces, shall be protected with suitable protective coatings applied in the shop. Surfaces of the equipment that will be inaccessible after assembly shall be protected for the life of the equipment. Exposed surfaces shall be finished, thoroughly cleaned, and filled as necessary to provide a smooth, uniform base for painting. Electric motors, speed reducers, starters, and other self-contained or enclosed components shall be shop primed or finished with an oil resistant enamel or universal type primer suitable for top coating in the field with a universal primer and aliphatic polyurethane system.

c) Surfaces to be coated after installation shall be prepared for painting as recommended by the paint manufacturer for the intended service, and then shop painted with one or more coats of the specified primer.

B. PUMP CONTROL SYSTEMS

1. Submittals: Complete fabrication and assembly drawings, together with detailed specifications and data covering materials, parts, devices, and accessories shall be submitted in accordance with the submittal section. The data and specifications for the Control panel shall include, but not be limited to, the following:

a) Name of acceptable manufacturer per Table 2

b) Type and model

c) Enclosure rating

d) Dimensions of complete panel

e) Electrical schematics and wiring diagram

f) Liquid level sensors with mounting details, cable lengths, and pump controls

g) Published descriptive data on each item and all accessories, indicating all specific characteristics and options

2. Enclosure: The Control Equipment Enclosure shall be a NEMA type 4X fiberglass and be of suitable size to house all components. A locking hasp shall be provided with no screw clamp type latches. Enclosure shall be fabricated from fiberglass. The top of the enclosure shall serve as a drip shield and the seam free sides shall prevent rain and sleet from entering. Inner panel shall be made of fiberglass.

3. Hinged Inner Door: An inner door shall be furnished. Overload reset push buttons, circuit breakers, switches pilot lights, and hour meters shall be the only components accessible with door closed. The door shall be hinged and may be opened when service is required.

4. Line Terminal Block: A terminal block shall be furnished with properly sized line lugs to accept the main power source entering the control panel. Load lugs shall be adequate to accept all required load size wiring requirements. All live parts shall be fully shielded.

5. Motor Circuit Breaker (440-480-VAC): A properly sized, molded case, thermal hydraulic-magnetic circuit breaker or motor protector shall be provided for each pump motor. Line and load sides shall be equipped with lugs properly sized for the horsepower and current rating of the motor(s). The interrupting rating shall be 5,000 root mean square (RMS) symmetrical amps.

6. Transformer Primary Circuit Breaker: A properly sized, two pole, molded case circuit breaker shall be furnished ahead of the control power 120-VAC power transformer for short circuit protection and disconnecting power to the transformer.

7. Control Power Transformer: An industrial quality control transformer shall be furnished to provide control voltage. The transformer shall be furnished to provide more than adequate kilovolt amperes (kVA) rating to provide 120-VAC power for all items required in the control and alarm circuits. Transformers shall be protected in their secondary by properly sized supplement circuit breaker(s).

8. Magnetic Contactors and Overload Relays: A magnetic contactor shall be furnished for each motor. A separate panel mounted, 3 leg (3 phase) overload relay or motor protector shall be supplied for each motor. Each leg of the overloaded relay shall be equipped with a properly sized overload heater. Electronic overloads are not acceptable. Contractor and overload relay shall be properly sized for the required horsepower, voltage, and phase.

9. Elapsed Time Meters: Six-digit, non-resettable elapsed time meters shall be mounted in the control panel enclosure inner door to record the run time for each pump.

10. Condensation Strip Heater with Thermostat: A strip heater shall be furnished to prevent condensation within the control panel enclosure. The heater shall be controlled by a panel mounted, adjustable thermostat.

11. Phase & Voltage: A phase failure, reversal and under voltage monitor shall be supplied to prevent the motors from running under low voltage, phase loss, or phase reversal conditions. The monitor shall lock out the control circuit until the problem is corrected and automatically reset. The phase and voltage monitor shall be adjustable.

12. Lighting and Surge Suppressors: Suitable lighting and transient level surge suppressors shall be provided to protect motors and control equipment from lightning induced or other line surges. Surge suppressors shall meet current UL standards.

13. Thru-Door Overload Reset Push Buttons: Overload reset push buttons shall be provided for each overload relay. Push buttons shall be mounted so that with inner door closed, overloaded relays maybe reset without entering high voltage compartment.

14. Switches: Heavy-duty industrial grade oil tight 22-millimeter (mm) switches shall be provided for each pump for "Hand/off/Automatic" operation selection. All switch components shall be made of see-through polycarbonate for simplified inspection of contracts. Cams and strokers shall be Teflon impregnated for abrasion free service without lubrication. The switches required shall be as follows:

Table 3: Switches

Switch Function (Name Plate)	Voltage
HOA	120-VAC

15. Pilot Lights: Full voltage, push to test, heavy-duty industrial grade oil-tight pilot lights shall be provided. All pilot light components shall be made of corrosion resistant metals and polyesters. An insulated socket shall be furnished to eliminate the possibility of shock during bulb change. Bulb change shall not require removal of the socket. Bulbs shall be "super bright" LED type. Lens shall be 22-mm and made of lexan. The pilot lights required shall be as follows:

Table 4: Pilot Lights

Pilot Light Function (Name Plate)	Voltage	Lens Color
PUMP 1	120-VAC	GREEN
PUMP 2	120-VAC	GREEN

16. Seal Fail Alarm Circuit with Test Push Button: The control panel shall be equipped with a conductance actuated control relay that shall respond to current from a moisture sensor in the pump seal chamber. Relay contacts shall be rated at 10-amps minimum.

All molded structural parts shall be of high mechanical and dielectric strength, structural dimensionally stable, arc resistant, thermosetting plastic. Base plate shall be high strength, diecast aluminum alloy. Solid state type relays shall not be considered acceptable for seal fail monitoring applications. An amber alarm pilot light shall illuminate upon alarm condition. Each pilot light shall include contacts that shall allow testing of the seal failure circuit and pilot light bulb by pushing. Bulb change shall not require removal of the socket. Bulbs shall be "super bright" LED type.

17. Seal Failure Circuit Test Push Button (Illuminated): Heavy-duty industrial grade oil-tight push buttons shall be provided. All push button components shall be furnished to eliminate the possibility of shock during bulb change. Bulb change shall not require removal of the socket. Bulbs shall be "super bright" LED type. Lens shall be 22-mm and made of Lexan. The push buttons required shall be as follows:

Table 5: Seal Failure Circuit Test Push Button

Pilot Button Function (Name Plate)	Voltage	Lens Color
PUMP 1 SEAL FAIL	120-VAC	AMBER
PUMP 2 SEAL FAIL	120-VAC	AMBER

18. Pump Alternator Circuit (For Duplex Pump): The electro-mechanical alternator relay shall be of industrial design specifically for use in pump applications. It shall have single-pole double-throw heavy-duty 10-amp silver cadmium oxide contracts enclosed in a transparent cover. The snap action contacts shall transfer when the unit is de-energized. The circuit shall never be closed or opened while current is being conducted. The alternator circuit shall alternate the lead pump position between the pumps and shall allow the lag pump to start in response to a rising water level in the wet well. A four-position switch shall be provided on the exterior of the pump control panel inner door. The switch shall have a position for: Pump 1, Pump 2, or Both.

19. Control Relay(s): Plug-in control relays with 120-VAC coils shall be provided as required. Contact rating shall be 5-amps (minimum). Sockets shall be of the same manufacturer as the relays and hold-down clips shall be furnished to prevent relay from sliding out of the socket. Relays shall have indicator lights showing when they are engaged.

20. High Wet Well Level Alarm: The control panel shall be provided with a suitable alarm circuit, activated by a separate level control. This alarm shall signal a high water condition in the wet well. Terminals shall be furnished in the control panel of externally mounted alarm devices. A red flashing light shall be provided as a visual alarm of the high water in the wet well. A continuous sounding horn shall also be provided as an audible alarm of the high water in the wet well. Provide a pushbutton to silence audible alarm.

21. Liquid Level Controls: Level control will be achieved by means of a corrosion resistant level sensing pressure transducer**.** Float-actuated mercury level control switches shall serve as a backup for low level alarm and high level alarm functions. The mercury switch shall be encapsulated in polyurethane foam for corrosion and shock resistance. Floats shall have sufficient chain length to reach from the splice box panel to the bottom of the wet well. Float switches shall be securely attached to a weighted stainless steel chain, in the location indicated in the drawings. Level switches shall be weighted to hold desired position in the wet well. The cord connection to the control shall be numbered 16-2, rated for 13-amps, and shall be type SJTO. To ensure optimum longevity contacts shall be rated for 20-amps at 115-VAC and shall be sealed in a heavy-duty glass enclosure. All pressure transducers shall have a separate 115-VAC power source. No junction boxes or cable splices of any kind will be allowed in the wet well.

22. High Temperature Shutdown Circuit(s): The pump motor high temperature circuit shall provide terminals for connection of the leads from the temperature sensor provided in the pump motor windings. Upon a high temperature condition, the control power to the pump motor contact shall be disconnected, thus stopping the pump motor. The pump shall automatically restart when the pump motor temperature returns to an acceptable level.

23. Ground Lug(s): Equipment ground lug(s) shall be provided for grounding the enclosure. The ground lug(s) shall be suitable for the service provided the enclosure is sized per table 250-95 of the NEC. In all cases, the enclosure must be adequately grounded per article 250 of the NEC, except for fiberglass enclosures where a grounding bus shall be provided.

24. Terminals: Terminals shall be provided for connecting mercury float switch leads, temperature sensor, and seal fail sensor leads. Terminal blocks shall be rated for 600-volt use and accept a wire range of #22-8. All live parts shall have insulating walls on all sides of the lug. Blocks must be US recognized.

25. Construction Standards: Subpanel shall be drilled and tapped to accept machine thread bolts (self-tapping screws are not acceptable). All control wiring shall be 16-AWG machine tool wire, Carol type 76512 or equal. All control wire shall be color-coded or numbered in accordance with applicable standards. Power (motor) shall be in accordance with the current NEC. Major groups of wires shall be contained in plastic wiring trough equal to Panduit type E.

26. Nameplates: All indicator lights, alarms, selector switches, pushbuttons and major control system components shall be identified with engraved phenolic plastic nameplates, white lettering on a black background.

27. Control Panel: The control panel shall include the following elements:

    a) Separate Manual Disconnect for each pump and grinder with 2-pole adjustable overload protection for each phase.

    b) Magnetic starter for each pump motor with all leg quick trip ambient compensated overload protection for each motor. Overloads are to have an auxiliary contact for auto dialer.

    c) Hand-Off-Auto selector switch for each pump.

    d) Automatic Electric Alternator with the ability to designate either Pump 1 or Pump 2 as lead.

    e) Circuit Breaker for Control Circuit.

    f) Motor Thermal protection – Motor control circuit is to shut down if high temperature occurs. Manual resets to be provided.

    g) MPE LPC420-R_RM Level Control Mode.

    h) MPE Level Probe-Model-LLP-10.

    i) Backup float system with 3 floats as backup to the MPE Level Control.

    j) SCADA shall be provided to allow simulation of wet well on MPE Control.

    k) > 40-hp shall be ‘soft start’.

    l) Horn signaling.

    m) Control signaling.

    n) Seal failure light for each pump and contact closure for automatic dialer.

    o) High temperature light for each pump and contact closure for automatic dialer.

    p) Running light for each pump.

    q) Non-resettable, elapsed time meter for each pump, reading in tenths of hours. Capacity 100,000 hours.

    r) High level alarm light with Red Globe and contact closure for automatic dialer.

    s) All necessary internal wiring, relays, etc. to provide the operation as described.

t) All functions and internal wiring shall be labeled accordingly.

u) Junction box shall be stainless and installed 4-feet above final grade to ensure water does not damage the internal wiring.

v) Automatic Dialer/SCADA.

w) AC Voltmeter.

C. SCADA

The Contractor shall furnish a complete SCADA system that in conformance with Table 2.

1. SCADA shall provide a remote silence for high level alarm conditions.

D. GRINDERS

1. General

a) A wastewater grinder shall be provided at each pump station for the intended purpose of grinding solids in the flow influent to the pump station.

b) The entire grinder unit and accessories necessary to provide a fully functional wastewater grinder system shall be supplied and warranted by a single manufacturer in conformance with Table 2.

c) The wastewater grinder shall be placed in a separate manhole, or other influent structure prior to the wet well but still within the pump station site. The minimum diameter of the manhole shall be 5-feet. The grinder shall be removable without entering the structure by means of a stainless steel guide rail and stainless steel lifting chain with 4X6 lifting eyes at 10-foot intervals, starting at the top assembly. Another means of solids removal, such as a bar rack, must be provided when the grinder unit is out of service for extended periods.

d) The wastewater grinder shall be electrically driven. The electric motor shall be a minimum 5-hp, 60-Hz, appropriately sized immersible motor. The motor shall be NEMA Design “B” and TEFC.

e) The wastewater grinder unit will have a complete and separate control panel providing all settings, monitoring, and control options required, as well as the ability to send alarm signals back to the SCADA system.

f) The equipment shall be installed as recommended by the manufacturer, and in compliance with all OSHA, local, state, and federal codes, and regulations.

g) The grinder unit power supply shall match the pump station power supply. Standard pump station power supply is 3 phase AC power.

h) Identification. Each unit of equipment shall be provided with a corrosion resistant substantial metal nameplate, securely affixed in a conspicuous place. Nameplate information shall include equipment model number, serial number, manufacturer's name, and location important performance data.

2. Submittals

Submittals shall include electrical diagrams, complete field wiring, terminal identifications, and control panel schematics. Electrical and control information shall be provided to allow coordination of field wiring to place the system in the desired operation. Submittals shall also include complete mounting and installation instructions (including size, length and spacing of all supports and anchor bolts) and painting instructions.

3. Quality Assurance

a) All equipment shall meet the requirements of applicable standards, including but not limited to: ASTM, AISI, NEMA, NEC, UL, and other State and Local codes.

b) Grinder Control Panel

1) Each grinder system shall be provided with a single control panel suitable for mounting on an electrical rack, building wall, or as a secondary panel located under the weather hood. The control panel shall include all power and circuits to provide the functional requirements.

2) A programmable controller shall be included in the panel. The programmable logic controller shall talk directly with the SCADA PLC without a third-party communication device. Upon the grinder encountering a jam or overload condition, the controller shall stop the grinder and screen and reverse the direction of rotation to clear the obstruction. If the jam is cleared, the controller shall return to normal operation. If the jam condition persists, the controller shall repeat the reversing cycle up to eight additional times within 45-seconds (total of nine cycles) before signaling a grinder overload condition. Upon a grinder overload condition, the controller shall shut down the grinder and screen and activate an overload contact.

3) If power failure occurs while the grinder is running, the grinder shall resume running when the power is restored. A 0-60 second adjustable time delay device shall be included in the control panel to select time delay until restart after power restoration. If the grinder is stopped due to an overload condition and a power failure occurs, the overload indicator shall reactivate when power is restored.

4) The control panel shall provide overcurrent protection. The overload relay shall be adjustable so that the range selected includes the full load amperage (FLA) rating and service factor. Grinder control panel shall be positioned either under the weather hood at the electrical riser or in the control building, if included. A standalone control panel will not be accepted.

5) The control panel shall be equipped with a HOA selector switch. In the Off/Reset position, the motor shall not run. In the Hand position, the motor shall run continuously. In the Auto position, the grinder shall stop and start by remote control signal. The control panel shall include dry contacts for future addition by others of a remote maintained contact start/stop control signal when in Auto mode. The control panel shall not allow remote resetting of overload condition. Overload reset shall be accomplished by switching the HOA switch to the Off/Remote position.

6) The controller shall indicate each of the following statuses with an indicator light on the panel face:

   a). Power On
   b). Grinder Overload
   c). Motor Overload
   d). Run

7) Engraved phenolic laminated plastic identification nameplates, with white letters on the black background, shall be provided for each switch, indicator light, gauge, etc. on the control panel and system.

8) The controller shall be properly rated 3 phase power, 60-Hz.

9) A single enclosure shall house all power and control devices, relays, terminal blocks, and motor starter. Control and indicating devices shall be mounted in the front of the enclosure. Indicating lights shall be integral transformer type with low voltage long life 6-volt lamps. Lamps and selector switches shall be heavy-duty type. The control panel and all control devices shall be NEMA 4X. Enclosure shall be a NEMA 4X fiberglass reinforced polymer equipped with full hinged door, suitable for exterior mounting as shown on the drawings.

10) A lockable disconnect switch shall be provided on the outside of the control panel to disconnect power to the entire grinder system.

11) One set of normally open (NO) contacts shall be provided in the control panel for remote indication of each grinder “fail” and grinder “run” status. Grinder overload, motor overload, oil over temperature, low oil level and oil pressure alarms shall be ganged together to a common grinder “fail” alarm. The control panel shall provide 120-VAC power to these alarm circuits for remote indication at an existing SCADA system.

12) Contacts shall be provided for a future remote maintained contact emergency stop pushbutton, to be provided by others. These contacts shall be jumpered.

13) Motor starter shall be full voltage type with 120-volt operating coil and captive terminal screws. Overload relay shall be mounted directly to the contactor. The relay shall be sized to the motor FLA.

14) Control panel shall incorporate a manual momentary or spring return reversing switch for the grinder control.

15) The Following spare parts shall be provided for each grinder as a minimum:

    a). Three (3) of each type of fuse found in the system
    b). Three (3) of each type of lamp bulb found in the system

16) The motor controller shall have sufficient space within its enclosure for the storage of the motor controller spare parts. Grinder spare parts shall be packaged in suitable containers for long-term storage and shall bear labels clearly designating the contents of each package and the equipment for which they are intended.

E. ODOR CONTROL

1. Odor control measures shall be evaluated for all possible sources of odor related to wastewater pump systems. Source locations to be analyzed shall include, but not limited to, the wet well at the pump station, the force main discharge location, and force main ARVs. Odor control measures to be analyzed shall include, but not limited to, oxidizing agent added to the wastewater, odor masking agents added to the air, activated carbon treatment, biofilter treatment, and wet scrubber treatment. Odor Control measures shall be provided in accordance with Table 2.

2. The chemical feed system, with variable dose controller, shall be capable of reducing the hydrogen sulfide concentration estimated to occur (with no treatment) in the pump station force main discharge at the receiving gravity sewer down to or below 0.1 mg/L using the chemical designated by the Town in the Pre-Design meeting.

3. Solutions that include chemical feed must consider the feasibility of chemical delivery to the site, provide appropriate chemical storage facilities; including double walled containment, and must incorporate chemical feed systems as listed in Table 2. A containment system may also be required, in case of tank or piping failure.

4. The Town reserves the right to require mechanical ventilation and treatment of exhaust from the wet well to address anticipated or existing proximity odors.

5. Odor Control facilities not located on the pump station site (ARVs and discharge points for instance) shall be constructed in underground vaults or if necessary to be above

ground, shall be housed in a structure. Requirements for odor control facilities not located on the pump station site are in the Force Main section of these Standards.

F. JIB CRANE/HOISTING EQUIPMENT

1. A pedestal-mounted jib crane with an electric chain hoist and motorized trolley of 360-degree swing shall be provided. Electric hoist and trolley shall be furnished with any optional equipment and accessories as required for permanent operation in an exterior location. Jib crane shall be provided with a "doghouse" shelter at the mast end of the crane beam, to provide shelter for and protection of the parked motorized trolley and hoist from precipitation and extended exposure to sunlight. The minimum capacity of the hoisting system shall be equal to the combined weight of the pump, motor, chains, and cables, times a factor of 1.25. Jib crane must be tall enough to lift pumps so that there is a 4-feet minimum clearance from the bottom of the pump to the concrete slab. The motor and handheld control pendant shall have NEMA 4 ratings. Jib crane must be capable of accessing and lifting both pumps and must be certified to be in accordance with OSHA. Crane shall be equipped with chain buckets.

G. GENERATORS

1. General

   a) Backup power shall be provided by an automatically starting on-site generator controlled by an ATS. The generator shall be capable of supplying all necessary electrical power for complete operation of the pump station in the event of a failure of the electrical feed supplied by the local grid.

   b) The entire generator set, switchgear, and accessories necessary to provide a fully functional backup power system, shall be supplied and warranted by a single manufacturer in accordance with Table 2.

   c) Engine-generator unit, controls, and transfer switch shall be new; a standard product of a single manufacturer; and a packaged type of unit, full shop assembled, wired, and tested, requiring no field assembly of critical moving parts.

   d) The generator shall be sized to sequentially start and continuously run all pumps, motors, and other electrical equipment. Simultaneous starting of pumps is not required. The pump starting conditions (including delay timers, VFDs, soft starts, reduced voltage starters, etc.) should be verified for the site. The kW rating needed shall be calculated by a NCPE by the generator manufacturer.

   e) The voltage, amps, phase, etc., shall be coordinated with the design of the electrical equipment. Generators will be 3 phase, 60-Hz, and capable of multiple voltages through re-strapping.

f) The engine generator set will have a complete and separate control panel mounted inside the generator enclosure providing all settings, monitoring, and control options required, as well as the ability to send alarm signals back to the SCADA system.

g) Each unit shall be provided with a corrosion resistant substantial metal nameplate, securely affixed in a conspicuous place. Nameplate information shall include equipment model number, serial number, manufacturer's name and location, and important performance data.

h) If the generator is elevated 30-inches or greater from the existing grade, a generator enclosure shall be furnished with an access platform with safety railing, metal grating, and stairs, to provide safe and convenient access to all parts of the generator and controls that require operator maintenance or inspection. The access platform shall be designed and located so that all generator maintenance can be performed without the need for ladders. The access platform shall be located within five vertical feet of the top of the uppermost maintenance access door/panel in the sidewalls of the generator enclosure.

i) The engine-generator set supplier shall be an authorized dealer of the engine-generator set manufacture and shall be fully qualified and authorized to provide service and parts for the engine and generator 24-hours per day, 7-days per week from a location within a 100-mile radius of the installation site.

2. Submittals

a) The contractor shall submit complete shop drawings for assembly and installation, together with detailed specifications covering materials, drive unit, parts, devices, and accessories forming a part of the equipment. The data for each unit shall include, but shall not be limited to, the following:

1) Manufacturer, model, and type: engine, alternator, enclosure, battery charger and battery, silencer, switchgear, transformer, etc.

2) Listing of standard and operational accessories.

3) Engine output horsepower and efficiency curves at specified conditions.

4) Engine mechanical data including heat rejection, exhaust gas emission data (maximum values at loads of ¼, ½, ¾, and full for carbon monoxide (CO) (lb/hr), nitrogen oxides (NOx)(lb/hr), temperature (F), flow (ACFM), combustion air and ventilation air flows, and fuel consumption at specified conditions).

5) Generator electrical data including temperature and insulation data, winding pitch, cooling requirements, excitation ratings, voltage regulation, voltage regulator, efficiencies, waveform distortion and telephone influence factor.

6) Ratings at specified conditions: engine (net horsepower), engine (maximum performance horsepower bare engine), generator kW at specified power factor, volts, amps.

7) Overall dimensions (length, width, height) and net weight.

8) Concrete pad recommendation (including size, length, and spacing of all necessary supports and anchor bolts) and layout/stub-up locations for electrical conduits.

9) Wiring diagrams and schematics for the entire system, including the engine control panel, generator breaker, ATS, auxiliary transformer, and remote alarm indicators.

10) Calculations or test results showing compliance with specified motor starting and voltage dip requirements.

11) Line circuit breaker rating.

12) Control panel layout, identifying location of all instrumentation being supplied.

13) Operation instructions.

14) Letter from the engine-generator manufacturer confirming that the unit will provide the specified minimum kW rating at the specified design conditions and time duration.

15) Battery sizing calculations.

16) Battery charger sizing calculations.

17) Maximum output short circuit kVA available.

18) A certificate of compliance, when required.

19) Manufacturers and dealer's written warranty.

3. Quality Control

a) All equipment and materials shall be designed and constructed in accordance with the latest applicable requirements of these Standards, specifications and codes of

ANSI, ASTM, NEMA, IEEE, EEI, HEI, ISO, NFPA, SAE, NEC, UL508, and other such regularly published and accepted standards, as well as state and local codes.

4. Generator Equipment

   a) Engine

      1) Engine shall be compression ignition type diesel powered. Diesel fueled generators shall be 4 stroke, liquid cooled, American made, with a minimum of 130-hp, or equal. Any alternative to this requirement shall be approved by the Director.

      2) Engine shall operate at $\leq$1800 RPM.

      3) The engine will be equipped with an electronic governor to maintain 4% drop from no load to full load and $^{+}/_{-}$0.25% steady state. The electronic governor control shall be furnished as a complete governor and control package.

      4) Engine shall have dry type air cleaner, coolant, fuel filters, and oil filters with replaceable elements.

      5) Engine shall be liquid cooled and shall have a radiator, coolant pump, thermostat, and fan.

      6) Governor shall be mechanical flyweight type with a speed regulation of 5% maximum.

      7) Lubrication shall be by a positive displacement lube oil pump with positive pressure lubrication to all bearings. Full flow lube oil filter shall be provided.

      8) Starting system shall be 12-volts, 35-amps with solid state voltage regulator. A battery float charger shall be provided.

      9) An engine block heater shall be provided with control thermostat. The unit shall be 120-volts.

   b) Generator

      1) The synchronous generator shall be a single bearing, self-ventilated, drip-proof design in accordance with NEMA MG 1 and directly connected to the engine flywheel.

      2) Voltage regulation shall be within $^{+}/_{-}$ 0.5% at steady state from no load to full load. The momentary voltage drop shall not exceed the specified percent without starter coils dropping out or stalling the engine at any time when applying or starting the specified loads. Recovery to stable operation shall occur

within 2-seconds. Unit shall be capable of adjusting voltage under varying load conditions within 16-milliseconds.

3) The voltage regulator shall be a totally solid state design, and include electronic voltage buildup, volts per hertz regulation, overexcitation protection, shall limit voltage overshoot on startup, and shall be environmentally sealed.

4) The insulation material shall meet NEMA standards for Class H insulation and be fungus resistant.

5) The generator shall be a self-excited generator type. The excitation system shall be of brushless construction.

6) The generator shall be supplied with a 240-volt single phase anti-condensation heater protected by a circuit breaker inside the main control panel. When the generator set is not running the heater is automatically connected to the AC supply through a power relay mounted in the control panel. Upon receiving a start signal the AC supply is automatically disconnected by the power relay and automatically reconnected when the start signal is removed, and the engine has stopped. A temperature set point shall determine the start and stop signal.

c) Fuel System

1) Each engine-generator unit shall be furnished with a complete fuel system, including an integral fuel tank, fuel filter, fuel shut off valve, air filter, pressure regulator (if applicable), and piping along with all other accessories as required for proper operation. All items shall be suitable for the specified fuel and located inside the enclosure above the base plate and serviceable from inside the enclosure. The fuel system shall conform to NFPA 58.

2) The fuel tank shall have a capacity of at least 250-gallons to provide fuel for a minimum run time of 72 continuous hours at 100% prime load.

3) The fuel tank shall be double walled with a rupture basin of 110% capacity. It shall be pressure tested for leaks prior to shipment and have all necessary venting per US142 standards. A locking fill cap, a mechanical reading fuel level gage, low fuel level alarm contact, and fuel tank rupture alarm contact shall be provided. The fuel system shall require a polishing/filtration system for larger units to be determined by the Town. Any drain lines associated with the generator need to include brass plugs. Plastic plugs will not be accepted.

4) Fuel piping shall be designed for a working pressure of 250-psi. Sizing shall be in accordance with the manufacturer's recommendations, but not less than ½-inch in diameter.

5) A vapor withdrawal system shall be installed, to include a manual shut-off valve at the tank(s), a vaporizer, dry fuel filter, line service regulator, solenoid fuel shut-off valve to pen when engine runs, flexible pipe connection at the engine, and a gas flow regulator.

6) An 80% charge of propane in the propane storage tank shall be provided at the time of final acceptance.

7) Complete charges of antifreeze and oil shall be provided.

d) Lubrication

1) Equipment shall be adequately lubricated by systems which require attention no more frequently than weekly during continuous operation. Lubrication systems shall not require attention during startup or shutdown and shall not waste lubricants.

2) Lubricants shall be provided in sufficient quantities to fill all lubricant reservoirs and to replace all consumption during testing, startup, and operation prior to acceptance of equipment. Unless otherwise specified or permitted, the use of synthetic lubricants will not be acceptable.

3) Lubrication facilities shall be convenient and accessible. Oil drains and fill openings shall be easily accessible from the normal operating area or platform. Drains shall allow for convenient collection of waste oil in containers from the normal operating area or platform without removing the unit from its normal installed position.

e) Alternator

1) Alternators shall be revolving, broad range, brushless type designed for minimum resistance, low voltage, waveform distortion, and maximum efficiency. Rotor shall be dynamically balanced permanently aligned to engine by flexible disc coupling. Maximum allowable voltage dip shall be 30%.

2) Exciter shall be 3 phase, full wave rectified with silicon diodes mounted on a common motor shafted for maximum motor starting.

3) Voltage regulator shall be solid state with silicon-controlled rectifiers with phase-controlled sensing circuits.

4) Temperature rise at rated load shall be within limits for Class F insulation in accordance with NEMA MG 1-22.40.

5) Insulation system shall be Class F in accordance with NEMA MG1-1.65. Rotor shall be vacuum impregnated with 100% solid epoxy resin for complete

environmental protection. Stator shall be impregnated twice with varnish conforming to MIL-1-24092, Type M, Class 155.

6) Output circuit breaker shall be 3-pole, rated at 145% of alternator full load current.

f) Exhaust System

1) Each engine-generator unit shall be furnished with a complete exhaust system including an exhaust silencer, exhaust piping, expansion joints, and accessories required for a complete operating system.

2) A rain cap shall be provided to prevent rain from entering the exhaust pipe. The rain cap shall open from exhaust pressure and shall close when exhaust flow stops. The cap shall be stainless steel counter balancing with vertical discharge.

g) Starting System

1) Each engine-generator unit shall be furnished with a complete electric motor start system including starting motors, maintenance free starting batteries, battery pack with rack, cables, and battery charger.

2) The engine starter shall be a 12-volt DC or 24-volt DC, solenoid shaft, electric starting system with positive engagement.

3) The batteries shall be of high rate, diesel starting, lead acid type. The batteries shall be sized for five 10-second cranks with battery and engine oil temperature of 30 degrees F and a battery end voltage of 70% of system voltage.

4) The battery charger shall be current limiting and shall be furnished to automatically recharge the batteries. The charger shall be dual charge rate with automatic switching to the boost rate when required. Output voltage regulation shall not exceed 1%. The charger shall include temperature compensation, NEMA 2 corrosion resistant enclosure, overload protection, silicon diode full wave rectifiers, voltage surge suppressor, DC ammeter, DC voltmeter, and fused AC input, on/off switch, remote annunciation of loss of AC power, low battery voltage, and high battery voltage, AC input and DC output circuit breakers or fuses, floating voltage equalization, equalizing timer. AC input voltage shall be 120-volts or 240-volts, single phase.

5) The battery charger shall have a DC output suitable to supply power to all continuous loads and to recharge the batteries from a full discharge state to normal operating voltage within 8-hours.

6) The batteries, battery rack, and battery charger shall be located within the engine-generator enclosure. The battery rack frame shall be constructed of corrosion resistant material.

7) The engine-generator shall automatically supply power to the battery charger when it is operating, and utility power is not available.

h) Cooling System

1) Engine-generator unit shall be cooled with unit mounted radiator cooling system complete with radiator, expansion tank, water pump, belt driven fan, fan guard, thermostatic control, high water temperature cutout, and all accessories required for proper operation. The radiator shall be sized to provide sufficient capacity for cooling of the engine and all accessories at an ambient temperature of 125 degrees F, considering the enclosure static pressure restriction. The fan shall draw air over the engine and discharge through the radiator.

2) The cooling system shall be filled with a permanent antifreeze mixture of ethylene glycol type with rust inhibitor.

3) The engine generator unit shall have a 240-volt coolant heater protected by a safeguard breaker inside the main control panel. A controller shall be included to regulate the output temperature to within safe limits. When the generator set is not running, the heater is automatically connected to the AC supply through a power relay mounted in the control panel. Upon receiving a start signal, the AC supply is automatically disconnected by the power relay and automatically reconnected when the start signal is removed and the engine has stopped.

i) Enclosure

1) The engine-generator unit, fuel system, control panel, battery rack, battery charger, power panel, exhaust silencer, and other ancillary equipment, shall be housed in a weatherproof enclosure.

2) The enclosure shall consist of a roof, side walls, and end walls, and shall be weatherproofed and sufficiently sealed to prevent the entry of rodents.

3) The enclosure shall be constructed of 12 gage or heavier metal panels that can be easily removed, or doors.

4) Doors shall be lockable with stainless steel hardware for access to the engine generator, controls, and accessories. Doors shall also provide easy accessibility for maintenance. Doors shall have lock arm to prevent swinging when open.

5) The enclosure shall be provided prewired, requiring only external connection to the power panel and ATS.

6) Lube oil and coolant drains shall be extended to the exterior of the enclosure and terminated with drain valves.

7) All moving parts inside of enclosure, including cooling fan and charging alternator, shall be fully guarded to prevent injury.

8) Lifting points shall be provided on base frame suitable for lifting combined weight of base tank, engine generator unit, and enclosure.

9) An LED floodlight shall be provided with a switch mounted on the generator control panel.

j) Control System

1) Provide a generator set mounted control panel for complete control and monitoring of the engine and generator set functions. Critical components shall be environmentally sealed to protect against failure from moisture and dirt. Components shall be housed in a NEMA 1/IP22 enclosure with hinged door secured with a twist lock hatch. The panel door will have a voltage shunt switch. The panel itself shall be mounted on a separate support stand and shall be mounted inside the enclosure such that the face of the panel faces outward and is isolated from vibrations of the engine/generator arrangement. Panel/breaker arrangements shall be mounted in such a manner as to not restrict access to the generator, engine, or other parts of the system that need periodic maintenance or repair.

2) The control panel shall be automatic and safety type and shall include at least all items required by NFPS 110 Level 1.

3) Panel shall include the following I&C (at a minimum): AC voltmeter, AC ammeter, frequency/tachometer, engine running hours, coolant temperature gauge, lube oil pressure gauge, battery condition voltmeter, run/off/auto switch, emergency stop push button, lamp test pushbutton, 7 position voltmeter phase selector switch, 4 position ammeter phase selector switch, 3 attempt start timer, cool down timer, remote start/stop terminals for 2 wire starting from ATS, charge rate ammeter, and exciter circuit breaker with manual reset.

4) Panel shall include the following emergency shutdowns with individual warning lamps (at a minimum): fail to start, high coolant temperature, low lube oil pressure, overspeed, overcrank protection, and alarm contact for auto dialer (generator fail signal).

5) Panel shall include the following alarms with individual warning lamps (at a minimum): approaching low oil pressure, approaching high engine temperature, low/high battery voltage, battery charger failure, control switch not in auto mode.

6) Panel shall have at least 2 spare shutdown channels and 1 spare alarm channel and 4 additional fault channels for shutdown or alarm programming.

7) Panel shall have the ability to send up to 8 channels back to existing SCADA system at the pump station.

8) Engine generator unit shall be provided with a fuel level gauge indicating relative fuel tank level in % values.

9) The panel shall be provided with a switched light that illuminates the panel face.

10) The panel shall include a stainless-steel canopy with LED hood lights.

k) Circuit Breaker

Provide a generator mounted, molded case or insulated case construction, UL rated, 3 pole, and circuit breaker, sized as required. Breaker shall utilize a thermal magnetic trip. Breaker shall be housed in a steel NEMA 1 enclosure mounted on a separate support stand vibration isolated from the engine/generator arrangement. Bus bars, sized for the cable type shown on drawing, shall be supplied on the load side of breaker.

l) Receptacles

The engine generator will be supplied with two 120-volt, 20-amp duplex receptacles and two 120-volt, 20-amp twist lock receptacles. Receptacles will have individual circuit breakers and will be placed inside the enclosure or will have weatherproof covers.

m) Shop Painting

1) All steel and iron surfaces shall be protected by suitable coatings applied in the shop. Surfaces which will be inaccessible after assembly shall be protected for the life of the equipment. Coatings shall be suitable for the environment where the equipment is installed. Exposed surfaces shall be finished, thoroughly cleaned, and filled as necessary to provide a smooth, uniform base for painting. Electric motors, engine, alternator, enclosure, piping, and valves shall be shop primed and finish painted prior to shipment to the site.

2) Stainless steel, nonferrous, and nonmetallic surfaces shall not be painted.

n) Power Transformer

An externally mounted power transformer shall be supplied to provide required 240-volt single phase power to the coolant heater and anti-condensation heater for

each engine generator unit. The amp load shall be calculated by a NCPE or the generator manufacturer.

H. AUTOMATIC TRANSFER SWITCH

1. An automatic transfer switch (ATS) shall be provided on all pump stations for switching power to the onsite backup generator when normal grid power fails. The ATS shall be provided by the same manufacturer as the generator and included under the same warranty as the generator.

2. General

   a) The ATS shall be rated for the voltage and ampacity as shown on the plans and shall have 600-volt insulation on all parts in accordance with NEMA standards.

   b) The current rating shall be a continuous rating when the switch is installed in an unventilated enclosure and shall conform to NEMA temperature rise standards. Designs which require cabinet ventilation are unacceptable and do not meet these Standards.

   c) The unit shall be rated based on all classes of loads, i.e., resistive, tungsten, ballast, and inductive load.

   d) Switches rated $\leq$400-amps shall be UL listed for 100% tungsten lamp load.

   e) As a precondition for approval, all transfer switches complete with accessories shall be listed by Underwriters Laboratories, under Standard UL 1008 (ATS) and approved for use on emergency systems.

   f) The withstand current capacity of the main contacts shall not be less than 20 times the continuous duty rating when coordinated with any molded case circuit breaker established by certified test data.

   g) Temperature rise tests in accordance with UL 1008 shall have been conducted after the overload and endurance tests to confirm the ability of the units to carry their rated currents within the allowable temperature limits.

   h) Transfer switches shall comply with the applicable standards of UL, ANSI, NFPA, IEEE, NEMA, IEC and all applicable federal, state, and local standards.

   i) The transfer switches shall be supplied with a microprocessor-based control panel as detailed further in these Standards.

   j) The transfer switch shall be capable of detecting if the source switch was successful and if the pump station is receiving power. It shall also be capable of transmitting

a failure signal if it was not successful in switching sources and the pump station is not receiving power.

3. Sequence of Operation

   a) The ATS shall incorporate adjustable 3 phase under-voltage sensing of the normal source.

   b) When the voltage of any phase of the normal source is reduced to 80% of the nominal voltage, for a period of 0-10 seconds (programmable) a pilot contact shall close to initiate starting of the engine generator.

   c) When the emergency source has reached a voltage value within 10% of the normal voltage and achieved frequency within 5% of the rated value, the load shall be transferred to the emergency source after a programmable time delay.

   d) When the normal source has been restored to not less than 90% of rated voltage on all phases, the load shall be re-transferred to the normal source after a time delay of 0-30-minutes (programmable). The generator shall run unloaded for 5-minutes (programmable) and then automatically shut down. The generator shall be ready for automatic operation upon the next failure of the normal source.

   e) If the engine generator should fail while carrying the load, retransfer to the normal source shall be made instantaneously upon restoration of proper voltage (90%) on the normal source.

   f) The transfer switch shall be equipped with a microprocessor-based control panel. The control panel shall perform the operational display functions of the transfer switch. The display functions of the control panel shall include ATS position and source availability.

   g) The front panel display shall include indicators for timing functions, capability to bypass the TD on transfer or retransfer, and an ATS test switch and afford on-board diagnostic capability.

   h) The control panel shall be provided with calibrated pots (accessible only by first opening the lockable cabinet door) to set time delays, voltage, and frequency sensors. Designs which make use of DIP switches to render such adjustments are unacceptable.

   i) The control panel shall be opto-isolated from its inputs to reduce susceptibility to electrical noise and provided with the following inherent control functions and capabilities:

      1) An LED display for continuous monitoring of the ATS functions.

2) Built-in diagnostic display.

3) Capability to support external communication and network interface through an optional RS 485 port.

4) Mechanical test switch to simulate a normal source failure.

5) Time delay to override momentary normal source failure prior to engine start. Field programmable 0-10-minutes (continuously adjustable via a calibrated potentiometer factory set at 3-minutes).

6) Time delay on retransfer to normal source, continuously adjustable 0-30-minutes, factory set at 15-minutes. If the emergency source fails during the retransfer time delay, the transfer switch controls shall automatically bypass the time delay and immediately retransfer to the normal position.

7) Time delay on transfer to emergency, continuously adjustable 0-15-minutes, factory set at 1-minute.

8) An in-phase monitor shall be provided. The monitor shall compare the phase angle difference between the normal and emergency sources and be programmed to anticipate the zero-crossing point to minimize switching transients.

9) An interval-type automatic clock exerciser shall be incorporated within the microprocessor.

10) Provide a momentary pushbutton to bypass the time delays on transfer and retransfer.

4. Construction and Performance

a) The ATS shall be of double throw construction operated by a reliable electrical mechanism momentarily energized. There shall be a direct mechanical coupling to facilitate transfer in 6 cycles or less.

b) The normal and emergency contacts shall be mechanically interlocked such that failure of any coil or disarrangement of any part shall not permit a neutral position.

c) For switches installed in systems having ground fault protective devices, and/or wired to be designated a separately derived system by the NEC, a 4th pole shall be provided. This additional pole shall isolate the normal and emergency neutrals. The neutral pole shall have the same withstand and operational ratings as the other poles and shall be arranged to break last and make first to minimize neutral switching transients. Add-on or accessory poles that are not of identical construction and withstand capability are not acceptable.

d) The contact structure shall consist of a main current carrying contact, which is a silver alloy with a minimum of 50% silver content. The current carrying contacts shall be protected by silver tungsten arcing contacts on all sizes above 400-amps.

e) The transfer switch manufacturer shall submit test data for each size switch, showing it can withstand fault currents of the magnitude and the duration necessary to maintain the system integrity. Minimum UL listed withstand and close into fault ratings shall be as follows:

Table 6: Any molded case breaker

Size (amps)	(RMS Symmetrical)
Up to 200	10,000
201-260	35,000
261-400	35,000
401-1200	50,000
1201-4000	100,000

Table 7: Specific coordinated breakers

Size (amps)	(RMS Symmetrical)
Up to 150	30,000
151-260	42,000
261-400	50,000
401-800	65,000
801-1200	85,000
1201-4000	100,000

Table 8: Current limiting fuse

Size (amps)	(RMS Symmetrical)
Up to 4000	200,000

*All values 480 volt, RMS symmetrical, less than 20% power factor.

f) A dielectric test at the conclusion of the closing tests shall be performed.

g) The ATS manufacturer shall certify sufficient arc interrupting capabilities for 50 cycles of operation between a normal and emergency source that are 120-degrees out of phase at 480-volts, 600% of the rated current at 0.50 power factor. This

certification is to ensure that there will be no current flow between the two isolated sources during switching.

h) All relays shall be continuous duty industrial type with wiping contacts. Customer interface contacts shall be rated 10-amps minimum. Coils, fuses, relays, timers, and accessories shall be readily front accessible. The control panel and power section shall be interconnected with a harness and keyed disconnect plugs for maintenance.

i) Main and arcing contacts shall be visible without major disassembly to facilitate inspection and maintenance.

j) A manual handle shall be provided for maintenance purposes with the switch de-energized. An operator disconnect switch shall be provided to defeat automatic operation during maintenance, inspection, or manual operation.

k) The switch shall be mounted in a NEMA 3R enclosure unless otherwise indicated on the plans.

l) Switches composed of molded case breakers, contactors or components thereof not specifically designed as an ATS will not be acceptable.

13.04 PUMP STATION TESTING AND TRAINING

A. TESTING

1. General

a) The Contractor shall furnish all materials, labor, and equipment to perform all testing and start up services. Water for testing purposes may be obtained from the Town. The Contractor shall reimburse the Town for all water used at inside Town Utility Rates.

b) All water or wastewater used during testing of the pump station, force main, or any of the systems described in this section, must be returned to the Town after proper coordination with the Town.

c) Before the operational tests are conducted, the required copies of the O&M Manuals shall be delivered to the Town.

d) The Town reserves the right to require further testing, as necessary, to assure that all components and infrastructure are performing in accordance with the manufacturer's recommendations and these Standards. All testing, repairs and/or readjustments, and necessary re-testing, shall be at no additional cost to the Town.

e) All on-site testing and/or installation verification shall be performed in the presence of the NCPE and representatives authorized by the Town.

f) All testing, installation verification, and training shall be performed in the presence of, or by an experienced, competent, and authorized manufacturer's representative.

g) Factory testing shall consist of testing all operating functions of the equipment under varying operating conditions to assure that it will perform as specified. Any specific testing that may be required is discussed under the individual equipment items below. Results of factory testing shall be presented to the Town prior to delivery.

h) Installation Verification shall consist of a visit to the site by a manufacturer's representative to inspect, check, adjust, and approve the equipment installation. The manufacturer's representative shall certify that the equipment has been properly installed and lubricated, is in accurate alignment, and is free from any undue stress imposed by connecting piping or anchor bolts. Any specific verification requirements are discussed under the individual equipment items below. Results of the installation verification shall be presented to the Town prior to start-up of the equipment.

i) On-site Testing shall consist of all manual and automatic operating functions under various operating conditions, including full load conditions. The equipment shall also be tested under adverse or emergency conditions. All alarms and remote signals shall also be tested. Any specific testing is discussed under the individual equipment items. Results of the on-site testing shall be presented to the Town prior to final acceptance.

j) All functions and systems, even those not specifically listed below, shall be tested to ensure proper operation under normal and emergency situations.

k) All defective equipment or malfunctioning systems shall be replaced or corrected, and the full system placed in a fully operational condition to the satisfaction of the Town.

l) Results of all factory testing, installation certifications, and on-site operational testing shall be provided to the Town in the final construction documents.

2. Pump Testing

a) Each pump shall be tested at the factory for capacity, power requirements, and efficiency at specified rated head, shutoff head, operating head extremes, and at as many other points as necessary for accurate performance curve plotting. All tests and test reports shall conform to the requirements and recommendations of the Hydraulic Institute Standards (HIS). Acceptance testing shall be Level A, with no minus tolerance or margin allowed. The test result report shall include data and test

information as stipulated in the HIS, copies of the test log originals, test reading to curve conversion equations, and certified performance curves. The curves shall include head, bhp (kW), pump efficiency, and shop test NPSH available, plotted against capacity. The curves shall be easily read and plotted to scales consistent with performance requirements. All test points shall be clearly shown.

b) All pumps shall receive installation verification.

c) On-site testing shall be performed to the maximum extent possible (flow availability could limit the range of testing conditions).

3. Grinder Testing

a) Each grinder unit shall be factory tested.

b) Each grinder unit shall receive installation verification.

c) Each grinder unit shall receive on-site testing.

4. Generator Testing

a) Each engine generator set shall be fully assembled with its control panel and factory tested to demonstrate that the equipment conforms to specified requirements for load capacity. The tests shall consist of repeated starts and stops operation under a load bank at specified capacity for minimum of 4 continuous hours, and tests to demonstrate that each safety shutdown device is working properly.

b) Each engine generator set shall receive installation verification.

c) Each engine-generator set shall receive on-site testing to demonstrate that the equipment conforms to specified requirements for load capacity and starting duty. The complete system (engine, generator, control panel, and ATS) shall be field tested together by the manufacturer or manufacturer's representative as a complete system to assure compatibility. A resistive load bank with temporary connections shall be provided to complete the field testing. Each unit shall be mechanically checked for proper operation. Each alarm and safety shutdown shall be checked by artificially simulating an alarm condition. The testing shall consist of repeated starts and stops, a "cold start", normal operation under full load conditions at the specified power rating for a minimum of 4 continuous hours, a one-step rated load pickup test in accordance with NFPA 110. The following items shall be measured, recorded, and submitted in a field test report: outdoor ambient temperature, barometric pressure, kW output, engine speed (RPM), engine jacket water temperature, engine oil pressure, start time, completion time. Test reports shall verify that the specified tests have been performed and shall state results.

5. ATS Testing

    a) Each ATS shall receive field verification.

    b) Each ATS shall receive on-site testing in conjunction with the engine generator. At a minimum, the main power supply from the commercial power grid shall be cut and the switch automatically properly transfers the power feed to the standby generator.

6. Control System Testing

    a) All electrical, I&C, and telemetry systems shall receive on-site testing to ensure complete operation. At a minimum the testing shall include the following:

        1) Pump automatic control and operation

        2) Level-sensing equipment operation

        3) Alarm and telemetry system automatic operation

        4) Backup power generation automatic control and operation

        5) Vibration testing of all rotating equipment

7. Structure Testing

    a) Wet wells and other structures shall be inspected and tested for watertightness. Structures shall be thoroughly cleared of dirt, mud, gravel, and other foreign debris prior to testing.

    b) The watertightness test shall be performed in accordance with ACI 350.1R "Testing Reinforced Concrete Structures for Watertightness". If the structure is a small diameter precast manhole, a vacuum test in accordance with ASTM C1244 "Standard Test Method for Concrete Sewer Manholes by Negative Test Pressure (Vacuum) Test" may be used in lieu of the hydrostatic test.

    c) Watertightness testing shall not commence until the structure is fully assembled and backfilled.

    d) Any structure that fails to meet the requirements of the watertightness test shall be inspected, made watertight, and retested until the structure passes.

B. OPERATOR TRAINING

1. Suppliers of major equipment packages shall provide training to the Town as to the proper operation and maintenance of their equipment.

2. Training shall be performed by an experienced, competent, and authorized manufacturer's representative.

3. Training shall be at no additional cost to the Town.

4. Training shall be provided for, but not limited to, the equipment listed in the table below. The training times presented below for O&M are the minimum required. Complicated systems can require more than the minimum requirements.

Table 9: Operator Training

Equipment System	Operation Training (hours)	Maintenance Training (hours)
Pumps and Pump Control Systems	1	2
Grinder System	1	2
Engine Generator and ATS	1	2
Odor Control Systems	1	2
SCADA	1	1

5. Operational training shall include, but not be limited to, the following procedures or information: normal startup of the unit, normal shutdown of the unit, emergency shutdown of the unit, normal operation of the unit (typical temperature, pressures, signals, RPM, etc., for gauges and instruments which are displayed on the panel), a presentation of all operational features (alternative run modes, bypasses, other features not typically used in day-to-day operation, etc.), presentation of all alarm signals, etc.

6. Maintenance training shall include, but not be limited to, the following procedures or information: standard lubrication procedures and schedules, removal and replacement of equipment, disassembly and re-assembly, replacement of wear parts or common replacement parts, standard troubleshooting procedures, etc.

7. Simplified operation instructions shall be submitted for review in accordance with the submittals section. When the review is complete, the instruction sheets shall be printed on heavy paper or cardboard stock and laminated with clear plastic. Two copies of the laminated instructions shall be furnished with the unit. The reserve copy shall be delivered to the Town. The instructions specified here are in addition to the required O&M manuals.

13.05 WASTEWATER FORCE MAINS

A. GENERAL

1. All aspects of force mains design shall, at a minimum, meet the requirements of the latest version of the:

   a) NCDEQ Minimum Design Criteria for the (Fast-Track) Permitting of Pump Stations and Force Mains (Minimum Design Criteria),

   b) Alternative Design Criteria for Minimum Separation for Sewer Systems to Wetlands,

   c) 15A NCAC 02T,

   d) NC Building Code,

   e) OSHA regulations, and

   f) Town Standards.

      Town Standards identify minimum equipment and construction requirements for force mains to be owned and operated by the Town. This section does not address every aspect of force main design; it is the NCPE's responsibility to supplement these requirements as necessary to produce a complete set of plans and specifications. Requirements in the Town Standards that are more restrictive or exceed the requirements of the Minimum Design Criteria are required by the Town.

2. All aspects of the design of force mains and associated facilities shall be submitted for review and approval.

3. Wastewater force main interconnections shall be prohibited. All wastewater force mains shall extend to the nearest gravity sewer or pump station wet well that has sufficient, long- term capacity.

4. Private force mains will require an exception from these Standards. A Basis of Design Report, signed and sealed by a NCPE, should be submitted for review prior to a determination by the Director. Private force main design is not covered by these Standards, and the applicant should look for guidance from other appropriate agencies, such as NCDEQ, NC Plumbing Code, etc. Documentation of future force main maintenance shall be required.

B. DESIGN

1. All force mains shall be located within dedicated ROW of Town roads, outside of the ROW on NCDOT roads, or within dedicated utility easements. When wastewater force

mains are constructed adjacent to gravity sewer mains or for construction of parallel wastewater force mains, the horizontal clearance shall be a minimum 10-feet from pipe edge to pipe edge. Clearances for pipelines greater than 10-feet depth shall be designed by the NCPE and approved by the Town. Easement widths outlined below shall be widened by at least the clearance between the pipelines when constructing a shared utility corridor. Within road ROW, a utility easement, or Town owned property, there shall be no permanent structures, equipment, retaining walls, embankments, impoundments, or other elements that would inhibit utility maintenance operations, unless approved by the Director.

2. All force mains shall be installed outside of buffers whenever practical. Sewer main shall be installed outside of all flood plains, unless No Practical Alternative is available and prior approval is obtained from the Director.

3. The minimum wastewater force main size shall be 4-inches in diameter, unless otherwise allowed by the Director.

4. Dedicated easements for force mains and appurtenances shall be recorded as "Town of Holly Springs Public Utility Easement". Town force main easements shall contain only Town utilities unless otherwise approved by an encroachment agreement.

Table 10: Standard Easement Width for Sewer Force Mains

Pipe Depth*	Permanent Easement Width	Town Owned ROW
<8-feet	20-feet	Allowed
8-15-feet	30-feet	Requires Director approval
15-20-feet	40-feet	Not Allowed
>20-feet	As Specified by the Director	Not Allowed

*Depth of the sewer main shall be measured from the top of the pipe to the final grade or road subgrade at the deepest point between manholes.

5. Force Main Odor Control Systems: Force main odor control shall be included in the design plans for any proposed force main at discharge locations, intermediate air release locations and otherwise as directed by the Town. ARVs located in isolated areas may be approved without odor control systems, at the discretion of the Director. The suggested odor control technology shall be designed by the NCPE to achieve 95% or greater hydrogen sulfide removal. All systems, including those utilizing active carbon, shall be manufactured specifically for addressing hydrogen sulfide gas. Forced air systems should be avoided due to the need to include provisions for electrical power to the odor control system.

   Odor control systems shall be provided with sufficient easement area to accommodate long term maintenance. The maintenance easement for odor control systems shall be

sized on site specific conditions and provide sufficient area for operations, such as refilling media/chemicals, replacing equipment, etc.

6. Sewer force mains shall not discharge directly into existing gravity sewer lines. Sewer force mains shall typically discharge into a receiving manhole that has been epoxy coated. The receiving manhole shall be provided in the typical eccentric tapered design at minimum 4-foot diameter, and a diameter capable of receiving flow without exceeding 50% surcharge conditions in the existing gravity sewer. The invert elevation of the force main shall be one-tenth of a foot higher than the gravity sewer discharge invert elevation. Force mains shall be as close as possible to 180-degrees from the outlet pipe. Provide a smooth channel from force main to gravity sewer main. Force main installations greater than 10-feet will require approval by the Director.

7. Drop connections into force main receiver manholes are discouraged and require approval by the Director.

8. Force main design shall facilitate cleaning and inspection. The use of 90-degree bends is prohibited.

9. Force mains shall be constructed with a pigging/bypass connection located within 50-feet of the pump station valve vault.

10. Force main minimum design velocity shall $\geq$2.5 ft/s throughout the length of the force main. As a design preference, force main systems operating at higher flows shall reach velocities of 3-5 ft/s to resuspend any settled solids.

11. Force mains shall be designed and sized to effectively convey the ultimate peak flows from the pump station to the discharge point.

12. The force main shall be routed to minimize the number of combination ARVs, to the extent possible. Combination ARVs rated for use with raw wastewater shall be installed at high points or runs exceeding 3000-feet, on all force mains. A high point shall be determined as any location where the vertical separation between the adjacent low point and high point in the force main $\geq$10 vertical feet.

13. Restraint:

    a) General: All pipes, valves, and fittings shall be restrained. Pipe joints shall also be restrained an adequate length away from valves and fittings in accordance with AWWA manual M41 (or the latest edition of Thrust Restraint Design for DIP, as published by the Ductile Iron Pipe Research Association). In all cases, there must be a pipe restraint plan prepared by the NCPE, showing the method of restraint to be used and the length of pipe to be restrained. All restraint systems shall be factory produced by the manufacturer.

b) Pipe joints: The standard joint restraint method shall use manufacturer provided restrained joint (RJ) pipe. Pipe diameter ≤12-inches may utilize mechanical joint (MJ) pipe with approved wedge action retainer glands (for the specified distance). All joint restraint products that include the means of restraint within the joint gasket shall be prohibited. Fusible C-900 DR 18 PVC may be utilized as an acceptable means of restraint.

c) Valves: Valves shall be restrained in a manner consistent with operation as a dead end. This includes restraining the valve to the pipe and restraining enough pipe joints on both sides of the valve to accommodate dead end restraint.

14. A plug valve shall be installed at least every 3000-feet of force main length, or as determined by the Director.

15. All ARVs, plug valves >12-inches, or other appurtenances that have moving or operating parts and require maintenance and routine access shall have a manhole placed over the operating portion of the device.

16. Separation Requirements:

a) Separation between Sewer Force Main and Storm Water Pipes:

Sewer force mains shall have a minimum vertical separation of 24-inches between storm pipes and minimum horizontal separation of 10-feet. Where sanitary and storm sewers cross with a vertical separation of less than 24-inches, the entire leg of sanitary sewer shall be made of standard DIP with joints rated for water main service and the void space between the pipe crossing shall be backfilled with 3000-psi concrete or minimum 500-psi, quick setting, non-excavatable flowable fill that meets or exceeds NCDOT specifications.

b) Separation between Sanitary Sewer and Sewer Force Main:

There shall be a minimum 10-foot horizontal separation between parallel gravity and/or force mains.

c) Separation between Sewer Force Main and Water Main:

There shall be a minimum 10-foot lateral separation (pipe edge to pipe edge) between parallel water and sewer force mains. If local conditions or barriers prevent a 10-foot lateral separation:

1) The water main shall be laid in a separate trench, with the elevation of the bottom of the water main at least 18-inches above the top of the sewer; or

2) The water main shall be laid in the same trench as the sewer, with the water main located at one side on a bench of undisturbed earth and with the elevation of the bottom of the water main at least 18-inches above the top of the sewer.

d) Crossings (Water Main over Sewer Force Main):

At a minimum, 18-inches of clearance shall be maintained measured from pipe edge to pipe edge between the water main and the sewer force main. The water main shall be installed above the sewer force main.

If 18-inches of clearance is not maintained, the NCPE must submit justification to demonstrate that it is impracticable to maintain the separation distances required, taking into consideration feasibility, cost, and the factors set forth in 15A NCAC 18C. The proposed deviation may be approved, on a case-by-case basis, by the permitting authority.

e) Crossing (Water Main under Sewer Force Main):

Allowed only as approved by the Director when not possible to cross the water main above the sewer force main. See Crossings above for direction.

f) Sanitary Sewer Force main and Stream Crossings:

The top of the sewer force main shall be at least 3-feet below the stream bed. If 3-feet of cover cannot be achieved, prior approval from the Director must be obtained and concrete encasement and DIP shall be required.

Sewer force mains shall not be installed under any part of water impoundments or area to impounded. Sewer mains shall not be installed through, above, or below any retained earth structure. Sewer main location and depth shall not be within the theoretical 1:1 slope of any impoundment dam or structure or shall maintain a minimum of 10-feet horizontal separation from the toe of slope, whichever is greater. The entire easement shall be outside of the toe of slope unless prior approval is obtained from the Director.

The following minimum horizontal separations shall be maintained:

1) 100-feet from any private or public water supply source, including wells, WS-1 waters or Class I or Class II impounded reservoirs used as a source of drinking water (except as noted below).

2) 50-feet from any waters (from normal high water) classified WS-II, WS-III, WS-IV, B, SA, ORW, HQW, or SB (except as noted below).

3) 10-feet from any stream, lake, or impoundment (except as noted below).

4) 100-feet from private wells.

Where the required minimum separations cannot be obtained, an exception may be considered by the Director, in accordance with 15A NCAC 02T.

17. All retaining walls shall have a separation from the easement boundary of at least 1:1, vertical to horizontal. For example, if the retaining wall is 10-feet tall, it shall be placed no closer than 10-feet from the easement.

C. MATERIALS

1. Pipe Materials

a) Outside of a pump station site, PVC C900 DR 18 pipe shall be required for all sewer force mains. In some cases, DIP is preferred and shall conform to the Standards.

b) PVC pipe shall meet the requirements of AWWA C900 and be green in color. Pipe shall be Class 150, SDR 18, integral bell with strength equal to the pipe wall, DI outside diameter, 18-foot length, with a solid elastomeric ring.

c) PVC pipe for force mains with a diameter of 4-inches shall be SDR-21 or Schedule 40 in accordance with ASTM D1785.

d) DIP shall be designed and manufactured in accordance with AWWA C150 and C151 and provided in normal 20-foot lengths. All DIP shall be marked in conformance with ASTM A-746.-The minimum requirements for DIP and required laying conditions are tabulated below. For all other installations other than specified, the laying condition, bedding requirements or the minimum pressure class rating and/or thickness class shall be increased in accordance with AWWA C151. A pipe thickness design shall be submitted for external loading in all cases where the pipe depth exceeds the specified range of depths outlined in the following table.

Table 11: Pressure Class, Maximum Depth and Laying Condition for DI Wastewater Force Mains

Pipe Diameter	AWWA C150, Laying Condition	Pressure Class	Maximum Depth of Cover*
4-8-inch	Type 1	350-psi	3-16-feet
4-8-inch	Type 4	350-psi	16-20-feet
10-12-inch	Type 1	350-psi	3-10-feet
10-12-inch	Type 4	350-psi	10-20-feet
14-20-inch	Type 4	350-psi	3-25-feet
24-inch	Type 4	350-psi	3-25-feet

*Unless otherwise recommended by the manufacturer

Note: For cases not specified, a DIP and bedding design certified by a NCPE shall be required in compliance with AWWA C150 and the Ductile Iron Pipe Research Association.

The following table lists approved manufactures of DIP, DIP fittings, and RJDIP that are allowable for installation within the Town's system.

Table 12: Approved Manufacturers for DIP

Product Category	Approved Manufacturer	Model/Series	Pressure/ Load Rating	Reference Standard	Requirements
DIP ≥4-inch Diameter, Protecto 401 Lined	US Pipe	Tyton Joint	250-350 psi	AWWA C150 and C151 and DIPRA Standards	40-mils of Protecto 401 Lining (lining must be less than 1 year old); McWane pipe stamped "McWane by Atlantic States or Clow" only
	American (ACIPCO)	Fastite Joint			
	McWane	Tyton Joint			
DI Fittings ≥4-inch Diameter, Protecto 401 Lined	Sigma	Mech. Joint	250-350 psi	AWWA110/ C111 And AWWA C153	Shall always meet or exceed pipe pressure rating
	Tyler Union				
	SIP Industries				
	Star				
	American				
Ductile Iron Restrained Joint (RJDIP) Pipe ≥4-inch Diameter, Protecto 401 lined	US Pipe	TR Flex	250-300 psi	AWWA C150 and C151	Boltless restraint unless otherwise specified
	American (ACIPCO)	Flex Ring			
	McWane	TR Flex (pipes 24-inches and smaller)			

e) All DI force mains and fittings for sewer construction shall receive an interior ceramic epoxy coating, consisting of an amine cured novalac epoxy~~,~~ as manufactured by Protecto 401. The interior coating shall be applied at a nominal dry film interior thickness per the manufacturer's specifications. All DIP bells and spigots shall be lined with Protecto 401 joint compound and applied by brush to ensure full coverage. All pipe supplied with Protecto 401 interior lining shall be provided free of holidays. Pipe installed with defects in the lining will be rejected. Patching of Protecto 401 coating defects after installation shall not be approved. Protecto 401 lined pipe must be installed within one year of the application date on the pipe.

Alternate liner manufacturers shall have a minimum of 10-years of successful experience and be able to demonstrate successful performance on comparable projects.

Permeability rating of 0.00 when tested according to Method A of ASTM E-96-66, Procedure A with a test duration of 30 days.

f) Pipe fittings shall be made of DI per AWWA C110 or C153. All fittings ≤24-inches in diameter shall be designed for a minimum internal pressure of 350-psi, unless otherwise approved by the Town. Fittings shall be MJ or proprietary manufacturer provided restrained joint. Gaskets shall be in accordance with AWWA C111. All fittings shall be interior coated with Protecto 401. Two 45-degree fittings shall be used in lieu of 90-degree fittings in all horizontal and vertical installations.

g) Restrained Joint Pipe shall be the boltless type unless otherwise approved. For installations requiring welded locking rings, the rings shall be factory welded. The restrained joints shall provide a minimum of 4-degrees of deflection for pipe sizes, 4- 12-inches in diameter.

All proprietary pipe restraint systems shall be approved by the Town and provided in compliance with all standards for coatings, linings, pressure classes, etc. as required for PVC C900 or DIP. All restrained joint pipe shall be installed based on laying conditions, pressure class, etc. as required for typical DIP.

Pipe and fitting manufacturer(s) must have a supplier within 200-miles of the Town.

2. Manhole Materials:

a) All sewer force main manholes shall be installed according to Town Standards.

b) Combination ARV Manholes: Manholes for combination ARV installation shall be provided in flat top configuration to accommodate the length of wastewater combination ARV. In cases where the combination ARV shall be located in a paved area, provide typical eccentric, tapered manhole design with typical manhole frame and cover for paved areas. The minimum manhole diameter for combination ARV shall be 5-feet. Minimum 6-feet diameter manholes shall be used with force mains 20-inches and larger and when an odor control system is required. Any manholes located in NCDOT or street ROW shall be provided flush with finish grade. ARVs shall be 2-inch sewage dual ARV with plastic body, per the manufacturer specifications. Refer to Table 2.

c) Manhole Epoxy Coating: Sewer force main receiver manholes, downstream manholes within 1200-feet of receiving manhole, sewer force main combination ARV manholes, and other concrete structures subject to high levels of hydrogen sulfide gas shall be provided with an approved monolithic epoxy coating system per the manufacturer's recommendations, and all blemishes shall be touched up prior to acceptance. Refer to Table 2. Coatings shall conform to the USACE specification C-200.

1) Surface Preparation: Concrete manholes must be well cured prior to application of the protective epoxy coating. A minimum of 28-days cure time for standard Portland cement is required. If earlier application is desired, compressive or tensile strength of the concrete can be tested to determine if acceptable cure has occurred. (Note: Bond strength of the coating to the concrete surface is generally limited to the tensile strength of the concrete itself. An Elcometer pull test to determine suitability of concrete for coating may be required).

   Surface preparation shall be based on the requirements of the manufacturer of the epoxy coating and applicable National Association of Corrosion Engineers (NACE) International standards.

2) Installation: A minimum thickness as determined by the manufacturer shall be applied to new manholes and existing manholes. During application a wet film thickness gage, meeting ASTM D4414 – Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages – shall be used to ensure a monolithic coating and uniform thickness during application.

   Temperature of the surface to be coated should be maintained per manufacturer's recommendations during application. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Where varying surface temperatures do exist, care should be taken to apply the coating when the temperature is falling versus rising or in the early morning. The humidity should also be observed to ensure compliance with the epoxy manufacturers' recommendations.

   Manufacturer approved heated plural component spray equipment shall be used in the application of the specified protective epoxy coating. The spray equipment shall be specifically designed to accurately ratio and apply the specified protective coating materials and shall be regularly maintained and in proper working order.

   If necessary, subsequent top coating or additional coats of the protective coating should occur as soon as the basecoat becomes tack free, but no later than the recoat window for the specified products. Additional surface preparations procedures will be required if this recoat window is exceeded.

D. INSTALLATION

1. General

   DIP shall be installed in accordance with the requirements of AWWA C600 and the Ductile Iron Pipe Handbook published by the Ductile Iron Pipe Research Association. Materials at all times shall be handled with mechanical equipment or in such a manner

to protect them from damage. At no time shall pipe and fittings be dropped or pushed into ditches.

Pipe trench excavation and backfilling shall be performed in accordance with Section 5 of these Standards.

Pipe and fitting interiors shall be protected from foreign matter and shall be inspected for damage and defects prior to installation. In the event foreign matter is present in pipe and fittings, it shall be removed before installation. Open ends of pipe shall be plugged or capped when pipe laying is not in progress.

Force mains shall be installed with a minimum cover of 4.5-feet measured from the top of the pipe and shall be measured as follows:

a) 4.5-feet from the top of pipe to finished subgrade when under a roadway;

b) 4.5-feet from top of pipe to existing edge of pavement elevation when adjacent to a roadway and installed in existing ROW or future ROW;

c) 4.5-feet from top of pipe to finished grade in all other areas.

Pipe shall be laid on true lines as directed by the NCPE. The wastewater force main shall be installed at a grade which will allow air to migrate to a high point where the air can be released through an ARV. A minimum pipe slope of 1-foot in 500-feet should be maintained, and there shall be no intermediate high points in the line.

Trenches shall be sufficiently wide to adjust the alignment. Bell holes shall be dug at each joint to permit proper joint assembly. The pipe shall be laid and adjusted so that alignment with the next succeeding joint will be centered in the joint and the entire pipeline will be in continuous alignment both horizontally and vertically. Pipe joints shall be fitted so that a thoroughly watertight joint will result. All joints will be made in conformance with the manufacturer's recommendations for the type of joint selected. All transition joints between different types of pipe shall be made with transition couplings approved on equipment submittals and shop drawings showing the complete assembly to scale.

Force mains shall not be installed within roundabouts or alleys.

All PVC fore mains shall have tracer wire, tracer wire clips, and detector tape marked "Sewage Force Main." Refer to Section 5 of these Standards for detailed requirements for Utility Locator Installation and Devices.

2. Utility Coordination

Prior to beginning construction, the Contractor shall contact local utility companies and verify the location of existing utilities. The Contractor shall be completely and solely

responsible for locating all existing buried utilities inside the construction zone before beginning excavation. The Contractor shall be solely responsible for scheduling and coordinating the utility location work. When an existing utility is in conflict with construction, it shall be exposed prior to beginning construction to prevent damage to the existing utility.

E. VALVES AND APPURTENANCES

1. General: The rated working pressure of all valves and appurtenances shall meet the maximum design pressure of the pump station and pipeline.

2. Check Valve: Check valves shall be cast iron body, bronze mounted full opening swing check valves in conformance with AWWA C508. Valves shall have renewable bronze or stainless steel seat ring and resilient faced clapper. Provide valve with outside weight and lever unless noted otherwise. Provide valve body constructed with a solid bronze or stainless steel shaft extending through bronze brushed bearings and "O" ring seals or adjustable graphite/composition packing.

3. Plug Valve: Plug valves shall be non-lubricating, eccentric action and resilient plug facing with heavy duty Type 316 stainless steel bearings. Plug valves shall be designed for a minimum working pressure of 175-psi for valves ≤12-inches, 150-psi for valves ≥14-inches. Valves shall be bi-directional and meet the pressure rating in both directions of flow. The plug valve body shall be cast iron ASTM A126 Class B with welded-in overlay of 90% nickel alloy content on all surfaces contacting the face of the plug. Sprayed plated, nickel welded rings or seats screwed into the body are not acceptable.

   All plug valves ≤12-inches shall have round port design that provides a minimum 80% port area. The valve plug shall be DI ASTM A536 Grade 65-45-12 ≤20-inches in diameter, with Ethylene Propylene Diene Monomer (EPDM), Buna N, or Neoprene resilient seating surface to mate with the body seat. Valves ≥24-inches may have plugs made of cast iron in accordance with ASTM A126 Class B. Large plug valves with rectangular plugs shall provide clean passage for a solid sphere >67% of the adjoining pipe diameter to facilitate pigging of the force main. Force main plug valves with rectangular port shall be “full port” cross-sectional area perpendicular to the flow of at least 100% of the adjoining pipe.

   All buried plug valves shall be provided with a worm gear actuator. All plug valves shall be buried and provided with a 2-inch operator nut and a valve box. Plug valves greater than 12-inches shall be installed such that the actuator and gearing is accessible in a manhole. All plug valves shall be provided with typical mechanical joint end connections and restrained with wedge action retainer glands on both ends of the valve assembly.

   Valves shall be installed according to the manufacturer’s recommendations. Typically for wastewater this means installing the seat side toward the pump station so that the

flow is against the face of the plug in the closed position. In the open position, the plug should rotate up to the top of the pipeline which may require installing the valve on its side.

4. Rubber Seated Ball Valve: For larger diameter force mains where plug valves are not available, rubber seated ball valves shall be of the tight-closing, shaft mounted type that fully comply with AWWA Standard C507 to provide a full port unobstructed waterway with no additional pressure drop. Design pressure ratings shall be ≥150-psi and provide tight shutoff against flow. With the valve in the closed position, the rubber seated valve shall be bubble tight at rated pressure. All ball valves shall be provided in an epoxy coated manhole with worm gear actuators and a handwheel.

5. Valve Box Covers: Force main plug valves or ball valves shall have locking valve box covers and/or manhole lids with the word "Sewer" cast into them.

6. Combination ARV: Shall be provided to purge air from the system at startup, vent small pockets of air while the system is being pressurized and running and prevent critical vacuum conditions during draining. The combination ARV shall automatically exhaust large volumes of air from the system when it is being filled and allow air to re-enter the pipe when the system is being drained. Combination ARVs shall be sized by the NCPE and approved by the Town.

    a) Combination ARVs shall be of the single housing style with Type 304 or 316 stainless steel body. The valve must meet the requirements of AWWA C512 and be installed in accordance with the Details. The valve shall have a minimum 145-psi working pressure unless the pipeline design requires a higher-pressure rating.

    b) The valve shall have a minimum 2-inch male NPT inlet for a 2-inch valve assembly. Combination ARVs sized from 3-inches to 8-inches shall be provided with studded inlet connectors or flanged connections. The combination ARV shall be provided with cylindrical shaped floats and antishock orifice made of high-density polyethylene. Combination ARVs with spherical floats shall not be accepted.

    c) Installation of Combination ARV Assembly:

        1) All combination ARVs shall be connected to the main by an MJ tee with a branch diameter equal to at least half of the main diameter.

        2) The 2-inch combination ARV shall be provided with male NPT threads and isolated with a 2-inch gate valve. The isolation valve shall be provided with NPT threads and connected with brass or bronze piping.

        3) Combination ARVs ≥3-inches shall be connected by flange or studs. If needed due to larger diameter tee, a flanged reducer shall be provided between the tee and the isolation valve. Gate valves shall be used for 3-inch assemblies.

Combination ARVs ≥4-inches shall be isolated with a plug valve. In all cases, the isolation valve shall be sized equal to the combination ARV.

4) The ARV shall be installed in a 4-foot diameter manhole per the standard detail.

7. Pigging Station: Force mains shall be constructed with a pigging/bypass connection located within 50-feet of the pump station valve vault. This pigging leg shall consist entirely of Protecto 401 coated DIP of the same diameter as the main. A restrained MJ wye shall be provided in the main line and valved on each branch. The pigging leg shall extend out of the ground and be closed with a blind flange. The protruding pipe shall be protected by concrete bollards spaced 6-feet apart.

8. Bypass Connection Assembly: An additional bypass connection assembly may be required. The size, criticality and proximity to a downstream manhole are factors used to determine the need for this connection. The bypass assembly shall include a ball valve on the upstream side of the bypass assembly to prevent bypass flow from draining back to the pump station. The bypass assembly shall be brought to the final graded surface with a visible blind flange assembly for connection by an outside pump contractor. The protruding pipe shall be protected by concrete bollards spaced 6-feet apart.

13.06 FORCE MAIN INSPECTIONS AND TESTING

A. INSPECTIONS

1. All materials and equipment used in the construction of the force main must be verified for compliance with the Standards prior to installation. Non-conforming materials or equipment shall be immediately removed from the job site.

2. Compliance with plans and Standards will be verified on a regular basis.

B. TESTING

1. General

a) The Contractor shall furnish all materials, labor, and equipment to perform all testing.

b) All water or wastewater used during testing of the force main must be returned to the Town's sanitary sewer system after proper coordination with the Town.

c) All on-site testing and/or installation verification shall be performed in the presence of Town staff.

2. Force main Testing

a) The force main shall be tested in accordance with the water main standards set forth in Section 6.

b) The following tests must be run on coupons from factory lined DIP:

1) ASTM B-117 Salt Spray (scribed panel) – Results to equal 0.0 undercutting after two years

2) ASTM G-95 Cathodic Disbondment 1.5-volts @ 77 F. Results to equal no more than 0.5-mm undercutting after 30 days

3) Immersion testing rated using ASTM D-714-87

a). 20% Sulfuric Acid – no effect after two years

b). 140 F 25% Sodium Hydroxide – no effect after two years

c). 160 F Distilled Water – no effect after two years

d). 120 F Tap Water (scribed panel) – 0.0 undercutting after two years with no effect

4) An abrasion resistance of no more than 3 mils (0.075-mm) loss after one million cycles using European Standard EN 598: 1994, Section 7.8 Abrasion Resistance.

GUIDELINES FOR PUMP STATION FINAL FIELD INSPECTION AND OPERATIONAL TEST

Project:_____

The following items shall be provided by the Developer to the Town *before* the Final Field Inspection and Operational Test begins:

	Three (3) copies O&M Manuals signed and sealed by the design engineer, including:
	Cover Sheet
	Pump manufacturer
	Source of repair parts (phone and address)
	Rated capacity (GPM) of pumps
	Total dynamic head (TDH) of pumps
	Model number of pumps
	Serial number of each pump
	Impeller diameter each pump
	Data plate information from each motor
	Data on all other pump station equipment
	Pump Performance Design Curves
	CERTIFIED pump performance curves (including pump cut-off lines) with operating conditions
	As-built detailed, dimensioned drawings of pump and pump base elbow
	As-built detailed, dimensioned drawings of pump motor
	As-built control panel wiring diagram
	Pump and motor Installation and Service Manual
	Detailed information on:
	Control panel
	Alarm dialer
	Generator
	Mylar As-built one (l) copy
	PE certification
	Warranty Letter
	Recorded Easement or Right-of-Way documentation for access
	Documentation of site dedication
	Pump Station Maintenance Agreement
	Crane Certification will be required to document compliance with OSHA Standards
	Ownership of power with Duke Energy transferred to Town of Holly Springs
	Ensure the pump station address is the permanent address.

Date of Inspection:_____ **Inspector:**_____

Attendees:_____

Final Field Inspection and Operational Test-Required Inspections:

The following items should be field inspected for compliance with approved plans and Town Standards. All employees shall conform to the Town of Holly Springs Safety Policies and Procedures in the course of making the following inspections. Attention is directed especially to the Town's existing policies pertaining to electrical systems and confined space entry. Owner shall ensure that the NCPE, subconsultant design professionals, equipment representatives, and laborers are present for the field inspection.

Site: Section 13.02

	Positive drainage away from station
	16-foot access road with good drainage and cross drainage
	Adequate gravel area for vehicular turn-around installed
	8-foot chain link fence with 3 strands barb wire (galvanized or aluminum)
	Signage "Town of Holly Springs _____ [station to be named by the Town] Pump Station, [address here], Emergency 919-557-9111" (white on blue lettering)
	Ground cover outside fence
	Vehicular accessibility to pumps
	Concrete pad inside fence area
	16-feet minimum width manual swing gates with 180-degree opening (non-obstructed)
	600-watt sodium vapor light with photocell (30' mounting height) with switch on pole
	Opaque buffers installed
	Power to pump station converted to Town of Holly Springs account with Duke Energy
	Water service converted to Town of Holly Springs account

Valve Vault: Section 13.02

	Valve Vault
	Check valve as designed
	Gate valve as designed
	Pressure gauge
	Vault drains back to wet well with Back Flap

Wet Well: Section 13.02

	Cleaned of all debris and filled with water
	6' minimum diameter
	Interior joints grouted
	Koppers super service black coating (2 coats)
	All bolts stainless steel
	Independent hatch for raising basket
	Access hatch and steps (check location)
	D.I. vent with bronze insect screen
	Class 50 DIP suction discharge and piping
	Well Point

Final Field Inspection and Operational Test-Required Inspections:

Pumps: Section 13.03

	Two pumps - field check the plates on pumps to insure conformance with design plans and O&M manuals (Manufacturer, GPM, TDH, Model Number, Serial Number, Impeller Size)
	Pump start-up (both pumps) on regular power feed
	Pump start-up (both pumps) on back-up power feed (generator)
	Verify automatic switch to back-up power source during power failure
	Verify automatic cycling between two pumps

Pump Motor Controls: Section 13.03

	Aluminum weather hood 7’ height with 4’ overhang with severe service paint
	NEMA 3R enclosure with locking hasp
	Hinged inner door with overload reset buttons, circuit breakers, switches, 2nd pilot lights as the only accessible components when closed
	Line terminal block
	Circuit breaker for each pump motor 10,000 RMS for 200-240-VAC, 5,000 RMS for 440-480 VAC
	Transformer primary circuit breaker (when required)
	Control power transformer (when required)
	Magnetic contactor and overload relay for each motor
	Six-digit, non-resettable elapsed time meters
	Condensation strip heater with thermostat in control panel enclosure
	Phase and voltage monitor
	Lighting arrestor
	Thru-door overload reset push buttons
	Two “hands-off-automatic” switches
	Two green pilot lights
	Two seal failure circuit test push buttons
	Pump alternator circuit
	Control relays
	High wet well level alarm device (flashing red light)
	Aluminum float switches
	High temperature shutdown circuit
	Groundings

Final Field Inspection and Operational Test-Required Inspections:

Alarm Dialer/SCADA: Section 13.03

	Lockable NEMA 4 enclosure
	120 VAC electrical supply
	Backup battery
	Surge protectors on power and telephone lines
	Dialer programmed with emergency phone numbers
	Approved model in accordance with plans
	Telephone line installed
	SCADA installed

Odor Control: Section 13.03

	Chemical feed facility for odor control
	2500-gallon liquid chemical storage tank
	Evoqua Bioxide® chemical feed system complete with a VersaDose® LT(VDLT) control system
	Containment system in case of chemical spill
	Freeze proof eyewash and shower wash station with a tepid water system and water heater
	Mechanical ventilation (if required)

Jib Crane/Hoisting Equipment: Section 13.03

	Pedestal mounted jib crane
	Electric hoist and trolley
	Doghouse shelter
	Provide lifting rings every 6-feet on lifting chain
	Chain bucket

Electrical: Section 13.02

	Generator-field check plate on generator to ensure conformance with design plans and O&M Manual
	3 Phase 240 VAC or 480 VAC
	Meter Base
	NEMA 3R single throw safety switch
	NEMA 3R double throw safety switch
	Building: electrical inspector has approved
	Automatic maintenance operation on timer (minimum weekly)

Final Field Inspection and Operational Test-Required Inspections:

Force Main: Section 13.05

	Force main including air release valves – Verify all valves are open
	Force main hydrostatic testing
	Air Release Valve manholes are epoxy coated

Development Construction Manager **Date**

Development Inspection Supervisor **Date**

Development Inspector **Date**

Executive Director of Utilities & Infrastructure **Date**

Deputy Director of Utilities **Date**

Owner's Representative **Date**

END OF SECTION 13.00

HIGHFILL

Highfill Infrastructure Engineering, P.C.
2703 Jones Franklin Road, Suite 201
Cary, North Carolina 27518
Tel 919-481-4342 | NC Firm License No. C-2586

July 2, 2025

Rachel Jones
Town of Holly Springs
128 S Main St
Holly Springs, NC 27540

RE: Recommendation of Award
Business Park PS & FM Improvements
Wake County, NC
HIGHFILL Project No.: HSP2101

Dear Ms. Jones,

Attached is the certified bid tabulation for the four (4) sealed bids opened on June 26, 2025 at 2:00 PM, for the Business Park PS & FM Improvements project. Sanford Contractors, Inc. submitted the lowest base bid in the amount of $5,908,930.00. We have reviewed the bids and believe them to be competitive and fair.

After contacting six references provided by Sanford Contractors, Inc., we believe they have demonstrated sufficient qualifications, experience, and manpower to complete the project. The project is within budget, the bid responsive, and the contractor deemed responsible; therefore, we recommend award of the project to Sanford Contractors, Inc.

Sincerely,

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.

Eddie Sasser

Eddie Sasser, PE
Project Manager

Enclosure

SUMMARY BID TAB
BUSINESS PARK PS AND FM IMPROVEMENTS
TOWN OF HOLLY SPRINGS
HOLLY SPRINGS, NC
HIGHFILL PROJECT NO.: HSP2101

HIGHFILL INFRASTRUCTURE ENGINEERING, P.C.
LICENSE NO. C-2586
BID DATE: 06-26-2025

				SANFORD CONTRACTORS 628 ROCKY FORK CHURCH RD. SANFORD, NC 27332		SOUTHERNCROSS CONSTRUCTION 1121 SITUS COURT, SUITE 300 RALEIGH, NC 27606		CARDINAL CIVIL CONTRACTING 100 E SIX FORKS RD., SUITE 300 RALEIGH, NC 27609		MOFFAT PIPE 701 FINGER LAKES DR. WAKE FOREST, NC 27587	
			Contractor License No.	06301		74430		73070		54906	
Pay Item No.	Item Description	Est. Qty.	Unit	UNIT PRICE	EXTENDED TOTAL	UNIT PRICE	EXTENDED TOTAL	UNIT PRICE	EXTENDED TOTAL	UNIT PRICE	EXTENDED TOTAL
1	Mobilization	1	LS	$ 155,000.00	$ 155,000.00	$ 191,217.00	$ 191,217.00	$ 210,000.00	$ 210,000.00	$ 235,000.00	$ 235,000.00
2	Business Park Pump Station Improvements	1	LS	$ 2,617,440.00	$ 2,617,440.00	$ 2,474,677.00	$ 2,474,677.00	$ 2,560,000.00	$ 2,560,000.00	$ 3,250,000.00	$ 3,250,000.00
3	Electrical Improvements	1	LS	$ 648,720.00	$ 648,720.00	$ 1,112,447.00	$ 1,112,447.00	$ 1,025,000.00	$ 1,025,000.00	$ 1,360,000.00	$ 1,360,000.00
4	Odor Control System	1	LS	$ 243,270.00	$ 243,270.00	$ 285,243.00	$ 285,243.00	$ 265,000.00	$ 265,000.00	$ 346,000.00	$ 346,000.00
5	16-Inch PVC Force Main	6,260	LF	$ 143.15	$ 896,119.00	$ 96.00	$ 600,960.00	$ 130.00	$ 813,800.00	$ 132.00	$ 826,320.00
6	16-Inch PVC Force Main - Restrained Joint	1,100	LF	$ 180.61	$ 198,671.00	$ 106.00	$ 116,600.00	$ 165.00	$ 181,500.00	$ 185.00	$ 203,500.00
7	28-Inch Steel Casing Installed by Open-Cut	175	LF	$ 367.00	$ 64,225.00	$ 303.00	$ 53,025.00	$ 400.00	$ 70,000.00	$ 442.00	$ 77,350.00
8	Air Release Valve and 5-ft ID Manhole	8	EA	$ 28,480.00	$ 227,840.00	$ 32,780.00	$ 262,240.00	$ 33,000.00	$ 264,000.00	$ 44,300.00	$ 354,400.00
9	Fittings	7,000	LB	$ 22.53	$ 157,710.00	$ 23.00	$ 161,000.00	$ 35.00	$ 245,000.00	$ 28.50	$ 199,500.00
10	Select Backfill	240	CY	$ 46.00	$ 11,040.00	$ 155.00	$ 37,200.00	$ 120.00	$ 28,800.00	$ 122.00	$ 29,280.00
11	Rock Excavation	712	CY	$ 25.00	$ 17,800.00	$ 400.00	$ 284,800.00	$ 625.00	$ 445,000.00	$ 245.00	$ 174,440.00
12	Stabilization Stone	267	TON	$ 39.00	$ 10,413.00	$ 100.00	$ 26,700.00	$ 150.00	$ 40,050.00	$ 128.00	$ 34,176.00
13	Temporary Erosion Control Measures	1	LS	$ 33,858.00	$ 33,858.00	$ 62,381.00	$ 62,381.00	$ 265,000.00	$ 265,000.00	$ 248,000.00	$ 248,000.00
14	SCADA Allowance	1	LS	$ 40,000.00	$ 40,000.00	$ 40,000.00	$ 40,000.00	$ 40,000.00	$ 40,000.00	$ 40,000.00	$ 40,000.00
15	Crane Restoration Allowance	1	LS	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00
16	Renovation Allowance	1	LS	$ 300,000.00	$ 300,000.00	$ 300,000.00	$ 300,000.00	$ 300,000.00	$ 300,000.00	$ 300,000.00	$ 300,000.00
17	Materials Testing Allowance	1	LS	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00	$ 30,000.00
18	Wetwell Rehabilitation Allowance	1	LS	$ 50,000.00	$ 50,000.00	$ 50,000.00	$ 50,000.00	$ 50,000.00	$ 50,000.00	$ 50,000.00	$ 50,000.00
19	28-Inch Steel Casing Installed by Bore and Jack with RJ Carrier Pipe (Guaranteed Bore)	62	LF	$ 2,852.00	$ 176,824.00	$ 4,120.00	$ 255,440.00	$ 3,000.00	$ 186,000.00	$ 1,600.00	$ 99,200.00
				Total	**$ 5,908,930.00**	**Total**	**$ 6,373,930.00**	**Total**	**$ 7,049,150.00**	**Total**	**$ 7,887,166.00**
Alternate Bid Items											
A1	Retain Ex. ATS in Lieu of Replacing	1	LS	**$ 15,000.00**	**$ 15,000.00**	**$ 20,000.00**	**$ 20,000.00**	**$ 20,000.00**	**$ 20,000.00**	**$ -**	**$ -**
					Deduction		Deduction		Deduction		Deduction

Low bidder selected based on Base Bid. Alternate Bid Item(s) will be added or excluded based on what is in the best interest of the Town.

We hereby certify the above Bid Tabulation to be an accurate representation of the bids submitted.

NORTH CAROLINA PROFESSIONAL SEAL 026481 ENGINEER EDWARD O. SASSER JR. 6-27-2025

Edward O. Sasser, Jr., PE
Highfill Infrastructure Engineering, P.C.
2703 Jones Franklin Rd, STE 201, Cary, NC 27518
Ph: 919-481-4342

BACKGROUND:

The Business Park Pump Station (BPPS) was constructed in 2009 as an economic development funded project to serve the Holly Springs Business Park and surrounding residential neighborhoods. The pump station site and structures were laid out for expansion from two pumps to four pumps and related electrical gear. The initial duplex pump station has a permitted firm capacity of 1,740 gallons per minute (GPM) with a 16-inch force main.

The BPPS will be upgraded to 4,300 GPM capacity and a parallel 16-inch force main will be added.

The Town desires HIGHFILL to provide construction administration and construction observation services during the construction phase of this project.

SCOPE OF SERVICES:

HIGHFILL will perform the following Basic Services upon Authorization:

The Town has staff available to manage and oversee construction administration and construction observation of the project. The Town would like HIGHFILL to provide supplemental support services. The services are listed below but may be adjusted based on the Town's needs. Available hours and budget will be used as directed by the Town.

Task 70 – Construction Administration Services

1. Provide the Town's project manager with monthly project activity updates.
2. Participate in one pre-construction meeting. The Town will lead the meeting and prepare the meeting summary.
3. Perform submittal reviews for up to 30 submittals.
4. Assist the Town with property owner concerns. An allowance of 4 hours per month on average is included in the budget.
5. Participate in up to 45 weekly construction progress meetings via conference call or virtual platform. The Town will lead the meetings and prepare the meeting summaries.
6. Review up to 14 monthly payment requests from the construction contractor and make recommendations to the Town for construction contractor payment.
7. HIGHFILL Visits to the Site: HIGHFILL will make site visits periodically or upon request from the Town. Such visits and observations by HIGHFILL are not intended to be exhaustive or to extend to every aspect of the construction contractor's work in progress. Observations are to be limited to spot checking, selective measurement, and similar methods of general observation of the Work based on the HIGHFILL's exercise of professional judgement.
    a. Average of one site visit per month
8. Participate in up to 14 in-person, on-site, monthly construction progress meetings. The Town will lead the meetings and prepare the meeting summaries.
9. Address Requests for Information (RFI's) from construction contractor, issue Field Orders (FO's), and prepare Change Orders (CO's) for the Town's approval.
10. Manage project SharePoint site which will be a repository for pertinent construction information, photographs, reports, and other construction documents.

11. Coordinate with the Town and construction contractor if force main modifications are required due to Southern Access Road (SAR) construction or design changes.
12. Revise the plan drawings to include the path around the pump station after the Town acquires the needed easement from Duke Energy.
    a. Coordinate with the construction contractor and provide the updated plans.
13. Punch list review and perform final walk through with the Town and construction contractor.
14. Materials testing:
    a. Coordinate with the construction contractor who will hire and coordinate with the materials testing firm.
    b. Review and report test results to the Town.
    c. The materials testing firm will be paid by the construction contractor through an allowance in the bid form.
15. Coordinate between the Town and the construction contractor during pump station testing. Attend the pump station startup.

Task 80 – Construction Observation Services

1. Provide on-site construction observation as follows:
    a. Average 6 hours per week for the contract construction duration.
    b. Some construction activities require more inspection time. The available budgeted hours will be allocated based on HIGHFILL's experience and coordinated with Town's staff availability to be on site.
2. Coordinate field review of pay applications, review of construction contractor red-line record drawings, and facilitate communication between construction contractor, HIGHFILL, and the Town.
3. Provide inspection reports and photos documenting construction activities, during periods we are onsite.
4. Coordinate with the Town to prepare a punch list upon notification from the construction contractor that work is Substantially Complete.

Task 85 – Post-Construction Phase Services

1) Collect and review construction contractor's close-out documents.
2) Prepare and submit certification of completion to the Town.
    a. The Town will submit certifications to NCDEQ.
3) Construction Record Drawings: Prepare construction record drawings based on construction contractor provided survey, construction contractor red-line drawings, and Town Inspector red-line drawings.
4) Record drawing and data submitted shall conform to the Town's record drawing requirements.

Assumptions and Clarifications:

1) Warranty period coordination with the construction contractor and product suppliers will be performed by the Town.
2) Construction will be performed under one construction contract and construction contractor will achieve Final Completion within 420 calendar days of the construction contractor's Notice to Proceed.
3) Fee budget does not include weekend or overtime field observation services, if required.

4) HIGHFILL will inform the Town when 50% and 75% of the available budget has been spent. The budget or level of service can be adjusted to meet the Town's needs.

Additional Services are those services not specifically included under the Basic Services.

SCHEDULE:

Work schedule will progress sequentially as follows:

- Task 70 – Construction Administration Services: 14 months
- Task 80 – Construction Observation Services: 14 months
- Task 85 – Post-Construction Phase Services: 2 months

HIGHFILL shall endeavor to complete work tasks in accordance with the above schedule. The Town acknowledges that certain aspects of the project, including regulatory review time and land acquisition, are outside the HIGHFILL's direct control and may impact schedule significantly.

COMPENSATION:

HIGHFILL will perform services described in Tasks 70, 80, and 85 on a Time and Materials (T&M) basis not to exceed $300,800 without prior written notice. Labor and expenses on this task will be invoiced according to HIGHFILL's then-current Schedule of Rates. A copy of the current Schedule of Rates is attached. Budgets may be reallocated between tasks, if needed.

Task	Phase	Labor	Subcontractors and Expenses	Total Fee
70	Construction Administration Services	$159,600	$21,100	$180,700
80	Construction Observation Services	$89,300	$10,700	$100,000
85	Post-Construction Phase Services	$14,200	$5,900	$20,100
	T&M TOTAL	**$263,100**	**$37,700**	**$300,800**

Additional Services, if needed, will be completed on a time and materials or lump sum basis as agreed by both parties prior to commencement of Additional Services.

2025 SCHEDULE OF RATES

HIGHFILL

Highfill Infrastructure Engineering, P.C.

Employee Classification	Hourly Rate
Senior Project Manager (11-14)	$220-270
Senior Project Manager (8-11)	$160-225
Senior Engineer (10-14)	$215-270
Senior Engineer (6-10)	$150-225
Project Manager	$150-170
Engineer (PE)	$140-150
Staff Professional	$110-135
Sr. Designer	$140-190
Sr. Const. Observer; Sr. Tech.; Sr. CAD Tech	$100-135
Construction Observer; Technician; CAD Tech	$75-95
Project Assistant	$60-90

Expenses/Subcontractors	Cost Incurred
Subcontractor	Invoice + 10%
Reimbursable Project Costs	Invoice + 10%
Mileage	then-current IRS rate

Rates are valid through 2025.

Sales or Use Taxes: Rates do not include sales or use tax on professional services. If any governmental entity takes a legislative action that imposes sales or use taxes on Engineer's services, then such taxes will be invoiced for reimbursement by Client.

V25.0_10sub

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 17.

Consent Agenda
Title: Operations Campus Building Upfitting - ADW Architects Design Construction Change Directive
Strategic Priority Area: Growth Management & Economic Vitality
Organizational Excellence
Staff Resource: Kimberly Keyes, Utilities and Infrastructure

Action(s):
Approve Construction Change Directive for ADW Architects to design upfit to include electrical, mechanical, plumbing, and sprinkler system for additional space in the Administrative and Operations Building - Operations Campus

Explanation:

- At the June 10, 2025, Town Council Workshop, staff presented a proposal and recommendation to upfit the Operations Campus to address current space challenges resulting from the unexpected closure of Town Hall Annex and to reduce reliance on long-term leased space Downtown.
- An additional 2,500 SF in the Administration Building and 4,200 SF in the Operations Building were identified for upfit. The estimated cost for design and construction is approximately $950,000. Pricing will be confirmed by the Construction Manager at Risk (CMAR) before major construction begins.
- ADW Architects, the Operations Campus architect, provided preliminary layouts. Required modifications include:
    - Interior layout and framing modifications
    - Mechanical, electrical, plumbing and sprinkler system design
- Once design is finalized, the CMAR will confirm final costs and schedule. Staff anticipates submitting an amendment to the Guarantee Maximum Price and updated design contract in August 2025.
- To expedite the project and not negatively impact current construction, staff proposes issuing a Construction Change Directive (CCD).
- The CCD is a written order issued by the architect, allowing design work to proceed before final pricing or scheduling adjustments are negotiated. This mechanism is used when time-sensitive work cannot be delayed.

Background:

- The Operations Campus will include offices, work and meeting space for various town departments.
- The first phase (Phase 1B) of the campus includes:
    - Convenience center for yard waste drop off

    - Laydown areas and parking for heaving equipment
    - Approximately 42,000 SF, two-story administration building with offices and meeting space
    - Approximately 38,500 SF building with warehouse and office space
- Phase 1 B is scheduled for completion in the summer of 2026.

Funding Source(s):

Community Investment Plan - Limited Obligations Bond

Attachment(s):

1. G714-2017 - CCD 1A Admin
2. G714-2017 - CCD 1B Operations

AIA Document G714® – 2017

Construction Change Directive

PROJECT: *(name and address)*	CONTRACT INFORMATION:	CCD INFORMATION:
NC4303 - Town of Holly Springs Operations Campus Green Oaks Parkway Holly Springs, NC 27540	Contract For: General Construction Date: 10-19-2022	Directive Number: 001A Date: 07-08-2025
OWNER: *(name and address)*	**ARCHITECT:** *(name and address)*	**CONTRACTOR:** *(name and address)*
Town of Holly Springs 128 S. Main Street Holly Springs, NC 27540	ADW Architects, P.A. Six Coliseum Centre Drive, Suite 500, Charlotte, NC 28217	Edifice LLC P.O. Box 36349 Charlotte, NC 28236

The Contractor is hereby directed to make the following change(s) in this Contract:
(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits.)

Administration Building: Proceed with making room layout framing changes per Architectural layout changes per revision 26 drawing A100 and AIOI dated 6/30/2025 for the Administration Building. Proceed with making mechanical, electrical, sprinkler, and all associated changes as further information and detail become available.

PROPOSED ADJUSTMENTS

1. The proposed basis of adjustment to the Contract Sum or Guaranteed Maximum Price is:

   [ ] Lump Sum unchanged $ 0.00

   [ ] Unit Price of $ 0.00 per

   [ ] Cost, as defined below, plus the following fee: 0.00
   (Insert a definition of, or method for determining, cost)

   [X] As follows: Subcontractor proposals to be approved in writing by the Town, plus standard allowable change order contract mark-ups. To be determined once full drawings are produced.

2. The Contract Time will be unchanged by ( ) days. NA> additional information must be provided in a timely manner to not affect schedule

NOTE: The Owner, Architect and Contractor shall execute a Change Order to supersede this Construction Change Directive to the extent they agree upon adjustments to the Contract Sum, Contract Time, or Guaranteed Maximum price for the change(s) described herein.

When signed by the Owner and Architect and received by the Contractor, this document becomes effective IMMEDIATELY as a Construction Change Directive (CCD), and the Contractor shall proceed with the change(s) described above.

Contractor signature indicates agreement with the proposed adjustments in Contract Sum and Contract Time set forth in this CCD.

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User Notes: (686d27dfff59e88382a735d7)

ARCHITECT *(Signature)*	**OWNER** *(Signature)*	**CONTRACTOR** *(Signature)*
BY: ADW Architects, P.A.	BY: Town of Holly Springs Operations Campus	BY: Edifice, LLC
(Printed name, title, and license number if required)	*(Printed name and title)*	*(Printed name and title)*
7/8/2025		
Date	*Date*	*Date*

David Andrews

Digitally signed by David Andrews
DN: C=US, E=dandrews@edificeinc.com, CN=David Andrews
Date: 2025.07.08 13:03:01-04'00'

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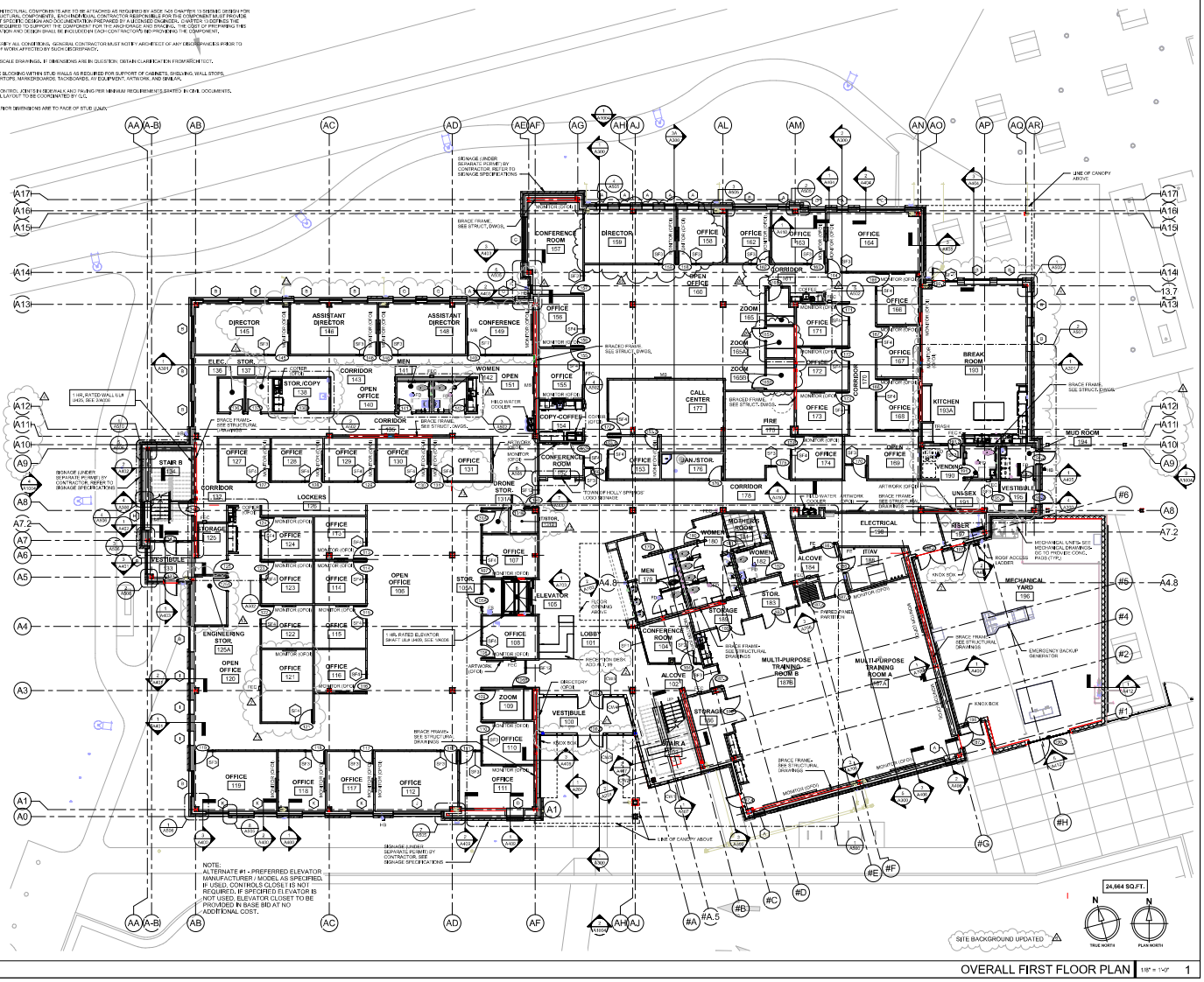

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HOLLY SPRINGS North Carolina

EDIFICE GENERAL CONTRACTORS

Holly Springs Operations Campus

Administration Building

425 Innovate Avenue
Holly Springs, NC 27540

OVERALL FIRST FLOOR PLAN

DATE: 4-30-24
PROJECT NO: 21028

REVISIONS

NO:	DATE:	DESCRIPTION:
2	6.14.24	Coordination
4	8.26.24	Coordination
6	9.27.24	Coordination
13	11.12.25	Revision 13
21	05.21.25	Revision 21
26	8.25.25	Revision 26

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SHEET NUMBER
A100

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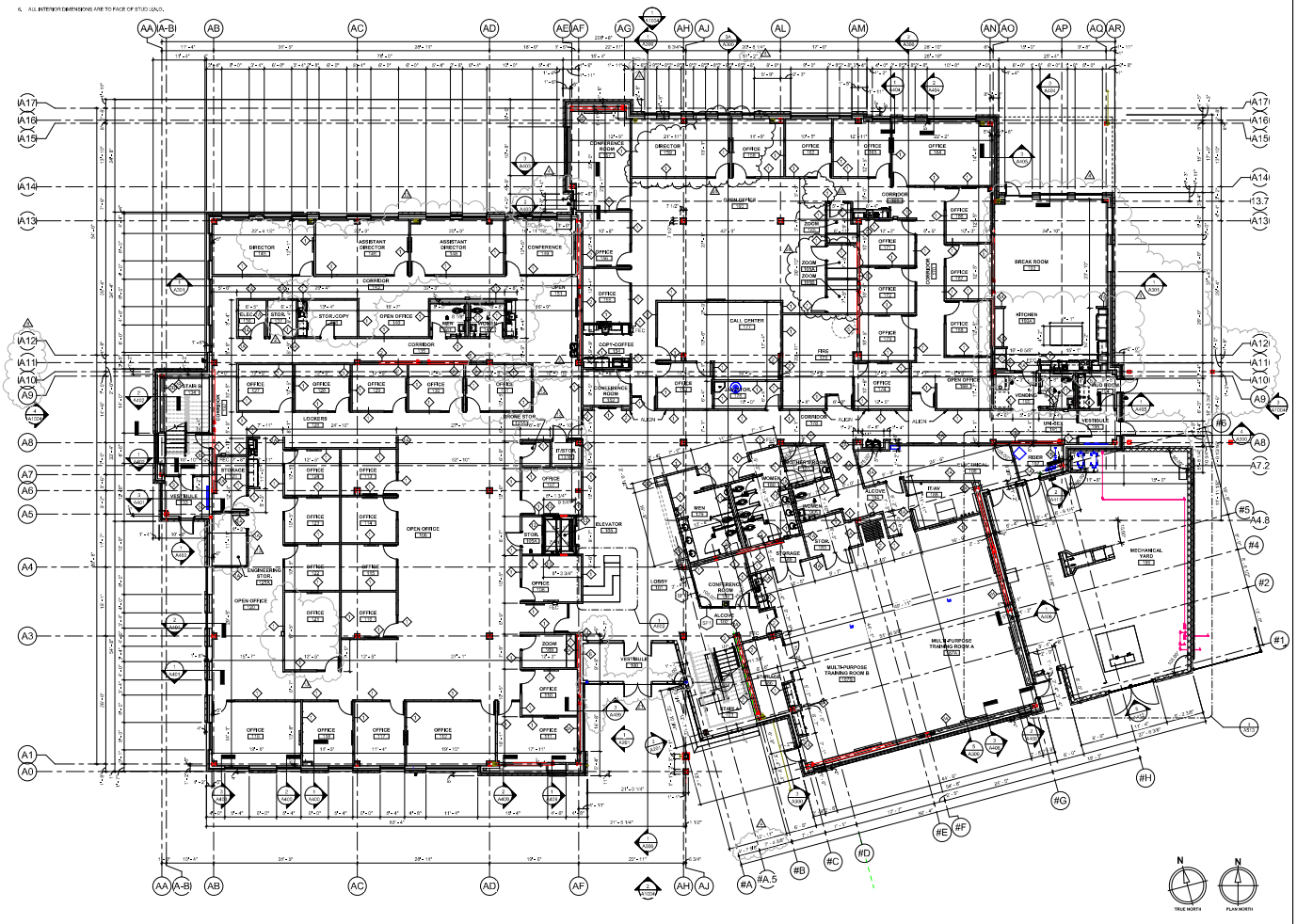

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50223 NORTH CAROLINA REGISTERED ARCHITECT

1465 CHARLOTTE, NC 06-30-25 REGISTERED LANDSCAPE ARCHITECT

SHEET NUMBER

A101

AIA Document G714’- 2017

Construction Change Directive

PROJECT: *(name and address)*	**CONTRACT INFORMATION:**	**CCD INFORMATION:**
NC4303 - Town of Holly Springs Operations Campus Green Oaks Parkway Holly Springs, NC 27540	Contract For: General Construction Date: 10-19-2022	Directive Number: 001B Date: 07-08-2025
OWNER: *(name and address)*	**ARCHITECT:** *(name and address)*	**CONTRACTOR:** *(name and address)*
Town of Holly Springs 128 S. Main Street Holly Springs, NC 27540	ADW Architects, P.A. Six Coliseum Centre Drive, Suite 500, Charlotte, NC 28217	Edifice LLC P.O. Box 36349 Charlotte, NC 28236

The Contractor is hereby directed to make the following change(s) in this Contract:
(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits.)

Operations Building: Proceed with making room layout framing changes per Architectural layout changes per revision 26 drawing A100 and A101 dated 6/30/2025 for the Operations Building. Proceed with making mechanical, electrical, sprinkler, and all associated changes as further information and detail become available.

PROPOSED ADJUSTMENTS

1. The proposed basis of adjustment to the Contract Sum or Guaranteed Maximum Price is:

   [ ] Lump Sum unchanged $ 0.00

   [ ] Unit Price of $ 0.00 per

   [ ] Cost, as defined below, plus the following fee: 0.00
   (Insert a definition of, or method for determining, cost)

   [X] As follows: Subcontractor proposals to be approved by the Town, plus standard allowable change order contract mark-ups. To be determined once full drawings are produced.

2. The Contract Time will be unchanged by ( ) days. NA, additional information must be provided in a timely manner to not affect schedule

NOTE: The Owner, Architect and Contractor shall execute a Change Order to supersede this Construction Change Directive to the extent they agree upon adjustments to the Contract Sum, Contract Time, or Guaranteed Maximum price for the change(s) described herein.

When signed by the Owner and Architect and received by the Contractor, this document becomes effective IMMEDIATELY as a Construction Change Directive (CCD), and the Contractor shall proceed with the change(s) described above.	Contractor signature indicates agreement with the proposed adjustments in Contract Sum and Contract Time set forth in this CCD.

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ARCHITECT *(Signature)*	**OWNER** *(Signature)*	**CONTRACTOR** *(Signature)*
BY: ADW Architects, P.A.	BY: Town of Holly Springs Operations Campus	BY: Edifice, LLC
(Printed name, title, and license number if required)	*(Printed name and title)*	*(Printed name and title)*
7/8/2025		
Date	*Date*	*Date*

David Andrews

Digitally signed by David Andrews
DN: C=US, E=dandrews@edificeinc.com, CN=David Andrews
Date: 2025.07.08 11:41:56-04'00'

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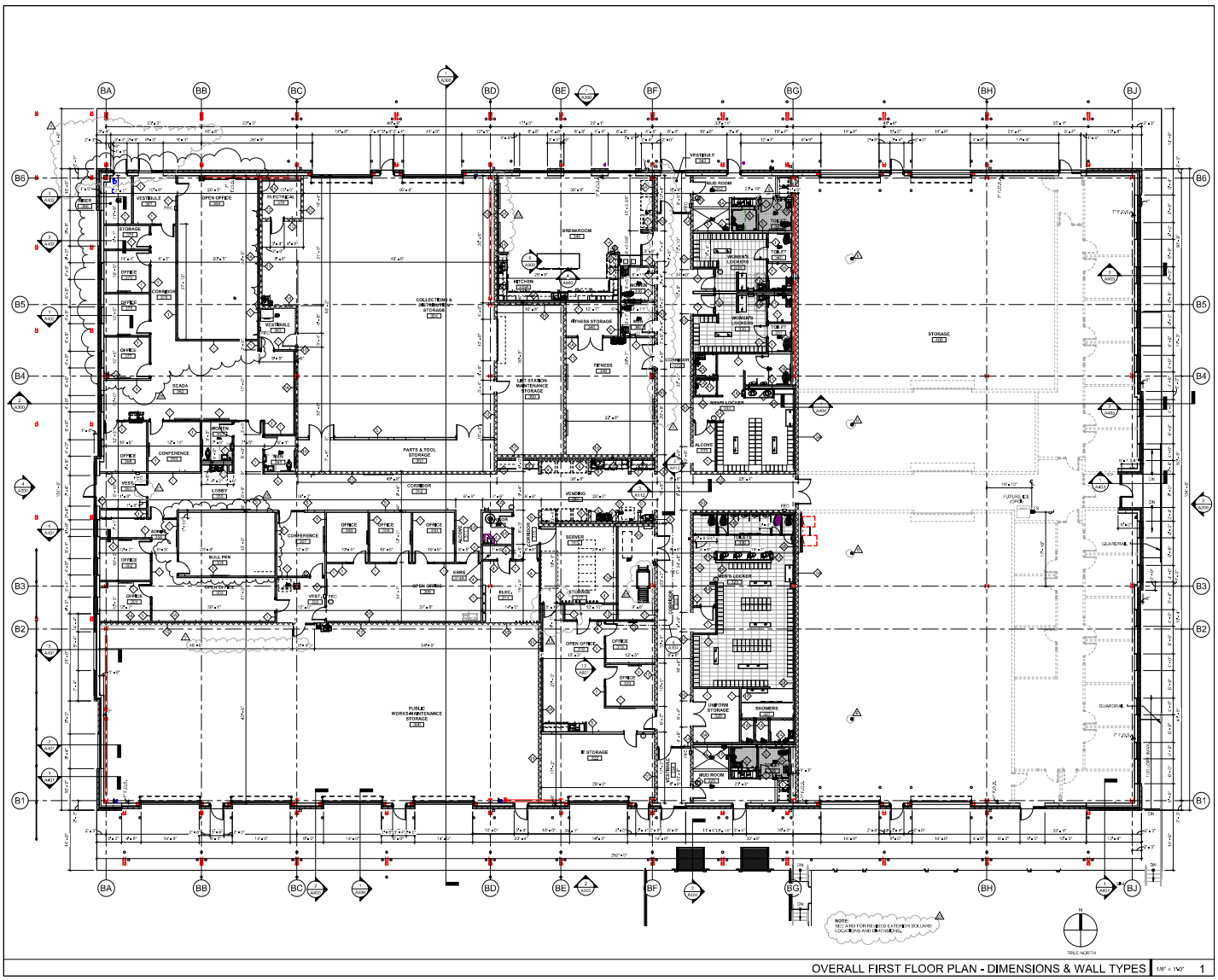

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50223 NORTH CAROLINA
7463 06-30-25 CHARLOTTE, NC

SHEET NUMBER

A101

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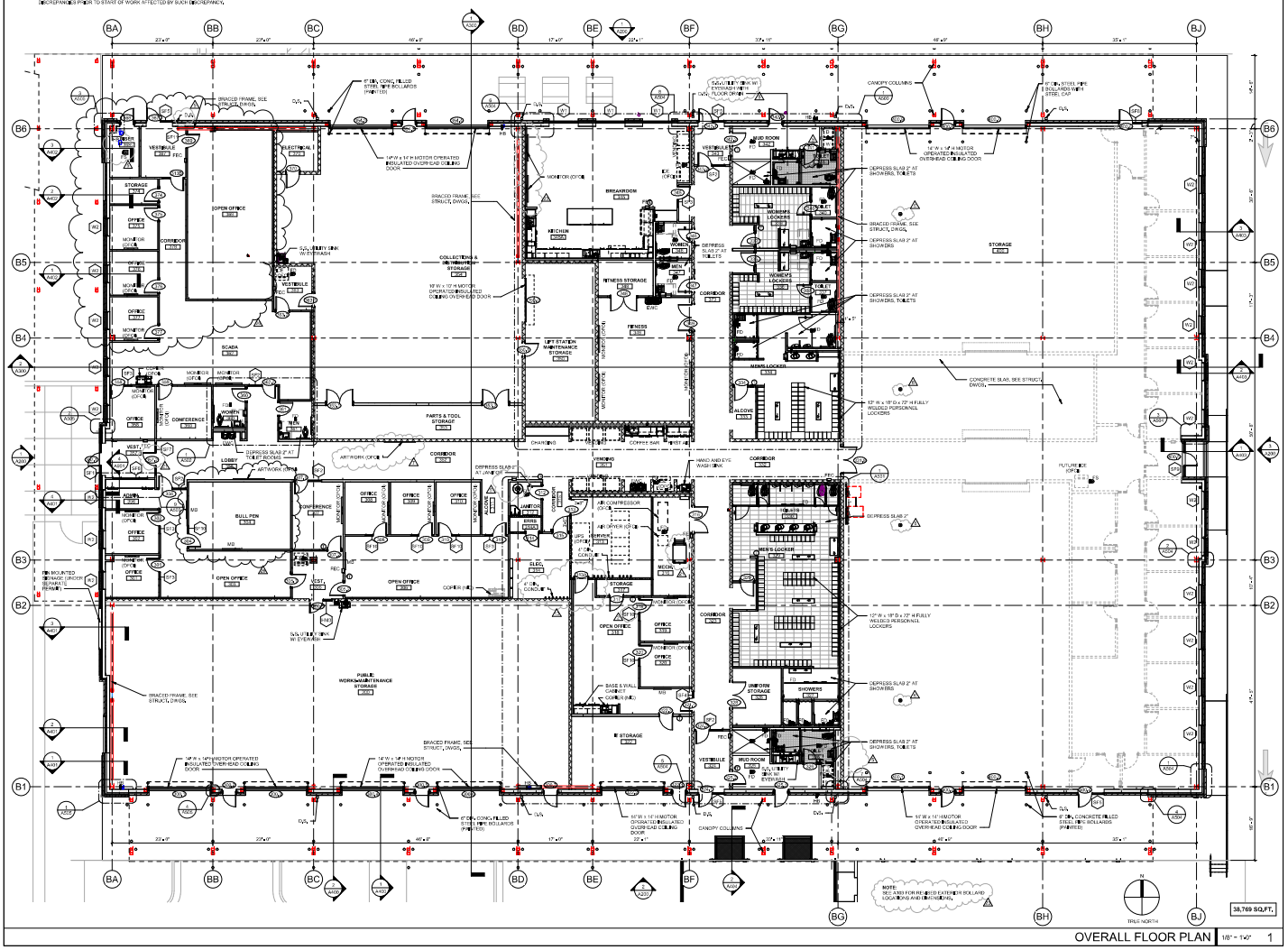

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SHEET NUMBER

A100

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 18.

Public Hearings
Title: Hazel Ridge Major Subdivision Plan (25-MAS-01) - Quasi-Judicial Public Hearing
Strategic Priority Area: Growth Management & Economic Vitality
Staff Resource: Brett Gosney, Development Services, Catherine Jacobs, Development Services

Action(s):

- Conduct Quasi-Judicial Public Hearing.
- Adopt Resolution 25-30 to make and accept the Findings of Fact for consideration of and approve/deny/defer Major Subdivision Plan for Hazel Ridge (formerly known as Tassel Ridge).

Explanation:

- A Major Subdivision Plan has been submitted to develop a 237-lot subdivision for single-family detached dwellings on 122.29 acres located at 5900 Duncan Cook Rd.
- The site includes four active open space areas that offer a variety of amenities, such as a pool, pickleball courts, and a playground.
- The traffic mitigation improvements shown on the attached plans are consistent with the previously approved Transportation Mitigation Agreement and Traffic Impact Analysis as well as the Comprehensive Plan and Traffic Study Policy.
- The project will include constructing a pump station as well as improving the existing Honeycutt Farm pump station. The new pump station is located between the southern and northern sections and will be surrounded on all sides by a minimum of 10' Type B buffer.

Staff Recommendation: Approve

Planning Board Recommendation: Approve (9-0)
A summary of the Planning Board discussion is in the Planning Board Action Report. *(Note: This Report is a separate attachment from the Staff Report)*

Background:

- The parcel was zoned SR-CD Suburban Residential Conditional Zoning District on August 20, 2024.
- This project was previously named Tassel Ridge.

Funding Source(s):
N/A

Attachment(s):

1. 25MAS01_HazelRidge_StaffReport_Final
2. 25MAS01_PlanningBoardActionReport
3. 25MAS01_HazelRidge_Resolution
4. 25MAS01_HazelRidge_WCPSSReport
5. 25MAS01_HazelRidge_Application
6. 25MAS01_HazelRidge_Planset

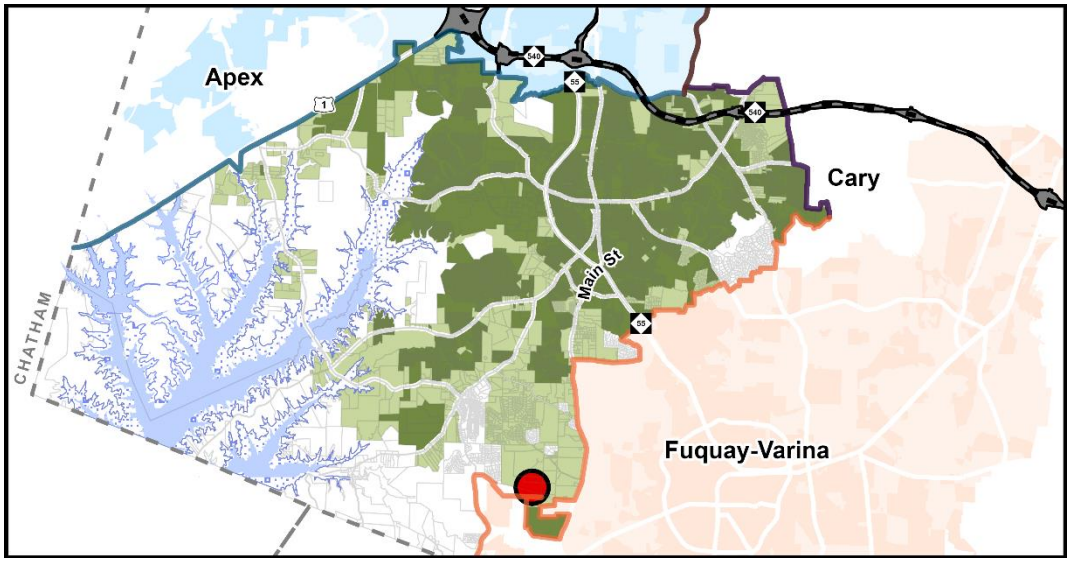
Project Type: Major Subdivision Plan

Concurrent Applications:
☐ Waiver / SUP/ VAR/ CPA

Applicant / Petitioner:
Paul Berger / Duncan Cook Holdings, LLC

Property Address: 5900 Duncan Cook Rd.

Property Area: 122.29 ac.



Located in: ☐Holly Springs Corporate Limits ☒Holly Springs ETJ ☒Annexation Pending

Project Summary:
A Major Subdivision Plan for a 237-lot subdivision for detached single family homes at 5900 Duncan Cook Road (formerly known as Tassel Ridge).

Requested Action:
Quasi-Judicial Decision: The Town Council must hold a quasi-judicial hearing to collect facts and then make a decision based on the written and oral evidence presented and adopted town policies and procedures.

Table of Contents:

Case Summary	Page 2
Current Zoning Information	Page 3
Land Use & Character Information	Page 4
Transportation Information	Page 7
Parks, Recreation & Greenways Information	Page 10
Community Facilities Information	Page 11
Infrastructure & Utility Information	Page 12
Natural Resources Information	Page 14
Development Standards Information	Page 15
Decision-Making Information	Page 17

Case Summary

Current Zoning:
SR Suburban Residential
☒ Conditional Zoning District

Current Major Subdivision Plan:
None



Aerial Photograph

Growth Strategy Map:
Places to Enhance

Small Area Plan Designation:
N/A

Future Land Use Plan Designation:
Residential Neighborhood

Staff Analysis:

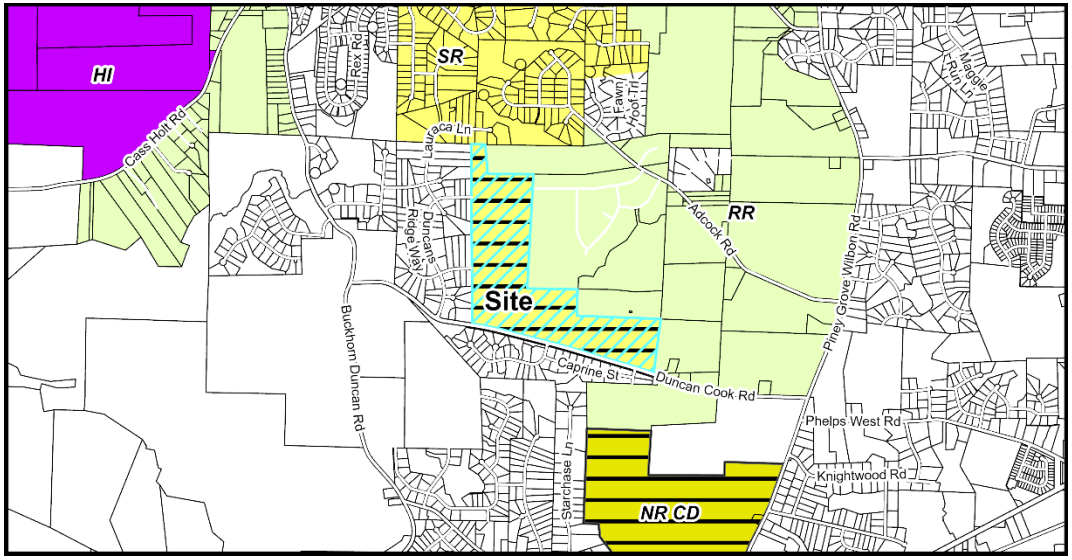
The Major Subdivision Plan is: ☒ Consistent with Adopted Plans/Ordinances ☐ Inconsistent with Adopted Plans/Ordinances

The Major Subdivision Plan complies with minimum requirements specified in Town adopted land development plans, policies, and ordinances and the Tassel Ridge Conditional Zoning District (24-REZ-01).

Staff Recommendation: ☒ Approve ☐ Deny

Current Zoning Information

Parcel #	Zoning	Area
0646398124	SR-CD Suburban Residential Conditional Zoning District	122.29 ac.
	Total Area	**122.29 ac.**



Current Zoning Map

Adjacent Property Current Zoning Information

	Zoning	Existing Land Use
Subject Property	SR-CD Suburban Residential Conditional Zoning District	Vacant / Agricultural
North	RR Rural Residential & SR Suburban Residential	Residential
South	R-30 (Wake County Zoning)	Residential
East	RR Rural Residential	Residential
West	CU – R-30 (Wake County Zoning)	Residential

Parcel Rezoning History

Rezoning Number: 24-REZ-01 (Tassel Ridge Conditional Zoning District)
Original Zoning: RR
Approved Zoning: SR-CD
Approval Date: August 20,2024

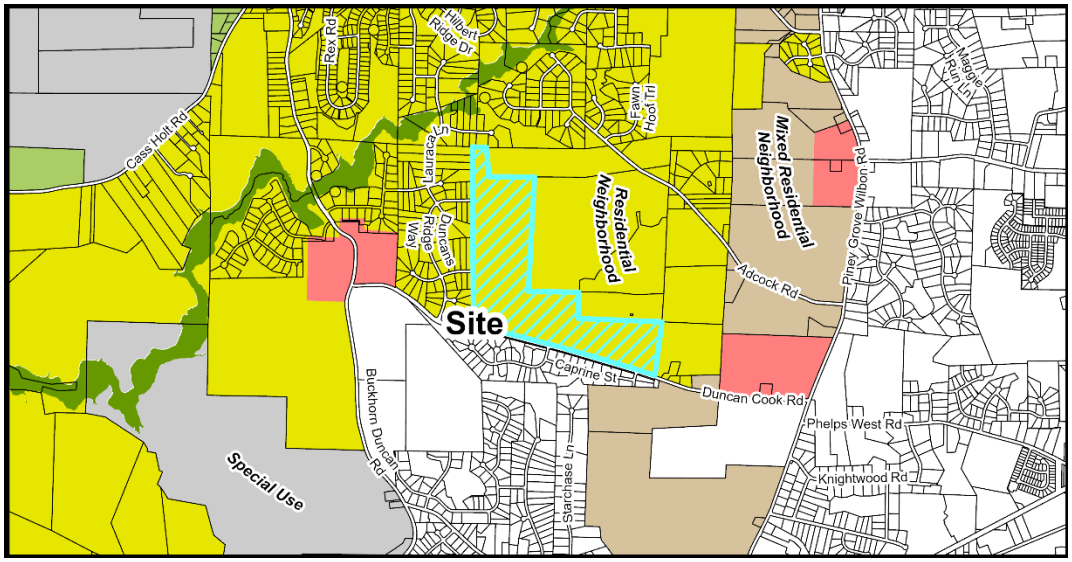
Land Use & Character Information

Vision Holly Springs Comprehensive Plan Section 1

Growth Strategy Map: Places to Preserve

Future Land Use: Residential Neighborhood

Small Area Plan: N/A



Future Land Use Map

Important Themes for Transforming Holly Springs:

Eight important themes for Holly Springs are highlighted as high-priority principles for transforming the Town. The following theme(s) should be considered with this request:

Theme	Description
☐ Establish Mixed-Use Activity Centers Throughout Holly Springs	Mixed-use and walkable development
☐ Suburban Remix	Activate neighborhood centers
☐ Suburban Retrofit	Redevelop existing centers into mixed-use, multi-modal, activated centers
☐ Context-Sensitive Infill Development Choices	Infill around single use residential areas
☒ Transitions	Complement existing development and avoid incompatibilities
☐ Increase Home & Neighborhood Choices in Holly Springs	Variety of integrated housing products
☐ Increase Diversity & Affordability of Housing in Holly Springs	Adequate supply of affordable housing
☒ More Transportation-Land Use Coordination in the Community	Equal emphasis on land use (demand), transportation (supply) and urban design (character)

Land Use & Character Information (cont.)

Growth Strategy Map: Places to Enhance
Places to enhance in Holly Springs celebrate existing and future residential neighborhoods, and the small activity centers that serve them, as the building blocks for a strong community. They generally include Conservation Neighborhoods, Residential Neighborhoods with single dwelling detached homes on varying lot sizes, or Mixed Residential Neighborhoods with two or more home types (single dwelling detached, single dwelling attached, and multi dwelling) in the same development. Future infill development in the enhancement areas should be sensitive to the uses and densities along the perimeter of adjacent neighborhoods.

Future Land Use: Residential Neighborhood
A Residential Neighborhood area includes one housing type — single dwelling detached — on different lot sizes that vary enough to provide a range of home choices in the same neighborhood. Homes are oriented toward streets with rear yards larger than front yards. Some Residential Neighborhood areas may mix lot and house sizes on the same block, or provide accessory dwelling units. Pedestrian-scale blocks and a grid street network support a well-connected, cohesive community. New Residential Neighborhood areas should include a comprehensive and connected network of open space throughout the site to accommodate small parks, gathering spaces, and community gardens; preserve large tree stands; and help manage stormwater run-off. Internal streets and open space in a Residential Neighborhood area should connect to existing or future neighborhoods nearby. Residential Neighborhoods are primarily residential but may include limited civic or other non-residential (non-commercial) uses.

Key Characteristics:

- Streets are generally in a grid network.
- Lot width and depth is variable, with larger lots near the edges of the neighborhood and smaller lots near the center, creating a mix of densities throughout the neighborhood.
- Front-facing garages should be avoided. Where garages face the street, they should be set back significantly from the façade of the building.
- Development should be sensitive to existing natural resources including large tree stands and drainage-ways. Mass grading and tree clearing should be avoided whenever possible.
- Residential building types are limited to single dwelling detached residential, including accessory dwelling units, in a variety of sizes. Single dwelling attached and multi-dwelling are not allowed.
- Very walkable, with sidewalks, bike facilities, paths and trails

Small Area Plan: N/A

Historic Structures: ☒ None

Land Use & Character Information (cont.)

Land Use & Character Staff Analysis:

The Major Subdivision Plan is: ☒ Consistent ☐ Inconsistent with the Land Use & Character Plan/Ordinances

The proposed Major Subdivision Plan is consistent with the Future Land Use Designation of Residential Neighborhood as it fulfills several goals of this Character Area. These goals include:

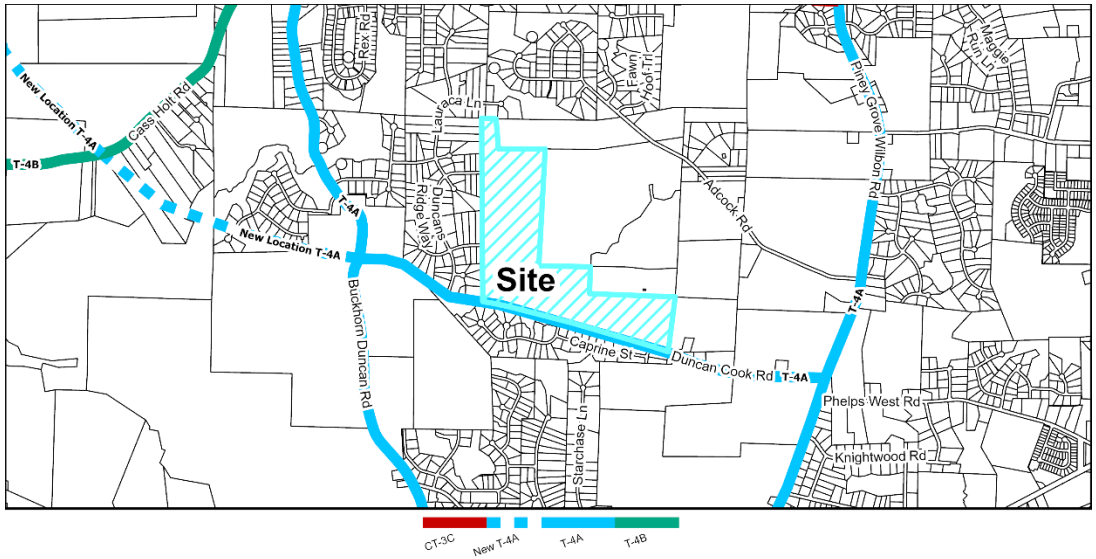
- Development being sensitive to existing natural resources – the proposed development preserves large tree stands and preserves a stream with wetlands that runs through the middle of the site.
- Providing connections to adjacent neighborhoods – the proposed development provides connections to adjacent roadway stubs and provides opportunities for additional connections to future development.
- Variable lot widths & depths – variable lot sizes are provided throughout the development with the large lots being located adjacent to the existing Wake County Subdivision to provide for better transitions.
- Includes only one residential building type of single dwelling detached.
- Several Active Open Space areas are provided throughout the development and are all connected with sidewalks as well as trails are provided around the SCM areas.

Transportation Information

Vision Holly Springs Comprehensive Plan Section 2

Comprehensive Transportation Plan

Road Widening along Project Frontage	☒ Required ☐ Not Required
New Location Roadways	☒ Required ☐ Not Required
Hotspot/Safety Study Location	☐ Yes ☒ No



Roadway Map

Comprehensive Transportation Plan Summary

Road Widening along Project Frontage:
In accordance with the Unified Development Ordinance and Comprehensive Transportation Plan, road widening is required across the property frontage of Duncan Cook Road to meet ½ of the ultimate cross-section which is a 4-lane median divided road with a 10' side path (T-4A).

New Location Roadways:
There are no new CTP public roads proposed on this parcel. The project will construct two new driveway accesses on Duncan Cook Road as well as connection to two existing roadway stubs along the western property line.

Hotspot/Safety Study Location:
There are no Hotspot/Safety studies adjacent to this parcel.

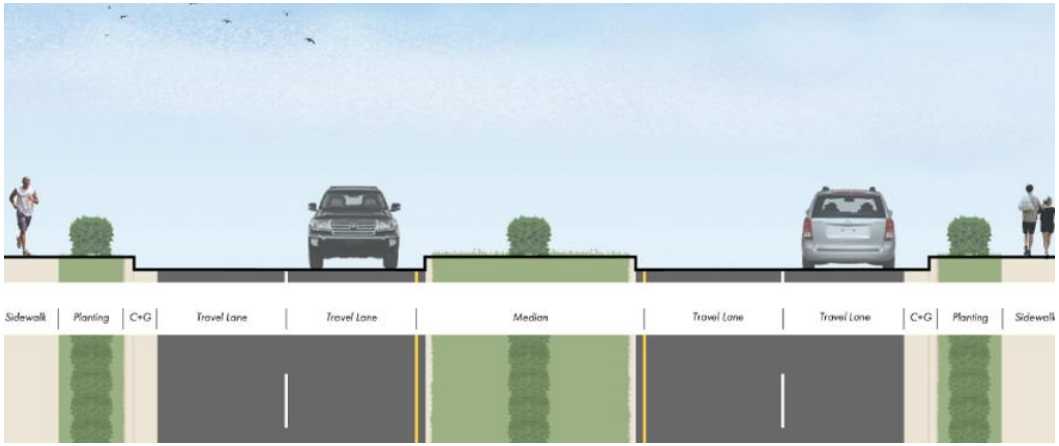
Improvement Prioritization:
N/A

Transportation Information (cont.)

Traffic Study Policy

☒Traffic Study Required

☐Tier 1
☐Tier 2
☐Tier 3
☒Traffic Verification Memo



Example of T-4A Thoroughfare Cross Section

Traffic Study Summary

A Traffic Impact Analysis (TIA) and associated Transportation Mitigation Agreement was completed and approved with the rezoning petition and a Traffic Verification Memo was completed with the Major Subdivision plan to ensure consistency with the TIA. The Major Subdivision plans show all recommended improvements within the approved TIA as follows:

Duncan Cook Road at Buckhorn Duncan Road

- Construct an exclusive southbound left turn lane on Buckhorn Duncan Road.

Piney Grove Wilbon Road at Duncan Cook Road

- Install a traffic signal.
- Construct an exclusive northbound left turn lane on Piney Grove Wilbon Road.
- Construct an exclusive eastbound left turn lane on Duncan Cook Road.

Duncan Cook Road at West Site Driveway (full movement)

- Construct an exclusive eastbound left turn lane on Duncan Cook Road.

Duncan Cook Road at East Site Driveway (full movement)

- Construct an exclusive eastbound left turn lane on Duncan Cook Road.

Buckhorn Duncan Road at Summit Creek Drive

- Construct an exclusive southbound left turn lane on Duncan Cook Road.

Transportation Information (cont.)

Transportation Staff Analysis:

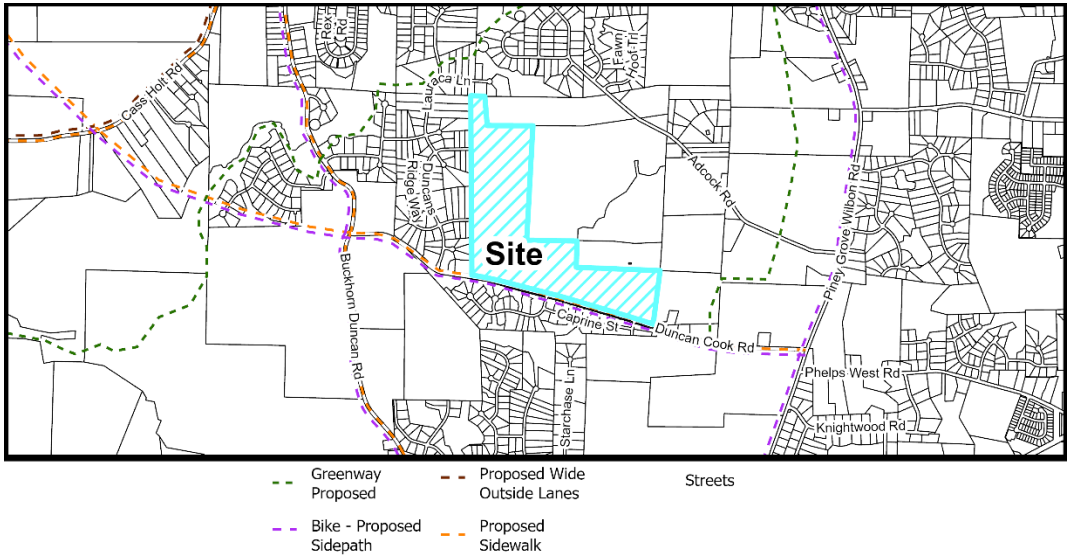
The Major Subdivision Plan is: ☒ Consistent ☐ Inconsistent with the Comprehensive Transportation Plan/Ordinances

The mitigation improvements shown on the plans are consistent with the previously approved Transportation Mitigation Agreement and Traffic Impact Analysis as well as the Comprehensive Plan and Traffic Study Policy.

Parks, Recreation & Greenways Information

Vision Holly Springs Comprehensive Plan Section 3

Park Search Area ☐ Yes ☒ No



Active Transportation Map

Required Active Transportation Improvements

☐ Greenway ☒ Sidepath

The Town's Comprehensive Transportation Plan shows a 10' Sidepath required along the Duncan Cooke Rd. frontage.

Parks, Recreation, & Greenways Summary

The proposal shows the required 10' wide Sidepath along the project's Duncan Cook Rd. frontage. The proposal is located outside of any Park Search Areas shown on the Town's Parks, Recreation, and Greenways Master Plan and is not required to dedicate land on site to meet UDO requirements, rather a fee-in-lieu of Parkland Dedication will be paid at time of property subdivision.

Parks, Recreation, & Greenways Staff Analysis:

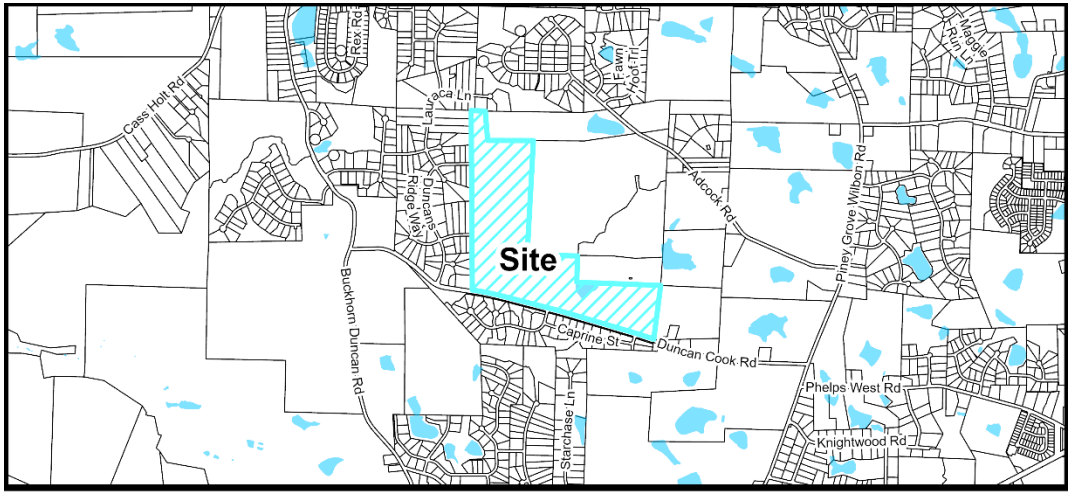
The Major Subdivision Plan is: ☒ Consistent ☐ Inconsistent with the Parks, Recreation & Greenways Master Plan/Ordinances

The proposal meets all requirements for Greenway improvements and Land Dedication and as such it is consistent with the Town's Comprehensive Plan Section 3: Parks, Recreation and Greenways Master Plan.

Community Facilities Information

Vision Holly Springs Comprehensive Plan Section 4

Population growth increases demand for public services. In order to fulfill this demand, community facilities must be appropriately planned for and constructed. These facilities may range from additional public safety stations, such as police and fire, to new schools to handle the influx of school-aged children into an area.



No Identified Facilities

Community Facilities Map

WCPSS Coordination

A Letter of Impact from Wake County Public School System (WCPSS) was received for this rezoning and is included in the attachments.

Schools at the following grade levels within the current assignment area for the proposed rezoning are anticipated to have insufficient capacity for future students; transportation to schools outside of the current assignment area should be anticipated:

☒ Elementary ☐ Middle ☐ High School ☐ N/A: All grade levels are anticipated to have sufficient capacity

The following mitigation of capacity concerns due to school construction or expansion is anticipated:

☐ School expansion or construction within the next five years is not anticipated to address concerns.

☒ School expansion or construction within the next five years may address concerns at these grade levels:

☒ Elementary ☐ Middle ☐ High School

☐Not applicable – existing school capacity is anticipated to be sufficient.

Community Facilities Staff Analysis:

The Major Subdivision Plan is: ☒ Consistent ☐ Inconsistent with the Community Facilities Plan/Ordinances

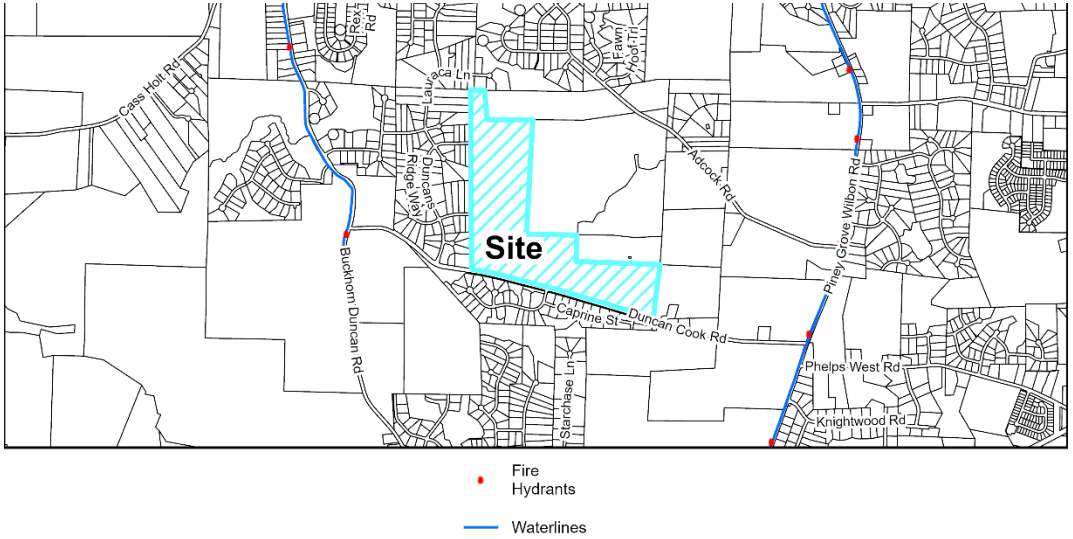
The subject property is outside of a search area for a public safety station as designated on the Community Facilities Map. As a project proposing residential units, the applicant is required to report the potential number of units to the Wake County Public School System for their facility planning.

Infrastructure & Utility Information

Vision Holly Springs Comprehensive Plan Section 5

Utility Availability

Water	☐ Yes ☒ No ☒ Study Required
Sanitary Sewer	☐ Yes ☒ No ☒ Study Required
Reclaim	☐ Yes ☒ No ☐ Study Required



Utility Map

Infrastructure & Utility Summary

Water:

The project is required to tie to existing Town water facilities located in Piney Grove Wilbon Road and extend up to and across the property frontage of Duncan Cook Road as well as throughout the site to serve the proposed development. A Fire Flow Analysis was completed with this Major Subdivision Plan, and it confirmed adequate water pressure within the Town's system with the addition of this development.

Sanitary Sewer:

Sewer service is proposed to be provided via an onsite pump station and forcemain to discharge to the existing Honeycutt Farm Pump Station. Easement acquisition and construction associated with the forcemain route are included as part of this development.

A sewer study, including a pump station capacity analysis for the existing pump station and the proposed pump station, was completed and approved with the rezoning. The study concluded improvements to the Honeycutt Farm pump station are necessary and have been committed to by the developer.

Reclaim:

This project is outside of the reclaimed service area.

Infrastructure & Utility Information (cont.)

Water Resource Management (WRMP) Policy

☒ WRMP Applicable	☐Tier 1	Allocation Elements	☒ Public Infrastructure Improvements
☐ WRMP Not Applicable	☐Tier 2		☒ Sustainable Design
	☒Tier 3		☐ Work Force Housing
			☒ Open Space/Tree Preservation

Water Resource Management Policy Summary
This development is subject to the Water Resource Management Policy and the requested allocation was approved by Town Council with the Rezoning on August 20, 2024.

Utility Allocation Summary

Priority Level: Priority Level 3
Allocation Assignment: Residential – Single Family
Allocation Requested: 60,690 gallons per day
Allocation Status: Approved

Infrastructure & Utility Staff Analysis:

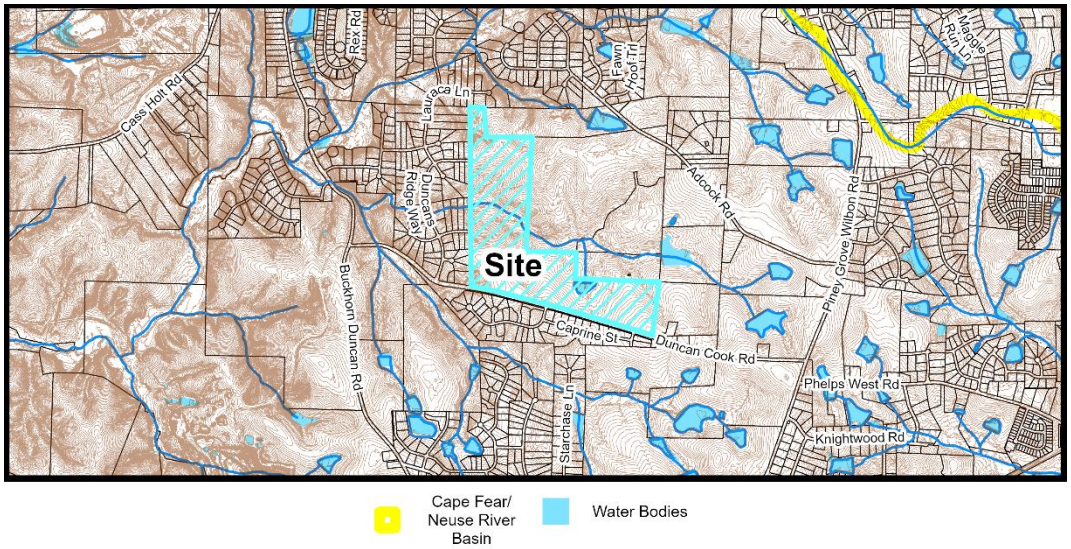
The Major Subdivision Plan is: ☒ Consistent ☐ Inconsistent with the Infrastructure & Utilities Plan/Ordinances

The proposed utility connections and extensions are consistent with the Town's Comprehensive Plan and the associated Engineering Studies.

Natural Resources & Open Space Information

Vision Holly Springs Comprehensive Plan Section 6

On-site Private Open Space	**30% (36.06 acres)**
Tree Preservation Area	20%
Active Recreation Area	5% (6.01 acres)
Urban Civic Space	N/A
Flexible Space	5%



Natural Resources Map

Natural Resources & Open Space Summary

Open Space:

The proposed Major Subdivision Plan includes the required 30% of open space with 24.2 acres of tree preservation are, 6.19 acres of active open space, and 11.95 of flexible open space. The four active open space areas include a playground, pool with a clubhouse, walking trails, and pickleball courts.

Stormwater:

The project is located within the Cape Fear River Basin and is proposing to treat new impervious surfaces onsite with Constructed Stormwater Wetlands. There are several jurisdictional features located on and adjacent to the site such as floodplains, wetlands, streams and Riparian buffers.

Natural Resources & Open Space Staff Analysis:

The Major Subdivision Plan is: ☒ Consistent ☐ Inconsistent with the Natural Resources Plan/Ordinances

The application exceeds the required Open Space regulations per the Town's Unified Development Ordinance. Any and all permits required to construct this development must be obtained prior to Civil Construction Drawing approval. This has been designed in a way to minimize impacts to the existing environmental features and is consistent with the Comprehensive Plan.

Development Standards Information

Unified Development Ordinance

The following is a summary of how the proposed development satisfies the applicable 2022 Holly Springs Unified Development Ordinance (UDO) and Tassel Ridge Conditional Zoning District (24-REZ-01).

Development Standards Summary

Development Standards (UDO Section 2 & 24-REZ-01):

Density	Standard	Proposed Standard
Number of Dwelling Units	237	237
Maximum Density	1.97	1.97

Building Height	Standard	Proposed Standard
Maximum Building Height	35'	35'

Landscaping (UDO Section 5 & 24-REZ-01):

	Standard	Proposed Standard
Perimeter Buffers		
North	15' Type B, 25' Type B, & 50' Type C	15' Type B, 25' Type B, & 50' Type C
East	15' Type B, 25' Type B, & 50' Type C	15' Type B, 25' Type B, & 50' Type C
South	20' Type B	20' Type B
West	50' Type C	50' Type C
Street Trees		
	Thoroughfare: Trees on private property within 5 ft of the right-of-way	Trident Maple, Southern Sugar Maple, Ginkgo, Nuttall Oak, Pin Oak, Chinese Elm, Japanese Zelkova, & Okame Cherry
	Local: Trees shall be located within the Public right-of-way	

Proposed Site Design (UDO Section 8 and Conditional Zoning District)



Site Design Highlights

- 237 Single family detached units on a minimum of 60 ft wide lots.
- Four active open space areas that include a variety of amenities such as a pool, pickleball, and playground.
- Traffic Calming measures such as solar powered radar speed signs.
- The pump station is located between the southern and northern sections and complies with all UDO requirements. Additionally, it will be surrounded by a minimum of 10' Type B buffer on all sides.
- The site includes the following lot mixing:
    - 79 lots of 12,000+ sf
    - 72 lots of 10,000+ sf
    - 86 lots of 7,500+ sf

Development Standards Staff Analysis

The Major Subdivision Plan is: ☒ Consistent ☐ Inconsistent with the Unified Development Ordinance

The proposed Major Subdivision Plan is carrying out the commitments stated within the Tassel Ridge Conditional District Rezoning as well as meeting the goals of the Suburban Residential Zoning District. The standards support higher quality development at an appropriate density that is also sensitive to environmental features that are located on the site by preserving large tree stands and designing around streams and wetlands. Additionally, the development is meeting the goals of the Suburban Residential district by providing low to medium density detached dwellings on different lot sizes within the same neighborhood.

Decision-Making Information

Comprehensive Plan and Unified Development Ordinance Consistency Summary Table

Vision Holly Springs Comprehensive Plan	
Land Use & Character Plan/Ordinances (Section 1)	☒ Consistent ☐ Inconsistent
Comprehensive Transportation Plan/Ordinances (Section 2)	☒ Consistent ☐ Inconsistent
Parks, Recreation & Greenways Master Plan/Ordinances (Section 3)	☒ Consistent ☐ Inconsistent
Community Facilities Plan/Ordinances (Section 4)	☒ Consistent ☐ Inconsistent
Infrastructure & Utilities Plan/Ordinances (Section 5)	☒ Consistent ☐ Inconsistent
Natural Resources Plan/Ordinances (Section 6)	☒ Consistent ☐ Inconsistent
Unified Development Ordinance	
Unified Development Ordinance	☒ Consistent ☐ Inconsistent

Major Subdivision Plan Staff Analysis
The applicant must demonstrate that the proposed Major Subdivision Plan complies with minimum requirements specified in Town's adopted land development policies and ordinances.

The Major Subdivision Plan complies with minimum requirements specified in Town adopted land development policies and ordinances.

Staff Recommendation: ☒ Approve ☐ Deny

Previous Case Related Items

Neighborhood Meeting
The applicant must hold a neighborhood meeting with all property owners within 500 feet of the project prior to submitting an application. A report of the neighborhood meeting has been submitted and is included in the agenda item attachments.

Meeting Date: 11/12/2024
Summary of Issues:

- Concerns regarding the traffic cutting through the adjacent neighborhoods.
- Concerns regarding safety with increased traffic through the adjacent neighborhoods.

Planning Board Consideration & Action

Planning Board Meeting Date: 6/24/2025

A summary of the Planning Board discussion and final recommendation can be found in the Planning Board Action Report attached with the agenda item.

Application Modifications

The following modifications have been made to the application as a result of feedback received from the Planning Board:

- None

Town Council Consideration & Action

Quasi-Judicial Public Hearing

Prior to the Quasi-Judicial Public Hearing:

- Mailed notice will be sent to all property owners within 500 feet of the project.
- Posted notice will be made with a public hearing sign on the property.

Town Council Decision: Quasi-Judicial Decision

Quasi-Judicial Decision:

Quasi-Judicial decisions are determined by the presentation of factual evidence as to whether the proposed Development Plan satisfies the applicable development standards. The Town Council must hold a Quasi-Judicial public hearing to collect facts and then make a decision based on the written and oral evidence presented. A Quasi-Judicial decision must be made on facts and evidence and cannot be based on opinions or hearsay. Anyone who presents facts and evidence during the Quasi-Judicial public hearing must be sworn in under oath and may be subject to cross-examination. These criteria shall be used to evaluate whether the proposal will cause significant adverse impacts on adjacent properties:

Criterion 1: The land uses and development intensity of the proposed project will not have significant adverse impacts on adjacent properties and are consistent with the character of the Zoning District and the land uses authorized therein.

Criterion 2: The proposed project provides for the preservation, improvement, and/or enhancement of open spaces and provides sufficient land dedicated for public park space or an equivalent fee-in-lieu.

Criterion 3: The proposed layout of streets, lots, utilities, water metering, and public improvements, and their relation to the topography of the land, reflect a design which can be economically served by the Town with public services and facilitates the use and future development of adjacent properties.

Criterion 4: The proposed building or site design enhances the public realm, maximizes natural surveillance and visibility, facilitates pedestrian access and circulation, and reinforces the Town's character.

Criterion 5: The design of the project furthers the goals and policies of the Comprehensive Plan.

Potential Major Subdivision Plan Petition Motion

Adopt Resolution #25-30 to make and accept Findings of Fact for and to approve / deny Major Subdivision Plan 25-MAS-01.

Planning Board Meeting Date: 6/24/2025

Per NCGS §160D-301(b), the Planning Board may provide a preliminary forum for review of quasi-judicial decisions, provided that no part of the forum or recommendation may be used as a basis for the deciding board.

Planning Board Decision Type: Advisory Decision

Advisory Decision
The Planning Board must review the application and make a recommendation to the Town Council.

The Planning Board should consider whether or not the proposed Major Subdivision Plan is consistent with the technical standards of Town of Holly Springs Unified Development Ordinance.

The Planning Board discussed the following issues and concerns:
- The changes that have been made to the application and design of the subdivision since the approved Rezoning.
- The cost of the homes once they are completed.

Major Subdivision Plan Motion
The Planning Board recommends the Town Council approve Major Subdivision Plan 25-MAS-01 for Hazel Ridge as submitted by Paul Berger of Duncan Cook Holdings, LLC, dated Revised 6/11/2025 with staff recommended conditions.

The Planning Board voted in favor of the recommendation (9 - 0)

Resolution No. 25-30
Date Submitted: July 15, 2025
Date Adopted: July 15, 2025

RESOLUTION OF THE TOWN OF HOLLY SPRINGS TOWN COUNCIL MAKING FINDINGS OF FACT FOR AND TO APPROVE WITH CONDITIONS MAJOR SUBDIVISION PLAN (25-MAS-01); FOR HAZEL RIDGE

WHEREAS, the Town of Holly Springs Town Council adopted *Town of Holly Springs Unified Development Ordinance* ("UDO") in March 2022; and

WHEREAS, pursuant to NCGS §§160D 403 and Chapter 11 of the Town of Holly Springs UDO, the Town Council of Holly Springs ("Town Council") has the authority to grant approval of Development Plans if competent and substantial evidence is presented by the Petitioner which allows the Town Council to find as a fact that conditions either currently exist or may exist after implementation of conditions by the Town Council. Such findings are each of the following:

Major Subdivision Plan Findings of Fact:
The Town Council shall consider the following review criteria in determining whether to approve, approve with conditions, or deny a Development Plan.

Criterion 1: The land uses and development intensity of the proposed project will not have significant adverse impacts on adjacent properties and are consistent with the character of the Zoning District and the land uses authorized therein.

Criterion 2: The proposed project provides for the preservation, improvement, and/or enhancement of open spaces and provides sufficient land dedicated for public park space or an equivalent fee-in-lieu.

Criterion 3: The proposed layout of streets, lots, utilities, water metering, and public improvements, and their relation to the topography of the land, reflect a design which can be economically served by the Town with public services and facilitates the use and future development of adjacent properties.

Criterion 4: The proposed building or site design enhances the public realm, maximizes natural surveillance and visibility, facilitates pedestrian access and circulation, and reinforces the Town's character.

Criterion 5: The design of the project furthers the goals and policies of the Comprehensive Plan.

WHEREAS, the Town Council has heard sworn testimony and has accepted and entered the Applicant's written findings of fact into the minutes (Exhibit A), have received site plans, and have considered conditions of approval (Exhibit B) for the following requested Major Subdivision Plan:

Major Subdivision Plan (25-MAS-01): A 237-lot subdivision for detached single family homes at 5900 Duncan Cook Road

WHEREAS, the Town Council has received competent and substantial evidence and has therefore found the written findings of fact. The Town Council finds that the Applicant's findings of fact to be consistent with the public testimony received on the requested Development Plan, and therefore the Town Council is able to reach conclusions independently (Exhibit C) or be reasonably able to meet the conclusions on the Findings of Fact upon implementation of additional conditions listed on Exhibit D to this Resolution.

THEREFORE, BE IT RESOLVED by the Town Council to make and accept the Findings of Fact and to approve with conditions (Exhibit B) Major Subdivision Plan (25-MAS-01) for Hazel Ridge; as submitted by Paul Berger of Duncan Cook Holdings, LLC.

Adopted by the Holly Springs Town Council on this, the 15th day of July, 2025.

Town of Holly Springs by **ATTEST**:

_____ _____

Sean Mayefskie, Mayor Linda McKinney, Town Clerk

RESOLUTION EXHIBIT A

MAJOR SUBDIVISION PLAN (25-MAS-01) FINDINGS OF FACT SUBMITTED BY APPLICANT

Criterion 1: Hazel Ridge provides a variety of lot sizes for single family homes ranging from 7,500 square feet up to almost 20,000 square feet. These lot sizes are a step down in size from the large Wake County lots immediately to the west in Duncan's Ridge, and larger than the house pads for "Big Daddy Trailer Park" to the east. The site plan shows a requirement for those lots closest to Duncan's Ridge neighborhood and those closest to the established single family residential on the Cook farm to be the largest lots with minimum sizes of 12,000 square feet. Hazel Ridge ties into existing communities as it transitions in intensity between the lowest intensity on the edges of the community with larger lots to a greater intensity of housing in the interior of the community. The neighborhood is connected to existing neighborhoods through not only streets, but also tree lines, and single-family housing on larger lots tying into the adjacent large lot neighborhood.

Criterion 2: The primary built upon area of Hazel Ridge is focused in the existing farm fields to the south of the stream that bisects the south East to West while having a single stream crossing to access the knoll to the North of the stream that will tie into the existing street stub to the west. Moreover, Hazel Ridge is committed to preserving the natural vegetation along the properties edge where it exists and enhancing that natural vegetation with additional plantings to a width that is ten (10) times the width of the buffer required by the UDO. In the event that the existing constructed farm pond can be reconstructed as an amenity following environmental study of the feature after 2 growing seasons, it will be incorporated into the amenities. The recreational/active open space design is the shining jewel of the subdivision. It is the element that takes Hazel Ridge from a subdivision to a community. With open space and not houses being the focal point of the entries, stream crossing entrance into the northern portion of the neighborhood, and at the end of longer east-west roadways, the open spaces as designed and programmed will be the focal point of Hazel Ridge and what one remembers of the community when gone. These open spaces feature a blend of structural play and naturalistic respite. The open space must include an amenity center, dog park, edible garden, nature trails, playground, and pollinator garden. In addition, there is flexibility around the additional amenities and where they will go, which will include a mix of fitness facility, pool, hard surface court, putting green, yoga lawn, fish pond, shad structures and benches. The intent of these open spaces is to have integrated designs where edible landscaping, moments of rest and respite within the landscape, and pollinator plants serve to frame the more active programmatic elements of open space.

Criterion 3: A public pump station is being installed with Hazel Ridge that is located at the lowest point of the property capable of serving a large drainage basin within the Town of Holly Spring's planning and utility jurisdiction. The pump station design is being coordinated with adjacent developments within the town to ensure the most efficient pump station and force main routing is achieved. Along with the pump station design, a twelve-inch water main is being extended down Duncan Cook Road from Piney Grove Wilbon Road which will increase the towns infrastructure and service capabilities. Additionally, five street stubs have been created on the eastern and northern property lines to create opportunities for future development to connect with Hazel Ridge.

Criterion 4: The utilization of a 20’ wide landscape strip along the frontage of Duncan Cook Rd and the pulling of homes away from the external streets helps to maintain the existing corridor’s viewsheds and character. Per Vision Holly Springs description of Holly Springs’s town character, residential neighborhoods West of 55 have historically been designed as semi-private enclaves with limited access points. Hazel Ridge incorporates some of this historical language, while incorporating the town’s goals for greater connectivity and pedestrian circulation. Hazel Ridge utilizes internal road networks for primary access to single family houses as historically seen throughout Holly Springs, while connecting the internal road network and open spaces to external thoroughfares. While NCDOT does not support short distances between neighborhood collectors/entry roads, 2 additional pedestrian connections have been added to allow for greater pedestrian circulation while the vehicular circulation more closely patterns existing enclave style neighborhoods.

Criterion 5: The proposed rezoning of Hazel Ridge is in line with the Vision Holly Springs Mission statement. Through a design approach focused around centralized community open spaces Hazel Ridge builds on the town’s vision of “the creation and enhancement of residential and non-residential development, which ultimately fosters a greater sense of community”. The design of Hazel Ridge is that of a neighborhood, not just a subdivision, but a built community. The neighborhood’s quasi-public open spaces are truly central to the neighborhood with locations that emphasize the importance of these shared spaces in building community. This emphasis is in line with the town’s own emphasis on the public realm, and while these areas are quasi-public, they do help to enhance the character of the neighborhood and surroundings. As noted in the Vision Holly Springs plan, the Duncan Cook Rd Corridor is a place to enhance, in which the existing and proposed neighborhoods should be celebrated as the building blocks of a strong community with infill development being “sensitive to the uses and densities along the perimeter of adjacent neighborhoods.” Hazel Ridge seeks to balance sensitivity to neighboring uses with a vision for a community in which neighbors know each other and feel a sense of ownership over not only their property but the public realm as well. This is done by including a variety of lots sizes that respond to context with lower intensity adjacent to existing large lot single family Wake County subdivisions and then create a more intense neighborhood core of smaller lots

RESOLUTION EXHIBIT B

MAJOR SUBDIVISION PLAN (25-MAS-01) CONDITIONS OF APPROVAL

1. All previous conditions of approval for Tassel Ridge Rezoning apply to this plan except for any condition that describes a fee or a fee-in-lieu to be paid shall now comply with the current amounts due pursuant to the Town's current annual budget or any unexpired development agreement.
2. All remaining comments will be addressed during the Construction Drawing Review.
3. Invoiced fees from Special Study third party review must be paid prior to first Construction Drawing Submittal, and no later than prior to Construction Drawing Approval.
4. ALL recommendations from the Traffic Study and as a result of Town and NCDOT review associated with this project, must be incorporated into the plans no later than with your next submittal to avoid delays in your development review. This must be finalized prior to this project being scheduled for Planning Board and Town Council.
5. The Build-out analysis in the Traffic Impact Analysis (TIA) associated with this development included a mix of background improvements and recommended development mitigations. If the assumed background projects do not occur, it should be the developer's sole responsibility to construct all of the background improvements included in the Traffic Study unless additional analysis can be provided to demonstrate the background mitigations are not warranted by the subject development.
6. A new traffic signal is warranted at the intersection of Duncan Cook Rd/Piney Grove Wilbon Rd. This development is responsible for traffic signal design and installation, including mast arm pole construction and fiber connection/extension, in accordance with Town standards.
7. Fiber utility connection/extension is required with this project associated with the traffic signal / pump station installation and construction. Please continue to coordinate with Staff during construction drawings.
8. If build out exceeds the anticipated time frame in the approved Traffic Study, an update of the Traffic Study will be required prior to or with the Development Plan for the associated phase. Recommended improvements will be required to be completed prior to plat approval of that phase.
9. Thoroughfares, collectors, and boulevards will require a calculated pavement design with 1st construction drawing submittal. This may result in a pavement cross section bigger than the specified minimum.
10. Offsite right-of-way dedication will be required in the form of a recorded plat prior to receiving construction drawing approval.
11. A Deed of Easement is required to be executed for public vehicular & public pedestrian access between the property owners at the time of plat.
12. In accordance with Engineering Design & Construction standards (ED&CS) Section 7.07, the pump station site lot shall be platted and deeded to the Town of Holly Springs through fee simple conveyance prior to pump station final acceptance. A deed of easement is not sufficient and is not allowed. Show lot lines on the associated subdivision plan and preliminary pump station site plan.
13. The following note must be clearly reflected on the plats and construction drawings for lot 104: "Pump station site owned by the Town of Holly Springs may be expanded in the future and there will be routine operation inspections and maintenance on the premises once the pump station is in operation."
14. All Special Studies must be finalized prior to being scheduled for Planning Board.

15. Preliminary Pump Station Site Plan is required to be on the same Town Council Meeting agenda as this plan.

16. Provide documentation in the form of a recorded plat of any required offsite sewer easements prior to first construction drawing submittal.

17. A verification letter that confirms no changes occurred to the gravity sewer network; including final sizing for lines that are stubbed upstream, will be required with first construction drawing submittal. [If changes have been made to the gravity sewer network between Town Council Approval and first Construction Drawing Submittal, a Final Gravity Sewer Line Sizing Report will be required with first construction drawing submittal for all lines that are stubbed to adjacent upstream properties. Include calculations to document line sizes, adequacy of proposed sanitary sewer lines to serve all future upstream development.

18. Offsite Sewer Infrastructure Incomplete: If any offsite sewer facilities are needed to serve this project and are not completed and accepted by the Town at the time of approval of this preliminary subdivision plan, then these facilities must be completed prior to construction drawing approval unless otherwise approved by the Executive Director of Utilities and Infrastructure. The Town is not responsible for completion of off-site sewer facilities and will not guarantee completion of such facilities by any other party. This will become a condition of plan approval.

19. If any offsite water facilities are needed to serve this project and are not completed and accepted by the Town at the time of the approval of this plan, then these facilities must be completed prior to construction drawing approval unless otherwise approved by the Executive Director of Utilities and Infrastructure. The Town is not responsible for completion of off-site water facilities and will not guarantee completion of such facilities by any other party. No plats or building permits will be issued by the Town until all necessary on and off-site water infrastructure is completed. This will become a condition of approval.

20. Approval of Stormwater Management Plan is required prior to issuance of a land disturbance permit or construction drawing approval.

21. Payment of the Stormwater Fee-in-Lieu will be required prior to construction drawing approval.

22. All items listed on the Stormwater Submittal Checklist, Form #16003, must be included with the first construction drawing submittal.

23. Please note that this project will be required to meet Town's NPDES Phase II Post Construction Stormwater ordinance. A general stormwater requirement may affect this project. Refer to NCDWQ's website for more information.

24. Please note that the Town Staff has been delegated approval authority by NCDWQ for stormwater management plans. Documentation of approval to NCDEQ is the responsibility of the owner.

25. Stormwater sureties are required on this project. A performance surety in the form of a bond, letter of credit or cash is required in the amount of 125% estimated construction cost of the stormwater SCM prior to plat recordation and a maintenance surety in the form of a cash escrow account in the amount of 35% the actual construction cost of the SCM is required at the end of the performance monitoring period for the project.

26. All environmental permits must be obtained prior to construction drawing approval and/or issuance of a land disturbance permit for the entire project. This will become a condition of plan approval.

RESOLUTION EXHIBIT C

TOWN COUNCIL'S FINDINGS OF FACT

The Town Council accepts the findings of fact as presented in Exhibit A unless specified below:

The Town Council made the following additional findings:

X No additional findings

RESOLUTION EXHIBIT D

ADDITIONAL CONDITIONS OF APPROVAL

The Town Council added the following conditions in order to adequately make and accept the Findings of Fact:

X No additional conditions of approval

WAKE COUNTY PUBLIC SCHOOL SYSTEM

Student Assignment
5625 Dillard Drive
Cary, NC, 27518
Email: studentassignment@wcpss.net

tel: (919) 431-7333
fax: (919) 694-7753

June 12, 2024

Chis Hills, AICP
Director, Development Services
Town of Holly Springs
chris.hills@hollyspringsnc.gov

Dear Chris,

The Wake County Public School System (WCPSS) Office of School Assignment received information about a proposed rezoning/development within the Town of Holly Springs planning area. We are providing this letter to share information about WCPSS's capacity related to the proposal. The following information about the proposed rezoning/development was provided through the Wake County Residential Development Notification database:

- Date of application: February 2, 2024
- Name of development: Tassel Ridge
- Address of rezoning: 5900 Duncan Cook Rd. (PIN 0646398124)
- Total number of proposed residential units: 237
- Type(s) of residential units proposed: 237 Detached Dwellings (Single-family)

Based on the information received at the time of application, the Office of School Assignment is providing the following assessment of possible impacts to the Wake County Public School System:

☐ Schools at all grade levels within the current assignment area for the proposed rezoning/development are anticipated to have sufficient capacity for future students.

☒ Schools at the following grade levels within the current assignment area for the proposed rezoning/development are anticipated to have insufficient capacity for future students; transportation to schools outside of the current assignment area should be anticipated:

☒ Elementary ☐ Middle ☐ High

The following mitigation of capacity concerns due to school construction or expansion is anticipated:

☐ Not applicable – existing school capacity is anticipated to be sufficient.

☐ School expansion or construction within the next five years is not anticipated to address concerns.

☒ School expansion or construction within the next five years may address concerns at these grade levels:

☒ Elementary ☐ Middle ☐ High

Thank you for sharing this information with the Town of Holly Springs Planning Board and Town Council as they consider the proposed rezoning/development.

Sincerely,

Susan W. Pullium, MSA
Senior Director

DEVELOPMENT PLAN PETITION

Major Subdivision, Development Plan

DPM Appendix #A.04 Supplement 20 October 2023

PETITION CONTACT INFORMATION *(Attach additional sheets if needed)* Applicant and Financially Responsible Party will need to register for an account on the Portal.	
Project Applicant Check One: ☑ Owner ☐ Owner's Agent ☐ Design Professional ☐ Developer ☐ Other	
Name: Paul Berger	Company: Duncan Cook Holdings, LLC
Mailing Address: 2310 S Miami Boulevard Suite 238	
City, State, Zip: Durham, NC 27703	
Telephone: 801-227-9794	E-Mail: paul@ganderdev.com
Design Professional	
Name: Andrew Petty	Company: Curry Engineering Group, PLLC
Mailing Address: 205 S. Fuquay Avenue	
City, State, Zip: Fuquay-Varina, NC 27526	
Telephone: 919-552-0849	E-Mail: andy@curryeng.com
Developer	
Name: Paul Berger	Company: Gander Development
Mailing Address: 2310 S Miami Boulevard Suite 238	
City, State, Zip: Durham, NC 27703	
Telephone: 801-227-9794	E-Mail: paul@ganderdev.com
Architect	
Name:	Company:
Mailing Address:	
City, State, Zip:	
Telephone:	E-Mail:
Landscape Architect	
Name: Adam Southwell	Company: Southwell Design, PLLC
Mailing Address: PO Box 37178	
City, State, Zip: Raleigh, NC 27627-7178	
Telephone: 919-272-6729	E-Mail: adam@southwelldesign.com
Financially Responsible Party (REQUIRED)	
Name: Peyton Anderson	Company: Duncan Cook Holdings, LLC
Mailing Address: 2310 S Miami Boulevard Suite 238	
City, State, Zip: Durham, NC 27703	
Telephone: 919-908-6603	E-Mail: panderson27609@gmail.com
Property Owner (REQUIRED)	
Name: Peyton Anderson	Company: Duncan Cook Holdings, LLC
Mailing Address: 2310 S Miami Boulevard Suite 238	
City, State, Zip: Durham, NC 27703	
Telephone: 919-908-6603	E-Mail: panderson27609@gmail.com

DEVELOPMENT PLAN PETITION

Major Subdivision, Development Plan

DPM Appendix #A.04 Supplement 20 October 2023

PROJECT INFORMATION	
Project Name	Hazel Ridge
PUD/Master Plan or Subdivision	Subdivision
Shopping Center or Lot #	
Project Location *Use street address. If none, use closest intersection*	5900 Duncan Cook Road
	☐ Within Corporate Limits ☑ Within Holly Springs ETJ ☐ Pending Annexation
PIN(s)	0646398124
Real Estate ID	0062443
Project Acreage	122.29 Partial Parcel? ☐ Yes ☑ No
Current Zoning	SR-CD Suburban Residential Conditional Zoning District
Proposed Use	Residential Subdivision
Open Space	☐ Dedication ☑ Fee-in-lieu ☐ Combination ☐ N/A
Waivers Requested	☑ No ☐ Yes: Specify UDO Section Number(s):
Special Study Scoping Meeting Dates	Special Studies completed with rezoning
Sketch Plan Review (pre-submittal) Meeting Date:	11/7/2024
Water Resource Management Program (WRMP)	WRMP Priority Level ☐ 1 ☐ 2 ☑ 3 Allocation Request Required 60,690 gpd

CERTIFICATE OF COMPLETION
I certify that all information presented in this petition is accurate to the best of my knowledge and belief. Signature of Applicant:  Date: 01/3/2025

DEVELOPMENT PLAN PETITION

Major Subdivision, Development Plan

DPM Appendix #A.04 Supplement 20 October 2023

DEVELOPMENT PLAN & MAJOR SUBDIVISION FINDINGS OF FACT

A petition for Development Plan or Major Subdivision may only be approved upon the presentation of the following:

1. The land uses and development intensity of the proposed project will not have significant adverse impacts on adjacent properties and are consistent with the character of the Zoning District and the land uses authorized therein:

Hazel Ridge provides a variety of lot sizes for single family homes ranging from 7,500 square feet up to almost 20,000 squaree feet. These lot sizes are a step down in size from the large Wake County lots immediately to the west in Duncan's Ridge, and larger than the house pads for "Big Daddy Trailer Park" to the east. The site plan shows a requirement for those lots closest to Duncan's Ridge neighborhood and those closest to the established single family residential on the Cook farm to be the largest lots with minimum sizes of 12,000 square feet. Hazel Ridge ties into existing communities as it transitions in intensity between the lowest intensity on the edges of the community with larger lots to a greater intensity of housing in the interior of the community. The neighborhood is connected to existing neighborhoods through not only streets, but also tree lines, and single family housing on larger lots tying into the adjacent large lot neighborhood.

2. The proposed project provides for the preservation, improvement, and/or enhancement of open spaces and provides sufficient land dedicated for public park space or an equivalent fee-in-lieu:

The primary built upon area of Hazel Ridge is focused in the existing farm fields to the south of the stream that bisects the south East to West while having a single stream crossing to access the knoll to the North of the stream that will tie into the existing street stub to the west. Moreover, Hazel Ridge is committed to preserving the natural vegetation along the properties edge where it exists and enhancing that natural vegetation with additional plantings to a width that is ten (10) times the width of the buffer required by the UDO. In the event that the existing constructed farm pond can be reconstructed as an amenity following environmental study of the feature after 2 growing seasons, it will be incorporated into the amenities.The recreational/active open space design is the shining jewel of the subdivision. It is the element that takes Hazel Ridge from a subdivision to a community. With open space and not houses being the focal point of the entries, stream crossing entrance into the northern portion of the neighborhood, and at the end of longer east-west roadways, the open spaces as designed and programmed will be the focal point of Hazel Ridge and what one remembers of the community when gone. These open spaces feature a blend of structural play and naturalistic respite. The open space must include an amenity center, dog park, edible garden, nature trails, playground, and pollinator garden. In addition there is flexibility around the additional amenities and where they will go, which will include a mix of fitness facility, pool, hard surface court, putting green, yoga lawn, fish pond, shad structures and benches. The intent of these open spaces is to have integrated designs where edible landscaping, moments of rest and respite within the landscape, and pollinator plants serve to frame the more active programmatic elements of open space.

3. The proposed layout of streets, lots, utilities, water metering, and public improvements, and their relation to the topography of the land, reflect a design which can be economically served by the Town with public services and facilitates the use and future development of adjacent properties:

A public pump station is being installed with Hazel Ridge that is located at the lowest point of the property capable of serving a large drainage basin within the Town of Holly Spring's planning and utility jurisdiction. The pump station design is being coordinated with adjacent developments within the town to ensure the most efficient pump station and force main routing is achieved. Along with the pump station design, a twelve inch water main is being extended down Duncan Cook Road from Piney Grove Wilbon Road which will increase the towns infrastructure and service capabilities. Additionally five street stubs have been created on the eastern and northern property lines to create opportunities for future development to connect with Hazel Ridge.

4. The proposed building or site design enhances the public realm, maximize natural surveillance and visibility, facilitates pedestrian access and circulation, and reinforces the Town's character:

The utilization of a 20' wide landscape strip along the frontage of Duncan Cook Rd and the pulling of homes away from the external streets helps to maintain the existing corridor's viewsheds and character. Per Vision Holly Springs description of Holly Springs's town character, residential neighborhoods West of 55 have historically been designed as semi-private enclaves with limited access points. Hazel Ridge incorporates some of this historical language, while incorporating the town's goals for greater connectivity and pedestrian circulation. Hazel Ridge utilizes internal road networks for primary access to single family houses as historically seen throughout Holly Springs, while connecting the internal road network and open spaces to external thoroughfares. While NCDOT does not support short distances between neighborhood collectors/entry roads, 2 additional pedestrian connections have been added to allow for greater pedestrian circulation while the vehicular circulation more closely patterns existing enclave style neighborhoods.

5. The design of the project furthers the goals and policies of the Comprehensive Plan:

Refer to the Plan Consistency Statement below.

Hazel Ridge Plan Consistency Statement

Executive Summary:

The proposed rezoning of Hazel Ridge is in line with the Vision Holly Springs Mission statement. Through a design approach focused around centralized community open spaces Hazel Ridge builds on the town's vision of "the creation and enhancement of residential and non-residential development, which ultimately fosters a greater sense of community". The design of Hazel Ridge is that of a neighborhood, not just a subdivision, but a built community. The neighborhood's quasi-public open spaces are truly central to the neighborhood with locations that emphasize the importance of these shared spaces in building community. This emphasis is in line with the town's own emphasis on the public realm, and while these areas are quasi-public, they do help to enhance the character of the neighborhood and surroundings. As noted in the Vision Holly Springs plan, the Duncan Cook Rd Corridor is a place to enhance, in which the existing and proposed neighborhoods should be celebrated as the building blocks of a strong community with infill development being "sensitive to the uses and densities along the perimeter of adjacent neighborhoods." Hazel Ridge seeks to balance sensitivity to neighboring uses with a vision for a community in which neighbors know each other and feel a sense of ownership over not only their property but the public realm as well. This is done by including a variety of lots sizes that respond to context with lower intensity adjacent to existing large lot single family Wake County subdivisions and then create a more intense neighborhood core of smaller lots.

Section 1: Future Land Use & Community Character:

The Future Land Use Plan designation for the Hazel Ridge property is residential neighborhood. The zoning for Hazel Ridge of Suburban Residential with a conditional district meets not only the intensity of development intended by the land use plan but also the pattern and character intended for the community. The proposed zoning district utilized streets and block patterns that weave together the smaller neighborhood blocks described in the comprehensive plan with the existing large blocks found in adjacent Wake County Development, and where external constraints such as intersection spacing and environmental features require blocks to be longer, breaks are created along the block length for pedestrian passages and trails. Moreover the open space pattern proposed by Hazel Ridge is in keeping with the Comprehensive plan's description of the appropriate distribution of open space, trees and natural resources. With a plan that uses natural areas and tree preservation along the perimeter and along riparian features, while activated open spaces such as the amenity center, dog park, and formal gardens are placed within the more structured and accessible portions of the neighborhood. As the comprehensive plan states "in Residential Neighborhoods…there is typically a balance of preserved natural features such as large tree stands, streams, and wetlands; with more formal landscape features including street trees, parks, and gardens."The lot sizes and building placement withing Hazel Ridge reflect the comprehensive plan's description of the wider lots being on the exterior of the community and transitioning to smaller lots. Moreover, the added commitments within Hazel Ridge of pulling homes/porches towards the street while pushing garages away from the street creates a better quality street, and thereby a higher quality public realm and stronger community.

Section 2: Transportation / Comprehensive Transportation Plan

A traffic study is being completed with the rezoning and all required mitigation improvements will be designed and constructed by the developer where physically feasible. The three (3) CTP goals most applicable to the Hazel Ridge rezoning and associated transportation improvements include integrated planning, efficient, and safe. In accordance with the comprehensive transportation plan and transportation planning principles, Hazel Ridge has numerous offsite roadway improvements and frontage improvements associated with the project. These improvements include turn lanes at critical intersections nearby, construction of Duncan Cook Road to include half of the proposed cross-section for the Urban Thoroughfare including a 10' sidepath path along the frontage and a median divided 4-lane road. Moreover the Hazel Ridge community development will fund a traffic light at the intersection of Duncan Cook Road and Piney Grove Wilbon Rd. This intersection is a problem for residents today and the delays and subsequent safety concerns around turning movements will only intensify with surrounding development pressures. Hazel Ridge's improvements to this intersection will be vital to the safe and orderly flow of traffic moving forward. In the sites internal road network includes 4 street stubs that connect to adjacent properties that could be developed in the future. These street stubs are in compliance with UDO standards for connectivity and ensure that the towns goals for greater connectivity can be born out as communities are built incrementally.

Section 3: Parks, Recreation & Open Space / Beyond the Green: A Parks & Recreation Master Plan

The Hazel Ridge property is outside of the town's park search areas and planned park improvements. However the greenways master plan does call for a sidepath along Duncan Cook Rd. This side path installation will be part of the Hazel Ridge community and support the overall comprehensive and open space goals of providing pedestrian connectivity throughout the community to a variety of uses and places. The active open space programming within Hazel Ridge is in line with the master plan's health recommendations around physical fitness, mental health, social cohesion, and healthy eating. The open space meets these recommendations through incorporation of the strategies for action items including amenities that encourage physical activity, access to healthy food, and program offerings. As required by the Development & Design Manual, the open active open space of Hazel Ridge is required to include an amenity center, dog park, edible garden, nature trails, playground, and pollinator garden. These required elements ensure that there are programmed spaces for physical activity and access to healthy food.

Section 4: Community Facilities

Hazel Ridge is not within close proximity to any community facility needs noted within the Town's Community Facilities Plan. With the development intensity proposed there will not be a significant increase in facilities demand associated with the neighborhood to modify the planned facilities needed by the town.

Section 5: Infrastructure and Utilities

Hazel Ridge is subject to Holly Spring's Water Resource Management Policy and is a priority level 3 with commitments for public infrastructure improvements, sustainable design, and tree preservation. Hazel Ridge will be served by an extension of a water line from Piney Grove Wilbon Rd to the site. There will be a town water transmission line installed by the town along the Duncan Cook Frontage, however Hazel Ridge will not be permitted to connect to that water line and will therefore need to run a separate water line from the water stub currently planned by Elliot at the intersection of Piney Grove and Duncan Cook Rd or to a newly created stub built by Hazel Ridge in the event the water stub is not constructed by Elliot Farm. A sewer study was completed in conjunction with the rezoning. All required mitigation improvements will be designed and constructed by the developer as set forth in zoning commitments. Sewer for Hazel Ridge will be served by a pump station that will connect with the Elliot Farm Pump Station and then run a force main to the Honeycutt Farms pump station. This pump station at Honeycutt Farms will require upgrades as a result. In the event the Elliot Farm Pump Station is not constructed, the Hazel Ridge Pump Station will pump directly to the Honeycutt Farms pump station via a forcemain in Piney Grove Wilbon Rd. The pump station at Hazel Ridge will be sized to handle not only the homes of Hazel Ridge but also the understood build out of the upstream land that can drain to Hazel Ridge.

Section 6: Natural Resources

The project layout minimizes impacts to the stream and associated wetlands to the greatest extent possible while balancing that natural resource protection with connectivity needs and protection of neighboring communities. The 1 stream crossing on site avoids the surveyed wetlands and crosses the stream at the straightest portion of the stream found on property to limit impacts as much as possible. Moreover, specimen trees will be retained well in excess of the 10% required per the utility allocation policy. An endangered species report and stream and wetland delineation have been done to verify that no impacts to critical habitat are occurring. In addition, the open space plan calls for pollinator gardens to support monarch butterflies, which are known to be an endangered migratory species that inhabit Holly Springs. There was an existing farm pond on the site that was built by the earliest aerial found by the development team from the 1960s. This pond was not a naturally occurring water feature as it even includes a drain pipe and based on topography was clearly dug out. Prior to submittal of the rezoning, Gander Development had this farm pond drained. Following this draining of the pond, it is required that 1-2 growing seasons pass before the site can be re-analyzed for what types of environmental features establish in this area – it may become a wetland or a stream channel or another feature. The drainage of this pond was determined to be the best course of action based on the need to ensure that if a pond is onsite that the dam meets all regulatory standards and is constructed to be safe for the increased interaction between residents and this pond. The open space options for this portion of the site have been left flexible to respond to the natural features that may become established here. In the event a pond can be re-established here, a fish pond is an option for the open space here.

DEVELOPMENT PLAN PETITION

Major Subdivision, Development Plan

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WAKE COUNTY RESIDENTIAL DEVELOPMENT NOTIFICATION

(only for projects proposing residential dwelling units)

Complete the Wake County Residential Development Notification Form online and provide the following information:

DEVELOPER REPRESENTATIVE INFORMATION	
Contact Name:	Paul Berger
Company Name:	Gander Development
Phone Number:	801-227-9794
E-Mail:	paul@ganderdev.com
PROJECT INFORMATION	
Project Name:	Hazel Ridge
Date of Subdivision Application	January 3, 2025
City, Town or Jurisdiction	Holly Springs
Address of Subdivision or nearest cross street	5900 Duncan Cook Road
REID(s)	0062443
PIN(s)	0646398124
Subdivision Completion Date	2027
Projected First Occupancy Date	2028
Total Number of Units	237
Senior Living Unit Total	
Studio Unit Total	
1 Bedroom Unit Total	
2 Bedroom Unit Total	
3 Bedroom Unit Total	
4 Bedroom Unit Total	237

ANTICIPATED COMPLETION OF UNITS & DATES	
Year: 2028	Number of Units: 36
Year: 2029	Number of Units: 75
Year: 2030	Number of Units: 63
Year: 2031	Number of Units: 63

Preparer's Signature: Date: 01/03/2025

DEVELOPMENT PLAN PETITION

Major Subdivision, Development Plan

DPM Appendix #A.04 Supplement 20 October 2023

NEIGHBORHOOD MEETING REPORT

A Neighborhood Meeting is required to occur prior to your submittal. The requirements for this meeting can be found in section 11.5 of the Unified Development Ordinance (UDO). The Neighborhood Meeting shall take place no more than 12 weeks prior to the application date and can be held virtually. A copy of the Neighborhood Meeting Notice must be sent to DSIntake@hollyspringsnc.gov prior to mailing for review and approval along with a copy of the mailing list.

NEIGHBORHOOD MEETING INFORMATION	
Meeting Date:	11/12/2024
Meeting Time:	4-5 pm
Meeting Location:	Virtual - https://us06web.zoom.us/j/89058518378 Meeting ID: 890 5851 8378

CONDUCT OF MEETINGS *(Attach additional sheets if needed)*

At the Neighborhood Meeting, the Petitioner shall explain the proposal and petition, answer any questions, respond to concerns neighbors have about the petition and proposed resolutions to these concerns. Town Staff will not attend the Neighborhood Meeting.

Summary of Issues:

See attached for summary of Neighborhood Meeting

Changes made to the Petition as a result of the meeting:

See attached for summary.

Preparer's Signature: Date: 01/03/2025

2310 S Miami Blvd, Suite 235
Durham, NC 27703

Paul Burger
Paul@ganderdev.com
801.227.9794

To: Neighbors of Hazel Ridge (formerly Tassel Ridge)

From: Paul Burger, Gander Development

Date: October 24, 2024

Re: Meeting to discuss proposed Development of 5900 Duncan Cook Rd (PIN #0646398124)

PLEASE NOTE: THIS LETTER IS TO RESCHEDULE A MEETING ORINGALLY SET FOR OCTOBER 28TH –

NEW DATE: NOVEMEBER 12th.

Gander Development intends to submit a Major Subdivision Plan to the Town of Holly Springs for a property located at 5900 Duncan Cook Rd. The Property is highlighted in red on the context map included with this mailing. The other parcels highlighted in yellow on the context map indicate the property owners we have invited to this meeting.

The development would result in the creation of a neighborhood of approximately 239 single family houses.

We will hold a virtual neighborhood meeting on Tuesday, November 12th, from 4:00 pm-5:30 pm via Zoom. The purpose of this neighborhood meeting is to update you on the Development Petition for the property.

Instructions for registering for and attending the meeting are below:

> To attend the meeting via computer, mobile device, or iPad, type in the following link in your internet browser:
https://us06web.zoom.us/j/89058518378

> To attend the meeting via phone, you may dial in by:

+1 646 931 3860
Meeting ID: 890 5851 8378

Please do not hesitate to contact Paul Burger via email at Paul@Ganderdev.com or phone at 8012279794 for any questions. Also, for more information about development in Holly Springs, you may want to visit https://www.hollyspringsnc.us/339/Development-Activity.

Sincerely,

Paul Burger, Land Development Manager, Gander Development

2310 S Miami Blvd, Suite 235
Durham, NC 27703

Paul Burger
Paul@Ganderdev.com
801.227.9794

To: Neighbors of Hazel Ridge

From: Paul Burger, Gander Development

Date: October 16, 2024

Re: Meeting to discuss proposed Development of 5900 Duncan Cook Rd (PIN #0646398124)

Gander Development intends to submit a D*evelopment Petition Application* to the Town of Holly Springs for a property located at 5900 Duncan Cook Rd. The Property is highlighted in red on the context map included with this mailing. The other parcels highlighted in yellow on the context map indicate the property owners we have invited to this meeting.

The development would result in the creation of a neighborhood of approximately 239 single family houses.

We will hold a virtual neighborhood meeting on Tuesday, October 28th, from 4:00 pm-5:30 pm via Zoom. The purpose of this neighborhood meeting is to update you on the Development Petition for the property.

Instructions for registering for and attending the meeting are below:

> To attend the meeting via computer, mobile device, or iPad, type in the following link in your internet browser:

https://us06web.zoom.us/j/87649706350

> To attend the meeting via phone, you may dial in by:

+1 301 715 8592
Meeting ID: 876 4970 6350

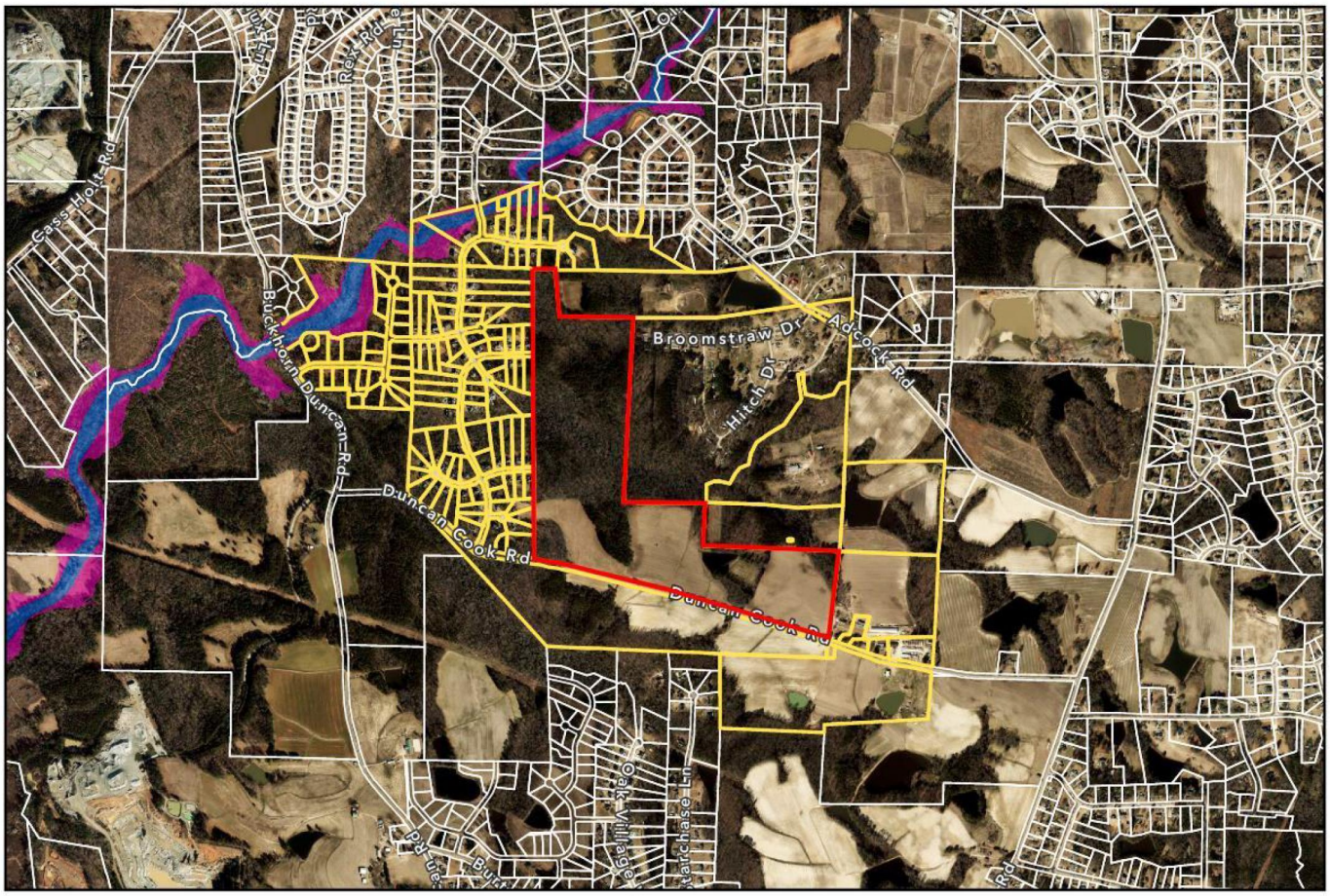
Please do not hesitate to contact Paul Burger via email at Paul@Ganderdev.com or phone at 8012279794 for any questions. Also, for more information about development in Holly Springs, you may want to visit https://www.hollyspringsnc.us/339/Development-Activity.

Sincerely,

Paul Burger,
Land Development Manager
Gander Development

2310 S Miami Blvd, Suite 235
Durham, NC 27703

Paul Burger
Paul@Ganderdev.com
801.227.9794



Disclaimer
*iMaps makes every effort to produce and publish the most current and accurate information possible. However, the maps are produced for information purposes, and are **NOT** surveys. No warranties, expressed or implied ,are provided for the data therein, its use,or its interpretation.*

	Owner	REID	PIN	Mailing Address 1	Mailing Address 2
1	TEMPLAR INVESTMENTS LLC	367152	646399748	624 HOLLY SPRINGS RD STE 419	HOLLY SPRINGS NC 27540-9030
2	DALTON, WILLIAM DAVID DALTON, MARY FIELDS	328094	647007380	7401 DUNCANS RIDGE WAY	FUQUAY VARINA NC 27526-5853
3	KIASKI, ANTHONY W KIASKI, RACHEL T	328091	647101259	6501 ALIRIN LN	FUQUAY VARINA NC 27526-5855
4	FRAELLO, MARCELLO FRAELLO, KARLA CLAWSON	351995	647018511	6417 LAURACA LN	FUQUAY VARINA NC 27526-5867
5	AYRES, PAUL L. TRUSTEE AYRES, CAROL S. TRUSTEE	361265	647019933	7212 DUNCANS RIDGE WAY	FUQUAY VARINA NC 27526-5864
6	CAPITOL CITY HOMES LLC	328100	646098559	PO BOX 1147	WAKE FOREST NC 27588-1147
7	FERGUSON, ANTHONY JR FERGUSON, BRIDGET	361269	647110553	7209 DUNCANS RIDGE WAY	FUQUAY VARINA NC 27526-5865
8	KREMER, COURTNEY D KREMER, THOMAS J	328093	647009246	6509 ALIRIN LN	FUQUAY VARINA NC 27526-5855
9	WILLIAMS, MARK WILLIAMS, LORI	361260	647028502	6317 LAURACA LN	FUQUAY VARINA NC 27526-5888
10	STAGNITTA, ANTONIO STAGNITTA, TAMMIE	351997	647018118	6420 LAURACA LN	FUQUAY VARINA NC 27526-5866
11	AQUA NC INC	405599	647123876	202 MACKENAN DR	CARY NC 27511-6447
12	CATALANO, RANDAL JASON CATALANO, ALANA ANN	328087	647007697	6516 ALIRIN LN	FUQUAY VARINA NC 27526-5854
13	ARNOLD, DALE E ARNOLD, JENNIFER	406282	646097750	6509 DUNCANS CREEK CT	FUQUAY VARINA NC 27526-5849
14	EYRE, RICHARD M EYRE, TAMI L	328092	647100350	6505 ALIRIN LN	FUQUAY VARINA NC 27526-5855
15	SMITH, MICHAEL ALLEN SMITH, SARAH ELIZABETH	405596	647027942	6253 LAURACA LN	FUQUAY VARINA NC 27526-5559
16	KIDD, AIMEE LOGAN KIDD, RONALD JAMES CHADWICK	351996	647110215	6421 LAURACA LN	FUQUAY VARINA NC 27526-5867
17	MELFI, MARK A MELFI, LINDA H	405591	647130395	6240 LAURACA LN	FUQUAY VARINA NC 27526-5558
18	DUNCANS RIDGE ASSN INC	351989	647005871	DUNCANS RIDGE HOA	PO BOX 79032
19	HAUN, ROBERT D HAUN, LAURA E	328096	647008031	6508 DUNCANS CREEK CT	FUQUAY VARINA NC 27526-5849
20	AQUA NORTH CAROLINA INC	328101	646190569	202 MACKENAN DR	CARY NC 27511-6447
21	COOK, DURWARD W COOK, PEGGY B	101649	646582410	5820 DUNCAN COOK RD	FUQUAY VARINA NC 27526-7900
22	NELSON, CRAIG J NELSON, CAROLYN C	328088	647009710	6512 ALIRIN LN	FUQUAY VARINA NC 27526-5854
23	MORRIS, ELWOOD NEIL MORRIS, LESLIE WILLIAMS	361262	647027244	7204 LISERIN WOODS LN	FUQUAY VARINA NC 27526-5884
24	MILLS, GREGORY A TRUSTEE MILLS, ELIZABETH A. TRUSTEE	361261	647028309	6321 LAURACA LN	FUQUAY VARINA NC 27526-5888
25	GAY, JONATHAN H GAY, KELLY H	405589	647038352	6248 LAURACA LN	FUQUAY VARINA NC 27526-5558
26	GALINSKI, THEODORE J GALINSKI, ANDREA J	328099	646190729	6501 DUNCANS CREEK CT	FUQUAY VARINA NC 27526-5849
27	LEWIS, RONALD KEITH LEWIS, KIMBERLY ANN	405592	647132327	6236 LAURACA LN	FUQUAY VARINA NC 27526-5558
28	DISBRO, STEPHEN M DISBRO, JODIE L	405593	647122807	6241 LAURACA LN	FUQUAY VARINA NC 27526-5559
29	TEMPLE, WADE P TEMPLE, JOYCE A	296060	646491644	1193 WILBON RD	FUQUAY VARINA NC 27526-8264
30	TEMPLE, WADE P TEMPLE, JOYCE A	75086	647313352	1193 WILBON RD	FUQUAY VARINA NC 27526-8264
31	TEMPLE, WADE P TEMPLE, JOYCE A	367153	647401596	1193 WILBON RD	FUQUAY VARINA NC 27526-8264
32	WHEELER, LISA WHEELER, ROBERT	361270	647019555	7213 DUNCANS RIDGE WAY	FUQUAY VARINA NC 27526-5865
33	MCPEEK, J KYLE EARLY, JENNIFER M	328086	647006553	PO BOX 224	COROLLA NC 27927-0224
34	HEDDERICH, DEBORAH A HEDDERICH, FRANK C III	328095	647008106	7405 DUNCANS RIDGE WAY	FUQUAY VARINA NC 27526-5853
35	OOSTERHOUSE, CALEB J OOSTERHOUSE, MALLORY K	405595	647029868	6249 LAURACA LN	FUQUAY VARINA NC 27526-5559
36	EVANS, AARON EVANS, MARY	351994	647017645	7217 DUNCANS RIDGE WAY	FUQUAY VARINA NC 27526-5865
37	YERXA, CHRISTIAN YERXA, COURTNEY	361266	647110933	7208 DUNCANS RIDGE WAY	FUQUAY VARINA NC 27526-5864
38	COOK, DURWARD WAYNE COOK, PEGGY BETTS	14575	646489445	5820 DUNCAN COOK RD	FUQUAY VARINA NC 27526-7900
39	COOK, DURWARD W COOK, PEGGY	449235	646485396	5820 DUNCAN COOK RD	FUQUAY VARINA NC 27526-7900
40	PINKERTON, BETH COOK	449245	646488691	5824 DUNCAN COOK RD	FUQUAY VARINA NC 27526-7900
41	COOK, DANNY W COOK, VIRGINIA B	66372	646592021	5832 DUNCAN COOK RD	FUQUAY VARINA NC 27526-7900
42	GREINER, JEFFREY GOODMAN, ANDREA	361267	647111944	7204 DUNCANS RIDGE WAY	FUQUAY VARINA NC 27526-5864
43	VAUGHAN, RUPERT L JR VAUGHAN, ELIZABETH A	463400	647227425	6724 STEPHERLY WAY	HOLLY SPRINGS NC 27540-7185
44	LEUNG, KAI S LEUNG, ALLISON	328097	647100021	6504 DUNCANS CREEK CT	FUQUAY VARINA NC 27526-5849
45	WEBER, RYAN JASON TRUSTEE WEBER LIVING TRUST	361264	647027071	7201 LISERIN WOODS LN	FUQUAY VARINA NC 27526-5885
46	DOELL, MATTHEW DOELL, JACQUELINE	328098	646190991	6500 DUNCANS CREEK CT	FUQUAY VARINA NC 27526-5849
47	POPE, RONALD G SR TRUSTEE TRUSTEE OF RONALD G POPE SR RE	361268	647111552	7205 DUNCANS RIDGE WAY	FUQUAY VARINA NC 27526-5865
48	KRAUS, ERIN LEA KRAUS, BRADLEY DUANE	457485	647127962	6229 LAURACA LN	HOLLY SPRINGS NC 27540
49	DOMINGUEZ, JENNIFER ROSE LOPEZ, MARIO ALBERTO DOMINGUE	457486	647125873	6233 LAURACA LN	FUQUAY VARINA NC 27526-5559
50	HARTE, BRYAN MICHAEL HARTE, MICHELLE	361259	647028607	6313 LAURACA LN	FUQUAY VARINA NC 27526-5888
51	DUNCAN COOK HOLDINGS LLC	62443	646398124	2310 S MIAMI BLVD STE 238	DURHAM NC 27703-4900
52	DAHMEN, JORDAN DAHMEN, TAYLOR GRACE HENRY	405598	647133149	6232 LAURACA LN	FUQUAY VARINA NC 27526-5558
53	BALLENTINE PLACE HOMEOWNERS ASSOCIATION, INC.	457481	647230053	4112 BLUE RIDGE RD STE 100	RALEIGH NC 27612-4652
54	CORNELIUS, CHELSIE J CORNELIUS, ANDY	351993	647017896	7216 DUNCANS RIDGE WAY	FUQUAY VARINA NC 27526-5864
55	TOLL SOUTHEAST LP COMPANY INC	10531	646380256	900 PERIMETER PARK DR STE B3	MORRISVILLE NC 27560-8725
56	TOLL SOUTHEAST LP COMPANY INC	507995	646282769	900 PERIMETER PARK DR STE B3	MORRISVILLE NC 27560-8725
57	COOK, DURWOOD W COOK, PEGGY B	14601	646379993	5820 DUNCAN COOK RD	FUQUAY VARINA NC 27526-7900
58	CRAVEN, WILLIAM TODD CRAVEN, ANDREA MARTIN	405590	647039373	6244 LAURACA LN	FUQUAY VARINA NC 27526-5558
59	T M ADCOCK FAMILY LLC	643	646594724	DOROTHY A MAYS	5628 DUNCAN COOK RD
60	PREBLE, JOHN E PREBLE, CHRISTINE A	328089	647100721	6508 ALIRIN LN	FUQUAY VARINA NC 27526-5854
61	STEWART, CARL STEWART, CAROLE	405594	647120887	6245 LAURACA LN	FUQUAY VARINA NC 27526-5559
62	WILSON, DAVID C WILSON, LISA ERIN	328090	647101742	6500 ALIRIN LN	FUQUAY VARINA NC 27526-5854
63	CASTILLO, ANTONIO SHEPPARD, RHONDA	361263	647029178	7200 LISERIN WOODS LN	FUQUAY VARINA NC 27526-5884

Meeting summary for Tassel Ridge - Neighborhood Update (11/12/2024)

Quick recap

Katie Hamilton from Gander Development led a meeting to discuss development plans for the Hazel Ridge neighborhood, addressing concerns about traffic, safety, and infrastructure. She provided updates on the project timeline, zoning approval, and ongoing engineering work, while also clarifying the conditional zoning process and potential changes to the approved scope. Throughout the meeting, Katie addressed questions from attendees, promised to follow up on various issues, and encouraged further communication via email.

Taskers

- Katie to send digital copy of the presentation to RC and the HOA for distribution.
- Katie to contact Wake County Sheriff's traffic enforcement unit about stop sign violations and speeding issues in the area.
- Katie and Paul to schedule future neighborhood meetings at 6 PM.
- Gander Development to work with the town on potentially adding a stub street between lots 37 and 45.
- Gander Development to coordinate with DOT on reducing speed limits on Buckhorn Duncan Road.
- Gander Development to follow up with traffic engineers about the possibility of 20 mph speed limits on internal neighborhood streets.
- Gander Development to include electronic traffic control device in construction drawing process, pending DOT approval.
- Gander Development to bundle signage and roadway improvements for DOT review during the construction document phase.
- Gander Development to continue talks with DR Horton as potential builder for the community.

Summary

Neighborhood Development Plans and Phasing

Katie discussed the ongoing development plans for the neighborhood, including the grading plan, stormwater plans, tree preservation plans, and landscaping plans. She mentioned that the civil engineering and landscape architect would be working on these plans throughout November and December. Katie also shared a current phasing plan, which showed the development of the western entrance, the amenity center, and surrounding lots in phases. She clarified that the sewer force main would route from the pump station to Elliott Farm, and that the layout of the street and lot layouts had not changed from zoning. Katie also mentioned that additional tree surveys would be conducted on the property and that there might be a need to add a stub street between lots 37 and 45. She encouraged the neighbors to ask any questions or concerns they might have.

Lot Count and Future Development Plans

Katie clarifies that the lot count for their development remains at 237 homes, as originally approved. The 239 number mentioned was a typo. While they may lose one lot due to a required stub street, the overall count will not increase unless reduced. Katie explains that their original materials referenced future multifamily housing east of their site based on the town's comprehensive plan calling for higher density there, similar to requirements for the nearby Elliott Farms development. However, they have no specific plans for land east of their site. The town may request a mix of single-family and multifamily housing from any future developer of that area based on the comprehensive plan, but details would depend on the actual proposal.

Community Traffic and Infrastructure Concerns

Katie discussed the potential routing of traffic through a small community and the infrastructure challenges that might arise. She also shared insights from the Comprehensive Plan, indicating that the land in question would continue to be designated for single-family homes. Katie acknowledged the safety concerns raised by the community, particularly regarding the road closure on Duncan Cook and Buckhorn Duncan, and assured that they were monitoring the situation and consulting with traffic consultants to find solutions. She also mentioned that they had been in talks with the Department of Transportation (DOT) to mitigate some of the concerns.

Presentation and HOA Distribution Plans

Katie discussed the presentation from the previous meeting and offered to send a digital copy to the attendees and the HOA for distribution. She also expressed her willingness to address any further questions or concerns. An attendee mentioned a neighbor who was unable to join the meeting, and Katie confirmed that there were no participants in the waiting room. Paul then provided the meeting ID and call-in information for the neighbor to join. The attendees also expressed concerns about traffic problems due to road closures, and Katie acknowledged these concerns, promising to prioritize safety measures in their plans.

Addressing Traffic Issues and Speeding

Katie discussed the ongoing issues with traffic problems due to the road closure. She mentioned that they are in talks with the DOT about the speed limit on the road and whether it's appropriate to reduce it. She also mentioned that they are considering ways to have a presence to help with issues like people running stop signs. Katie acknowledged the problem of speeding on Buckhorn and Duncan, and mentioned that they are already in talks with the DOT about this. She also mentioned that she would reach out to the sheriff's traffic enforcement unit to help with the issue of people running stop signs. Katie also introduced the new neighborhood name, Hazel Ridge, which was formerly called Tassel Ridge.

Project Update and Future Plans

Katie provided an update on the project's progress, stating that the zoning has been approved and preliminary engineering is underway. She anticipates submitting for the development petition in early January, with a 5 to 6 month process expected for approval in July. Construction drawings are expected to be completed by the end of 2025, with the earliest construction beginning in January 2026. The site plan remains substantially the same as previously shown, with a maximum of 237 units. The town has requested the addition of a stub street between lots 37 and 45 for potential development. The sewer force main will route from the pump station to the Elliott farm neighborhood, and the roadway improvements have been preliminary designed. The project will include a mixture of walkout basements, crawl spaces, and raised foundations. A rough phasing plan has been proposed, with the first phase including the western entrance, amenity center, and surrounding lots, followed by the second phase, third phase, and fourth phase.

Addressing Speed Limit and Traffic

Katie led a meeting to address questions and concerns about the neighborhood's speed limit and traffic issues. A request was made to reduce the speed limit to 20MPH on all Duncan's Ridge roads, which Katie agreed to follow up with the DOT about. The meeting also discussed the possibility of changing the Buckhorn dumping area. Katie agreed to hold future meetings at 6 PM to accommodate residents' schedules. The only potential change to the approved scope by Hoy Springs was the addition of a stub street between lots 37 and 45, which was discussed with Ollie Springs.

Conditional Zoning and Traffic Study

Katie clarified the conditional zoning process for the project, explaining that it was approved based on specific conditions such as layout, architectural standards, and offsite improvements. She emphasized that if these conditions were not met, the zoning would not be approvable. Katie also addressed a question about a potential traffic study, stating that while one had been done for their project, it was unclear if one had been conducted for the recently discovered northeast community. She suggested that any future neighborhood developments in the vicinity would need to reference the traffic generated by their project and the existing well and septic neighborhood to the south.

Community Talks and Traffic Control

Katie discussed ongoing talks with a builder for the community and confirmed that the electronic traffic control device, previously discussed, would be implemented. She clarified that the device would need to be approved by the town and would be bundled with roadway improvements as part of the construction document process. Katie also mentioned that future neighborhood meetings would be scheduled at 6 PM to accommodate everyone's schedules. She encouraged attendees to reach out to her or Paul via email with any further questions.

HAZEL RIDGE SUBDIVISION

TOWN OF HOLLY SPRINGS
WAKE COUNTY, NORTH CAROLINA

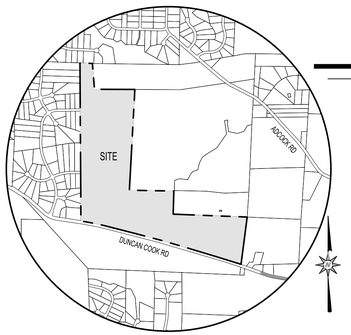
DEVELOPMENT PETITION - MAJOR SUBDIVISION

TOWN OF HOLLY PLANS PROJECT # 25-MAS-01 / PLMS202400011 △

1st SUBMITTAL TO TOWN OF HOLLY SPRINGS: JANUARY 3, 2025
2nd SUBMITTAL TO TOWN OF HOLLY SPRINGS: MARCH 14, 2025
3rd SUBMITTAL TO TOWN OF HOLLY SPRINGS: APRIL 17, 2025
4th SUBMITTAL TO TOWN OF HOLLY SPRINGS: MAY 16, 2025
5th SUBMITTAL TO TOWN OF HOLLY SPRINGS: JUNE 10, 2025

VICINITY MAP

SCALE: 1" = 1500'



ENGINEERS CERTIFICATION:

I CERTIFY THAT THESE PLANS WERE PREPARED AND THAT THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING PLANS, THE LATEST EDITION OF THE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS OF THE TOWN OF HOLLY SPRINGS AND OTHER APPLICABLE TOWN ORDINANCES AND POLICIES. THE ENGINEER WHOSE SEAL AND SIGNATURE APPEAR BELOW CERTIFIES THAT THE TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS HAVE BEEN THOROUGHLY REVIEWED FOR APPLICABILITY TO THIS PARTICULAR PROJECT. ANY PROPOSED EXCEPTIONS OR DEVIATIONS FROM THE STANDARDS ARE LISTED SPECIFICALLY ON SHEET N/A OF THESE DRAWINGS. FURTHERMORE, THESE PLANS WERE PREPARED IN CONFORMANCE WITH THE APPROVED PRELIMINARY PLAT FOR THIS PROJECT.

SITE INFORMATION TABLE

GENERAL INFORMATION

LOCATION:	5900 DUNCAN COOK ROAD HOLLY SPRINGS, NC 27540
COUNTY:	WAKE
PARENT PIN:	0646-39-8124
EXISTING PARCEL ACREAGE:	122.29 AC
ROAD WIDENING RIGHT OF WAY DEDICATION:	4.11 AC
PROPERTY ACREAGE AFTER DEDICATION:	118.18 AC
LAND CLASS:	VACANT
PROPOSED USE:	SINGLE FAMILY
FEMA MAP PANEL NUMBER:	3720064600J

MINIMUM BUILDING SETBACKS:

FRONT:	15'
SIDE - INTERIOR:	5'
SIDE - CORNER:	15'
REAR:	25'
FRONT GARAGE:	25'
MAX. HEIGHT:	35'

RIGHT OF WAY & OTHER AREAS:

RIGHT OF WAY AREA:	21.57 AC
NATURAL WETLANDS:	1.77 AC
STREAM BUFFER:	4.76 AC
FLOOD PLAIN:	0.00 AC
FLOOD WAY:	0.06 AC

UTILITY CALCULATIONS:

WRMP PRIORITY LEVEL:	III
UTILITY ALLOCATION △	60,690 GPD

ROADWAYS:

LENGTH OF ROADWAYS	14,246 LF
EST. DISTURBED AREA:	9.22 AC

IMPERVIOUS AREAS:

ROADWAYS:	401,682 SF (9.22 AC)
OPEN SPACE AREAS (1-4):	46,900 SF (1.08 AC)
PUMP STATION:	8,500 SF (0.20 AC)
MAIL KIOSK / AMENITY:	65,340 SF (1.50 AC)
LOTS (4,700 SF / LOT):	1,113,900 SF (25.57 AC)
SIDEWALK:	202,375 SF (4.65 AC)
TOTAL ON-SITE IMPERVIOUS AREA:	1,838,697 SF (42.21 AC)
TOTAL ON-SITE IMPERVIOUS %:	35.72%

LOT ACREAGE:

TOTAL NUMBER PROPOSED LOTS:	237
MAXIMUM ALLOWABLE DENSITY:	1.97 DU/AC
PROPOSED OVERALL DENSITY:	1.97 DU/AC
MAXIMUM ALLOWABLE UNITS:	237 DU
MINIMUM ALLOWED LOT SIZE:	7,500 SF
MINIMUM PROPOSED LOT SIZE:	7,500 SF
AVERAGE PROPOSED LOT SIZE:	10,671 SF
MINIMUM ALLOWED LOT WIDTH:	60'
MINIMUM PROVIDED LOT WIDTH:	60'
12,000 SF+ LOTS:	79±
10,000 SF+ LOTS:	72±
7,500 SF+ LOTS:	86±

OPEN SPACE & OTHER AREAS: △

FLEX OPEN SPACE REQUIRED: (5% OF SITE AREA)	6.01 AC
FLEX OPEN SPACE PROVIDED:	11.95 AC
ACTIVE OPEN SPACE REQUIRED: (5% OF SITE AREA)	6.01 AC
ACTIVE OPEN SPACE PROVIDED:	6.19 AC
TREE PRESERVATION REQUIRED:	24.20 AC (PER APPROVED MASTERPLAN)

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C-0.1 CIVIL NOTES
C-1.0 EXISTING CONDITIONS PLAN
△ C-1.1 TREE PRESERVATION PLAN
C-1.2 OVERALL TREE SAMPLE PLAN
C-1.3 PARTIAL TREE SAMPLE PLAN I
C-1.4 PARTIAL TREE SAMPLE PLAN II
C-1.5 PARTIAL TREE SAMPLE PLAN III
C-1.6 PARTIAL TREE SAMPLE PLAN IV
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△ C-2.1 PRIVATE UTILITY IMPACTS PLAN
C-2.2 ENVIRONMENTAL IMPACTS PLAN
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C-3.6 PARTIAL SITE LAYOUT VI
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C-4.4 PARTIAL UTILITY PLAN IV
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C-4.7 PARTIAL UTILITY PLAN VII
C-4.8 PARTIAL UTILITY PLAN VIII
C-4.9 PARTIAL UTILITY PLAN IX
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△ C-4.14 SEWER BASIN MAP
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C-5.2 PARTIAL GRADING AND DRAINAGE PLAN II
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D-1.2 SITE DETAILS III
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L-5.1 ACTIVE OPEN SPACE #2 LAYOUT
L-5.2 ACTIVE OPEN SPACE #3 LAYOUT
L-5.3 ACTIVE OPEN SPACE #4 LAYOUT

ROADWAY IMPROVEMENT PLANS

4A TYPICAL SECTIONS
△ R-1 PLAN SHEET
R-2 PLAN SHEET
R-3 PLAN SHEET
R-4 PLAN SHEET
R-5 PLAN SHEET
R-6 PLAN SHEET
R-7 PLAN SHEET
△ R-8 PLAN SHEET
SD-1 INTERSECTION SIGHT DISTANCE
SD-2 INTERSECTION SIGHT DISTANCE

△ SEWER FLOW CALCULATIONS:
TOTAL NUMBER OF LOTS * 256 GPD/LOT = SEWER ALLOCATION
237 LOTS * 256 GPD/LOT = 60,690 GPD = 0.061 MGD

MONUMENT CONTROL NOTE:

THERE IS NO GEODETIC MONUMENT LOCATED WITH IN 2,000 FEET OF THIS PROPERTY. THE NEAREST MONUMENT IS "HOLLEMAN RM1" LOCATED AT 35°36'36"N, 78°52'18" W

TOWN OF HOLLY SPRINGS NOTES:

PLAN IS SUBJECT TO REVISION DURING CONSTRUCTION DRAWING APPROVAL PROCESS.

1. ALL CONSTRUCTION SHALL CONFORM TO TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS.
2. CONSTRUCTION DRAWING APPROVAL IS REQUIRED BEFORE CONSTRUCTION ON THIS PROJECT MAY BEGIN. DEVELOPMENT FEES ARE DUE BEFORE CONSTRUCTION DRAWING APPROVAL.

REZONING CONDITIONS: 24-REZ-01 (PLPRE202400217)

1. CONSTRUCTION TRAFFIC SHALL NOT UTILIZE EXISTING DUNCAN RIDGE NEIGHBORHOOD ROADS. ALL CONSTRUCTION TRAFFIC SHOULD ACCESS SITE DIRECTLY FROM DUNCAN COOK RD.
2. TASSEL RIDGE SHALL INSTALL TWO (2) TO THREE (3) RADAR SIGNS FOR SPEED LIMITS WITHIN THE DUNCAN RIDGE NEIGHBORHOOD WHERE ALLOWED BY NCDOT AND TWO (2) PEDESTRIAN WARNING SIGNS.
3. MONUMENT SIGNS SHALL BE INSTALLED ADJACENT TO THE RIGHTS OF WAY OF ALIRIN LN AND DUNCAN'S RIDGE WAY WHERE THE TASSEL RIDGE COMMUNITY WILL TIE INTO EXISTING STREET STUBS IN THE EXISTING DUNCAN'S RIDGE NEIGHBORHOOD.
4. PET WASTE STATIONS & SIGNAGE SHALL BE INSTALLED AT ALL STREET INTERSECTIONS WITHIN DUNCAN'S RIDGE INCLUDING WHERE ALIRIN LN AND DUNCAN'S RIDGE WAY TIE INTO THE DUNCAN'S RIDGE NEIGHBORHOOD.
5. PRIOR TO APPLICATION FOR MAJOR SUBDIVISION PLAN, A REVISED ENVIRONMENTAL ASSESSMENT SHALL BE PERFORMED TO DETERMINE IF THE DRAINED FARM POND HAS RE-ESTABLISHED AS ANOTHER ENVIRONMENTAL FEATURE. IN THE EVENT A NEW ENVIRONMENTAL FEATURE HAS NOT ESTABLISHED, A SMALLER POND WITH APPROPRIATE DAM STRUCTURE SHALL BE CONSTRUCTED. IN THE EVENT A NEW ENVIRONMENTAL FEATURE DOES ESTABLISH, AN EDUCATIONAL INTERACTIVE LANDSCAPE DESIGN SHALL BE INSTALLED.

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025	HORZ. SCALE: AS SHOWN
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 36823 ENGINEER ANDREW S. PETTY

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA, INC.

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT — A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

COVER SHEET

C-0.0

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-0.0 COVER SHEET.DWG
PLOTTED: 6/10/2025 9:07 AM

GENERAL CONSTRUCTION NOTES:

1. BOUNDARY AND TOPOGRAPHY DATA BY BASS, NIXON, & KENNEDY, INC. SURVEY IS REFERENCED TO NC GRID NAD 83. REFER TO EXISTING CONDITIONS PLAN.
2. ALL WORK, CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARDS AND SPECIFICATIONS, LATEST EDITION.
3. ALL WORK, CONSTRUCTION AND MATERIALS WITHIN NCDOT RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH THE 2024 NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
4. ALL RIGHT OF WAYS SHALL BE PUBLIC.
5. THIS SITE IS NOT LOCATED IN A FLOOD HAZARD ZONE PER FEMA MAPS 3720064700K DATED 7/19/2022.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK ZONE TRAFFIC CONTROL IN OR ADJACENT TO NCDOT RIGHT-OF-WAY. TRAFFIC CONTROL SHALL BE MAINTAINED AT ALL TIMES WITH PROPER SIGNAGE, SIGNALS, LIGHTING, FLAGMEN. ALL SIGNS, PAVEMENT MARKINGS AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION.
7. COPIES OF ALL PERMITS AND APPROVED PLANS MUST BE KEPT ON SITE IN A PERMIT BOX THAT IS CONSPICUOUSLY LOCATED AND EASILY ACCESSIBLE DURING CONSTRUCTION. THIS INCLUDES APPROVED CONSTRUCTION PLANS, APPROVED EROSION CONTROL PLANS, ENCROACHMENT AGREEMENTS, DRIVEWAY PERMITS, WATER/SEWER PERMITS, ETC.
8. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE AND MUST BE FIELD VERIFIED. CONTACT THE NC ONE CALL CENTER AT LEAST 48 HOURS PRIOR TO DIGGING @ 1.800.632.4949. UNDERGROUND LINES SHOWN HEREON ARE APPROXIMATE OR AS REPORTED BY VARIOUS RESPONSIBLE PARTIES. THE SURVEYOR DOES NOT GUARANTEE THAT ANY UNDERGROUND STRUCTURES SUCH AS UTILITIES, TANKS AND PIPES ARE LOCATED HEREON.
9. THE CONTRACTOR SHALL NOTIFY AND COOPERATE WITH ALL UTILITY COMPANIES OR FIRMS HAVING FACILITIES ON OR ADJACENT TO THE SITE BEFORE DISTURBING, ALTERING, REMOVING, RELOCATING, ADJUSTING OR CONNECTING TO SAID FACILITIES.
10. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OF ANY TOWN OR NCDOT DAMAGED PROPERTY. THE CONTRACTOR SHALL REPAIR THE DAMAGED PROPERTY TO THE LATEST STANDARDS AND SPECIFICATIONS OF THE AGENCY HOLDING JURISDICTION AT NO COST TO THE OWNER.
11. ANY DAMAGE DONE TO PRIVATE PROPERTY OWNERS SIGNS, MAILBOX, DRIVEWAY CULVERTS, OR OTHER PROPERTY SHALL BE RESTORED TO ORIGINAL CONDITION.
12. CONTRACTOR IS RESPONSIBLE FOR FENCING AND SECURITY OF HIS LAYDOWN AND STORAGE AREA.
13. CONTRACTOR SHALL KEEP ALL ROADS FREE OF DIRT AND DEBRIS AT ALL TIMES.
14. CONTRACTOR SHALL PROTECT EXISTING PAVEMENTS AND UTILITIES FROM HEAVY EARTH MOVING EQUIPMENT. PROVIDE TRAFFIC CONTROL AND ADEQUATE PROTECTION METHODS AT ALL EQUIPMENT CROSSINGS.
15. ALL EXCAVATION IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED.
16. ALL STRUCTURAL FILL MATERIAL SHALL BE FREE OF ALL STICKS, ROCKS, AND CLUMPS OF MUD. ALL ROCKS GREATER THAN 3" DURING EXCAVATION SHALL BE REMOVED.
17. UNUSABLE EXCAVATED MATERIALS AND ALL WASTE RESULTING FROM CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR IN AN APPROVED, LEGAL DISPOSAL SITE.
18. CONCRETE SIDEWALKS THAT ARE TO BE REMOVED SHALL BE CUT BACK TO NEAREST EXPANSION OR CONTROL JOINT AND REPLACED WITH 4-INCH CONCRETE SIDEWALK FINISHED TO MATCH EXISTING SIDEWALKS.
19. CONTRACTOR TO COORDINATE WITH TOWN OF HOLLY SPRINGS FOR TEMPORARY WATER NEEDED DURING CONSTRUCTION. IF PERMITTED TO CONNECT TO EXISTING FIRE HYDRANT A REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTER WILL BE REQUIRED.
20. THE TRANSITION OF PROPOSED ROADWAY TO EXISTING ROADWAY SHALL BE DONE WITH A MINIMUM 8-FT TRANSITION WHERE THE EXISTING PAVEMENT IS MILLED TO A MINIMUM DEPTH OF 1-1/2" AND OVERLAID.
21. ALL PAVEMENT SAW CUTS SHALL BE NEAT, STRAIGHT AND FULL DEPTH.
22. ALL RIP-RAP IS TO BE INSTALLED WITH NON-WOVEN FILTER FABRIC BENEATH (MIRAFI 140N OR APPROVED EQUAL).
23. ALL EXCESS TOPSOIL AND UNCLASSIFIED EXCAVATION IS TO BE HAULED OFF-SITE, UNLESS OTHERWISE DIRECTED BY THE OWNER TO AN APPROVED NCDENR LOCATION.
24. ALL SITE CONSTRUCTION MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER AT THE FOLLOWING STAGES:
    A. COMPLETION OF GRADING SUBGRADE PRIOR TO PLACING STONE BASE.
    B. COMPLETION OF STONE PLACEMENT PRIOR TO PAVING.
    C. FINAL INSPECTION WHEN ALL WORK IS COMPLETE.
25. PRIOR TO PLACING CABC STONE BASE, THE CONTRACTOR SHOULD NOTIFY THE GEOTECHNICAL ENGINEER TO INSPECT THE PROOF ROLL OF THE SUBGRADE. ANY STONE PLACED WITHOUT PRIOR APPROVAL WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SUBJECT TO RE-CONSTRUCTION IF SUBGRADE DOES NOT MEET TOWN AND NCDOT STANDARDS & SPECIFICATIONS.
26. ALL UTILITY SERVICES, (POWER, TELEPHONE, CABLE, ETC.) ARE PROPOSED TO BE UNDERGROUND. DO NOT SEED OR MULCH DISTURBED AREAS UNTIL ALL UNDERGROUND UTILITIES HAVE BEEN INSTALLED. THE CONTRACTOR SHALL COORDINATE WITH THE PRIVATE UTILITY SERVICE COMPANIES FOR ANY REQUIRED CONDUITS OR POINT OF CONTACT CONDITIONS.
27. ALL PUBLIC UTILITIES THAT REQUIRE AN ENGINEERING CERTIFICATION MUST BE INSPECTED BY A PROFESSIONAL ENGINEER ON A PERIODIC BASIS. THE CONTRACTOR SHALL CONTACT THE PROJECT ENGINEER WHEN INSTALLING UTILITIES FOR PERIODIC INSPECTIONS. THE CONTRACTOR SHALL CONTACT THE PROJECT ENGINEER AT THE TIME OF PRESSURE TESTING AND WATER LINE DISINFECTION. THE CONTRACTOR SHALL SUPPLY THE PROJECT ENGINEER PRESSURE TEST RESULTS.
28. INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS AND FIELD CONDITIONS WHEN POSSIBLE, BUT THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES BY DIGGING TEST PITS BY HAND AT ALL UTILITY CROSSINGS WELL IN ADVANCE OF TRENCHING. IF THE CLEARANCES ARE LESS THAN SPECIFIED ON THE PLANS OR 12 INCHES, WHICH EVER IS LESS, CONTACT THE PROJECT ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
29. THE CONTRACTOR SHALL INCLUDE IN HIS CONTRACT PRICE THE REMOVAL AND DISPOSAL OF ANY EXCESS TOPSOIL HE DETERMINES IS NOT REQUIRED TO PERFORM THE FINAL GRADING AND LANDSCAPING OPERATION.
30. THE CONTRACTOR SHALL INCLUDE IN THE CONTRACT PRICE DAILY RECORD KEEPING OF THE AS-BUILT CONDITION OF ALL OF THE UNDERGROUND UTILITIES, CONSTRUCTION STAKEOUT ASSOCIATED WITH THE PROJECT. PREPARATION OF THE NECESSARY/REQUIRED AS-BUILT PLANS TO BE SUBMITTED TO TOWN OF HOLLY SPRINGS AND/OR ALL OTHER INFORMATION REQUIRED IN CONNECTION WITH RELEASE OF BONDS.
31. THE CONTRACTOR SHALL INCLUDE IN THE PRICE, ANY AND ALL COSTS ASSOCIATED WITH PROVIDING A PROFESSIONAL ENGINEER ON SITE IF REQUIRED, DURING THE CONSTRUCTION OF THE STORMWATER MANAGEMENT FACILITIES, UNDERGROUND UTILITIES, ETC. AS REQUIRED FOR AS-BUILT CERTIFICATION.
32. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF ALL REQUIRED/NECESSARY SHEETING, SHORING, AND SPECIAL EXCAVATION MEASURES REQUIRED ON THE PROJECT TO MEET OSHA, FEDERAL, STATE AND LOCAL REGULATIONS PURSUANT TO THE INSTALLATION OF THE WORK INDICATED ON THE DRAWINGS. NCDOT, TOWN OF HOLLY SPRINGS & CURRY ENGINEERING ACCEPT NO RESPONSIBILITY FOR THE DESIGN TO INSTALL SAID ITEMS.
33. TESTING BY CONTRACTOR: CONTRACTOR SHALL EMPLOY AT HIS EXPENSE AN OUTSIDE INDEPENDENT SOIL TESTING SERVICE (APPROVED BY THE OWNER) TO PERFORM SOIL TESTING AND INSPECTION SERVICE FOR QUALITY CONTROL TESTING DURING EARTHWORK OPERATIONS. COPIES OF RESULTS OF TESTS SHALL BE SUBMITTED BY THE TESTING SERVICE DIRECTLY TO THE CONTRACTOR, THE OWNER, AND THE APPLICABLE APPROVING AGENCY. --THE TESTING SERVICE WILL CLASSIFY PROPOSED ON-SITE AND BORROW SOILS TO VERIFY THAT SOILS COMPLY WITH SPECIFIED REQUIREMENTS AND TO PERFORM REQUIRED FIELD AND LABORATORY TESTING. (MINIMUM REQUIRED SOIL BEARING CAPACITY IS NOTED ON THE STRUCTURAL DRAWINGS). --IN PAVED AND BUILDING SLAB AREAS, THE TESTING SERVICE SHALL MAKE AT LEAST ONE FIELD DENSITY TEST FOR EACH 2000 SQUARE FEET OF FILL IN EACH COMPACTED FILL LAYER. IF A TEST SHOULD FAIL TO MEET REQUIRED DENSITY, THE CONTRACTOR SHALL RE-COMPACT THAT LAYER. THE SOIL TESTING SERVICE SHALL PERFORM ADDITIONAL TESTS AT THE CONTRACTOR'S EXPENSE TO SHOW THAT THE FAILED LAYER HAS REACHED THE REQUIRED COMPACTION. --IN FOUNDATION WALL AREAS, THE TESTING SERVICE SHALL MAKE AT LEAST ONE FIELD DENSITY TEST FOR EACH 100 FEET OR LESS OF WALL LENGTH OF FILL IN EACH COMPACTED FILL LAYER, WITH NO LESS THAN TWO TESTS ALONG A WALL FACE. IF A TEST SHOULD FAIL TO MEET REQUIRED DENSITY, THE CONTRACTOR SHALL RE-COMPACT THAT LAYER. THE SOIL TESTING SERVICE SHALL PERFORM ADDITIONAL TESTS AT THE CONTRACTOR'S EXPENSE TO SHOW THAT THE FAILED LAYER HAS REACHED THE REQUIRED COMPACTION.
34. COMPACTION: COMPACT EACH LAYER OF BACKFILL AND FILL SOIL MATERIALS AND THE TOP 12" OF SUBGRADE IN CUT AREAS TO 100% OF MAXIMUM DENSITY IN ACCORDANCE WITH AASHTO T99 FOR STRUCTURES, SLABS, AND PAVEMENTS AND 95% OF MAXIMUM DENSITY FOR EMBANKMENTS OR UNPAVED AREAS. MAX LIFT THICKNESS FOR FILL AREAS IS 8 INCHES.
35. DISTURBED AREA IS IN EXCESS OF 1 ACRE AND FORMAL SEDIMENTATION & EROSION CONTROL PLAN APPROVAL IS REQUIRED AS A CONDITION OF CONSTRUCTION PLAN APPROVAL. A COPY OF THE APPROVED EROSION CONTROL PLAN MUST BE KEPT ON SITE AT ALL TIMES. THE APPROVED SEDIMENTATION & EROSION CONTROL PLAN SHOULD BE REGARDED AS MINIMUM REQUIREMENTS; ADDITIONAL MEASURES SHALL BE PUT IN PLACE AS NEEDED TO ENSURE THAT NO SEDIMENT IS RELEASED FROM THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR PICKING UP AND PAYING FOR GRADING PERMIT ISSUED BY NCDENR LAND QUALITY
36. DESIGN/FIELD CONDITIONS QUITE EASILY MAY VARY FROM THAT REPRESENTED IN THE INITIAL SOILS REPORT AND/OR TOPOGRAPHICAL REPORT. ISOLATED AREAS MAY SHOW UP WEAK AND ADVERSE SOILS OR GROUNDWATER CONDITIONS MAY BE DISCOVERED THAT WERE NOT REVEALED DURING THE INITIAL SOILS INVESTIGATION. THEREFORE, THE OWNER/CLIENT IS TO BE AWARE THAT CURRY ENGINEERING GROUP, PLLC WILL NOT AND CANNOT BE HELD RESPONSIBLE FOR ANY FAILURES TO EITHER A STREET OR PARKING LOT PAVEMENT DESIGN UNLESS WE CAN BE FULLY AND TOTALLY INVOLVED IN THE CONSTRUCTION PROCESS WHICH MAY INCLUDE, BUT MAY NOT NECESSARILY BE LIMITED TO, TESTING SUBGRADE AND BASE DENSITY, ENGAGING THE GEOTECHNICAL ENGINEER FOR THE EVALUATION OF THE SUBGRADE AND FOR THE OBSERVATION OF PROOF ROLLING SUBGRADE AND BASE AT VARIOUS STEPS OF CONSTRUCTION, OPPORTUNITY FOR THE DESIGN ENGINEER TO CALL IN A GEOTECHNICAL ENGINEER FOR CONSULTATION AND ADVICE, ETC. - STEPS WHICH TAKEN ALTOGETHER WITH THE INITIAL DESIGN SHOWN ON THE PLANS, CONSTITUTE THE COMPLETE DESIGN OF THE ROAD, STREET OF PARKING AREA (PRIVATE OR PUBLIC). THE DESIGN ENGINEER MUST BE GIVEN THE FULL LATITUDE AND OPPORTUNITY TO COMPLETE THE DESIGN BY FULLY PARTICIPATING IN THE CONSTRUCTION PROCESS. PLAN DESIGN IS A SMALL PORTION OF THE DESIGN AND CANNOT BE SEPARATED FROM THE CONSTRUCTION PROCESS IF THE OWNER'S/CLIENT'S DESIRE IS TO HAVE THE DESIGN ENGINEER STAND BEHIND THE COMPLETED DESIGNED PROJECT.

GENERAL ABBREVIATIONS:

IDENTIFIER	DESCRIPTION
&	AND
℄	CENTERLINE
⌀	DIAMETER OR ROUND
ℙ	PROPERTY LINE
-- A --	
ABC	AGGREGATE BASE ASPH
	ASPHALT
AVE	AVENUE
-- B --	
BLVD	BOULEVARD
BLDG	BUILDING
BOC	BACK OF CURB
BW	BOTTOM OF WALL
-- C --	
CB	CATCH BASIN
CI	CURB INLET
CIP	CAST IRON PIPE
CLS	CLASS
CJ	CONTROL JOINT
CO	CLEANOUT
CONC	CONCRETE
-- D --	
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DOM	DOMESTIC
DR	DRIVE
-- E --	
(XX)	EXISTING ELEVATION
E	EAST, EASTING
EL	ELEVATION
EJ	EXPANSION JOINT
EP	EDGE OF PAVEMENT
EX	EXISTING
EVAP	EVAPORATIVE
-- F --	
FDC	FIRE DEPARTMENT CONNECTION
FES	FLARED END SECTION
FFE	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FHA	FIRE HYDRANT ASSEMBLY
FL	FLOW LINE
FT	FOOT OR FEET
-- G --	
G	GAS
GALV	GALVANIZED
GB	GRADE BREAK
GE	GENERAL ELECTRIC
GR	GRADE
-- H --	
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HOV	HIGH OCCUPANCY VEHICLE
HP	HIGH POINT
-- I --	
IAW	IN ACCORDANCE WITH
I.H.	INTERSTATE HIGHWAY
INV	INVERT
-- L --	
LEN	LENGTH
LEV	LOW EMISSION VEHICLE
LF	LINEAR FEET
LP	LOW POINT

IDENTIFIER	DESCRIPTION
-- M --	
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
-- N --	
N	NORTH, NORTHING
NCDENR	NORTH CAROLINA DEPARTMENT OF ENVIRONMENT & NATURAL RESOURCES
NCDOT	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
NTS	NOT TO SCALE
-- O --	
OH	OVERHEAD
OCB	OFF-SET CATCH BASIN
-- P --	
PCC	PORTLAND CEMENT CONCRETE
PE	POLYETHYLENE
PKWY	PARKWAY
POC	POINT OF CONNECTION
PVC	POLYVINYL CHLORIDE
-- R --	
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
R.O.W.	RIGHT OF WAY
RPDA	REDUCED PRESSURE DETECTOR ASSEMBLY
RPZ	REDUCED PRESSURE ZONE
-- S --	
S	SOUTH
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SDE	SIGHT DISTANCE EASEMENT
SSMH	SANITARY SEWER MANHOLE
SS	SANITARY SEWER
STA	STATION
STD	STANDARD
ST.STL	STAINLESS STEEL
SWPPP	STORMWATER POLLUTION PREVENTION PLAN
-- T --	
TB	TOP OF BARRIER
TC/TOC	TOP OF CURB
TD	TEMPORARY DIVERSION
TH	TEST HEADER
TOP	TOP OF PIPE
TP	TOP OF PAD
TYP	TYPICAL
TW	TOP OF WALL
-- U --	
UG	UNDERGROUND
-- V --	
VEG	VEGETATED
VERT	VERTICAL
-- W --	
W	WEST
W/	WITH
W/O	WITHOUT
-- Y --	
YI	YARD INLET

** ALL SYMBOLS & ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS DRAWING PACKAGE **

BEFORE YOU DIG, CALL 811
NORTH CAROLINA ONE CALL CENTER
www.ncocc.org

Land Owner:
Duncan Cook Holdings, LLC.
2310 S Miami Bldv., Suite 235
Durham, NC 27703

Developer:
Gander Development, LLC
2310 S Miami Blvd., Suite 235
Durham, NC 27703
Contact: Paul Burger
paul@ganderdev.com

Surveyor:
Bass, Nixon, & Kennedy, Inc.
6310 Chapel Hill Road, Suite 250
Raleigh, NC 27607
919.851.4422 (o)

Civil Engineering:
The Curry Engineering Group, PLLC
NC License # P-0799
PO Box 2018
205 S. Fuquay Ave
Fuquay-Varina, NC 27526
919.552.0849 (o)
910.624.5215 (m)
Contact: Andy Petty, PE
andy@curryeng.com

Landscape Architect:
Southwell Design, PLLC
P.O. Box 37178
Raleigh, NC 27627
919.272.6729 (v)
Contact: Adam Southwell, PLA, ASLA
adam@southwelldesign.com

UTILITY AGENCIES:

WATER & SEWER
TOWN OF HOLLY SPRINGS
ENGINEERING DEPT.
128 S. MAIN ST.
HOLLY SPRINGS, NC 27540
919-557-3938
CONTACT: MS. KENDRA PARRISH, PE

NCDENR-DWQ SEWER
NCDENR RALEIGH
REGIONAL OFFICE
3800 BARRETT DRIVE
RALEIGH, NC 27609
919-791-4232

NCDENR-PUBLIC WATER SUPPLY
NCDENR DIVISION OF WATER RESOURCES
RALEIGH REGIONAL OFFICE
3800 BARRETT DRIVE
RALEIGH, NC 27609
919-791-4232

GOVERNING AGENCIES:

PLANNING/ZONING/LANDSCAPE:
TOWN OF HOLLY SPRINGS
PLANNING DEPT.
128 S. MAIN ST.
HOLLY SPRINGS, NC 27540
919-557-3905
CONTACT: MR. BRETT GOSNER

STORMWATER
TOWN OF HOLLY SPRINGS
ENGINEERING DEPT.
128 S. MAIN ST.
HOLLY SPRINGS, NC 27540
919-557-3135
CONTACT: MS. JULIE TURNER

ENGINEERING
TOWN OF HOLLY SPRINGS
ENGINEERING DEPT.
128 S. MAIN ST.
HOLLY SPRINGS, NC 27540
919-557-3938
CONTACT: MS. KENDRA PARRISH, PE

EROSION CONTROL:
TOWN OF HOLLY SPRINGS
ENGINEERING DEPT.
128 S. MAIN ST.
HOLLY SPRINGS, NC 27540
919-557-3135
CONTACT: MS. JULIE TURNER

US ARMY CORPS OF ENGINEERS (USACE)
USACE RALEIGH FIELD OFFICE
3331 HERITAGE TRADE DR. SUITE 105
WAKE FOREST, NC 27587
919-554-4884
CONTACT: MR. JAMES LASTINGER

REVISIONS

1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
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NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: AS SHOWN
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PETTY

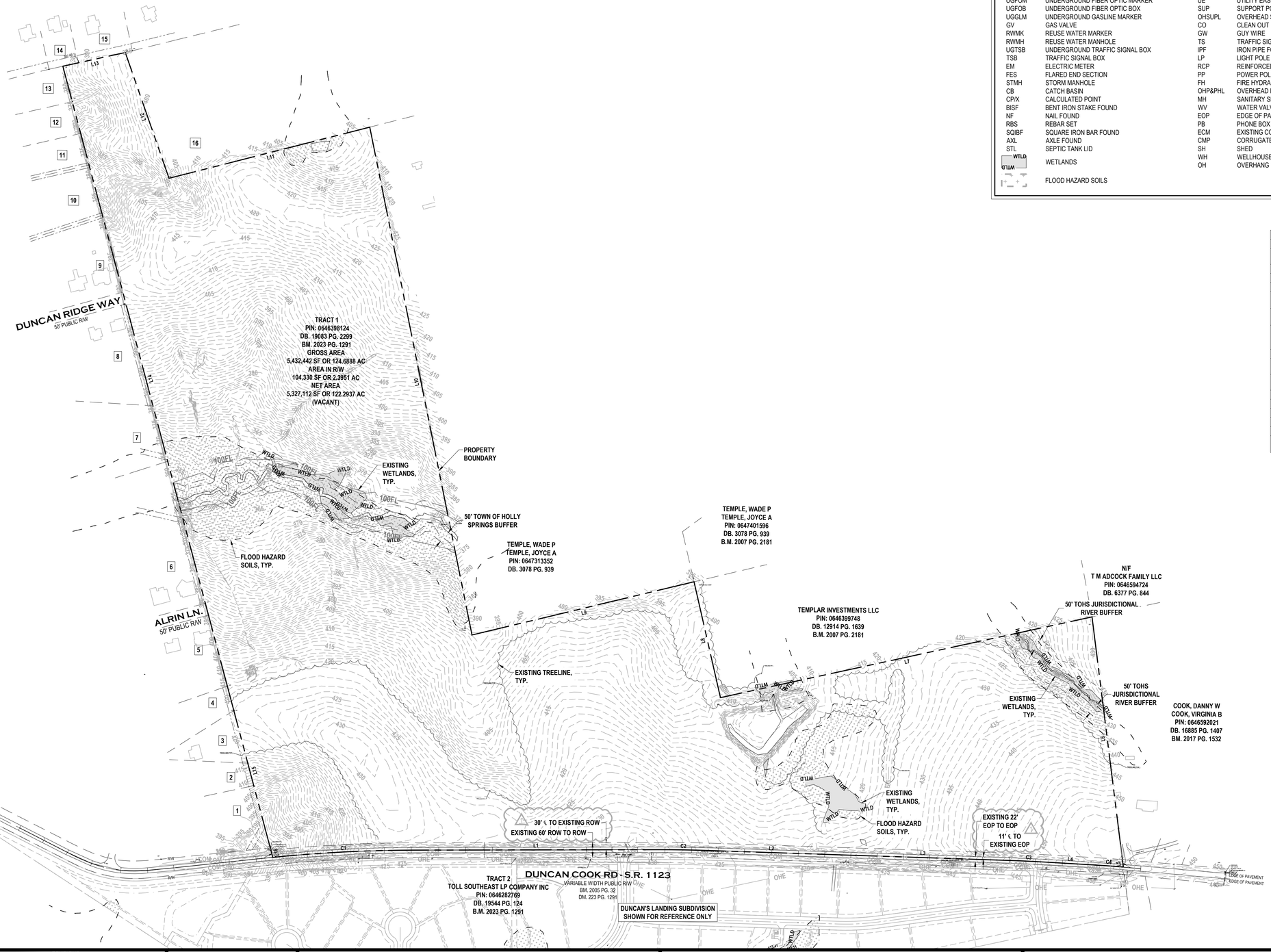
CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING GROUP, PLLC EST. 2010 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
CIVIL NOTES
C-0.1

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-0.1 CIVIL NOTES.DWG
PLOTTED: 6/10/2025 9:07 AM



LEGEND:

(O)	POSSIBLE OVERLAP LINE BEARING AND DISTANCE	TP	TELEPHONE POLE
OHPHL	OVERHEAD PHONE LINES	VWSSE	VARIABLE WIDTH SANITARY SEWER EASEMENT
RBF	REBAR FOUND	TCE	TEMPORARY CONSTRUCTION EASEMENT
UGFOM	UNDERGROUND FIBER OPTIC MARKER	UE	UTILITY EASEMENT
UGFOB	UNDERGROUND FIBER OPTIC BOX	SUP	SUPPORT POLE
UGGLM	UNDERGROUND GASLINE MARKER	OHSUPL	OVERHEAD SUPPORT LINE
GV	GAS VALVE	CO	CLEAN OUT
RWMK	REUSE WATER MARKER	GW	GUY WIRE
RWMH	REUSE WATER MANHOLE	TS	TRAFFIC SIGN
UGTSB	UNDERGROUND TRAFFIC SIGNAL BOX	IPF	IRON PIPE FOUND
TSB	TRAFFIC SIGNAL BOX	LP	LIGHT POLE
EM	ELECTRIC METER	RCP	REINFORCED CONCRETE PIPE
FES	FLARED END SECTION	PP	POWER POLE
STMH	STORM MANHOLE	FH	FIRE HYDRANT
CB	CATCH BASIN	OHP&PHL	OVERHEAD POWER AND PHONE LINES
CP/X	CALCULATED POINT	MH	SANITARY SEWER MANHOLE
BISF	BENT IRON STAKE FOUND	WV	WATER VALVE
NF	NAIL FOUND	EOP	EDGE OF PAVEMENT
RBS	REBAR SET	PB	PHONE BOX
SQIBF	SQUARE IRON BAR FOUND	ECM	EXISTING CONCRETE MONUMENT
AXL	AXLE FOUND	CMP	CORRUGATED METAL PIPE
STL	SEPTIC TANK LID	SH	SHED
WTLD	WETLANDS	WH	WELLHOUSE
	FLOOD HAZARD SOILS	OH	OVERHANG

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   - VERTICAL DATUM = NAVD88
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6. STREAM AND WETLAND IMPACTS TO BE PERMITTED THROUGH THE US ARMY CORP OF ENGINEERS AND THE NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES - DIVISION OF WATER RESOURCES. COPIES OF IMPACT APPROVALS TO BE PROVIDED PRIOR TO APPROVAL OF CONSTRUCTION DRAWINGS.

OWNER INFORMATION

LOT #	OWNER	PIN	DB / PG	BM / PG
1	WELL LOT - AQUA NORTH CAROLINA	646190569	13547 / 76	2005 / 32
2	GALINSKI, THEODORE J	646190729	13314 / 2400	2005 / 32
3	DOELL, MATTHEW	646190991	19104 / 1522	2005 / 32
4	MCDANIEL, DALE F	647100021	16021 / 299	2005 / 32
5	KIASKI, ANTHONY W KIASKI, RACHEL T	647101259	16431 / 160	2005 / 32
6	WILSON, DAVID C WILSON, LISA ERIN	647101742	18186 / 541	2005 / 32
7	KIDD, AIMEE LOGAN KIDD, RONALD JAMES CHADWICK	647110215	15351 / 129	2006 / 1935
8	POPE, RONALD G SR.	647111552	17106 / 550	2007 / 1112
9	GREINER, JEFFREY GOODMAN, ANDREA	647111944	17243 / 1037	2007 / 1112
10	CATILLO, ANTONIO SHEPPARD, RHONDA	647029178	16603 / 2231	2007 / 1112
11	MILLS, GREGORY A TRUSTEE	647028309	19027 / 198	2007 / 1112
12	WILLIAMS, MARK	647028502	13198 / 1893	2007 / 1112
13	HARTE, BRYAN MICHAEL	647028607	18667 / 2172	2007 / 1112
14	DISBRO, STEPHEN M	647122807	14916 / 1951	2011 / 435
15	WELL LOT - AQUA NC INC	647123876	14378 / 2346	2011 / 435
16	VAUGHAN, RUPERT L JR. VAUGHAN, ELIZABETH A	647227425	17357 / 1209	2018 / 2526

CURVE TABLE

CURVE #	LENGTH	RADIUS	DELTA
C1	572.228	5729.580	005.7223
C2	199.997	5729.580	002.0000
C3	146.913	5729.578	001.4691
C4	120.640	5737.279	001.2048

LINE TABLE

LINE #	LENGTH	DIRECTION
L1	1005.470	S75° 35' 51.33"E
L2	520.065	S73° 35' 51.33"E
L3	716.845	S73° 35' 51.33"E
L4	193.610	S72° 07' 42.33"E
L5	30.637	N07° 22' 53.72"E
L6	998.808	N07° 22' 15.45"E
L7	1552.698	N87° 45' 10.19"W
L8	485.231	N01° 39' 13.73"E
L9	932.370	N88° 58' 31.14"W
L10	2116.000	N03° 07' 30.31"E
L11	845.939	N89° 47' 41.68"W
L12	543.966	N04° 39' 49.59"W
L13	261.005	N87° 53' 11.96"W
L14	2649.489	S00° 21' 06.80"E
L15	663.545	S00° 21' 06.80"E
L16	30.362	S00° 21' 06.80"E

SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET
HORIZONTAL

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
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FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

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PROFESSIONAL ENGINEER SEAL NOT AFFIXED TO SHEET AS ENGINEER DOES NOT CERTIFY INFORMATION PROVIDED BY OTHERS

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 1.0 NORTH CAROLINA
NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

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Durham, NC 27703
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Contact: Paul Burger
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ZONING: SR-CD
DK: 19083 PG: 2299

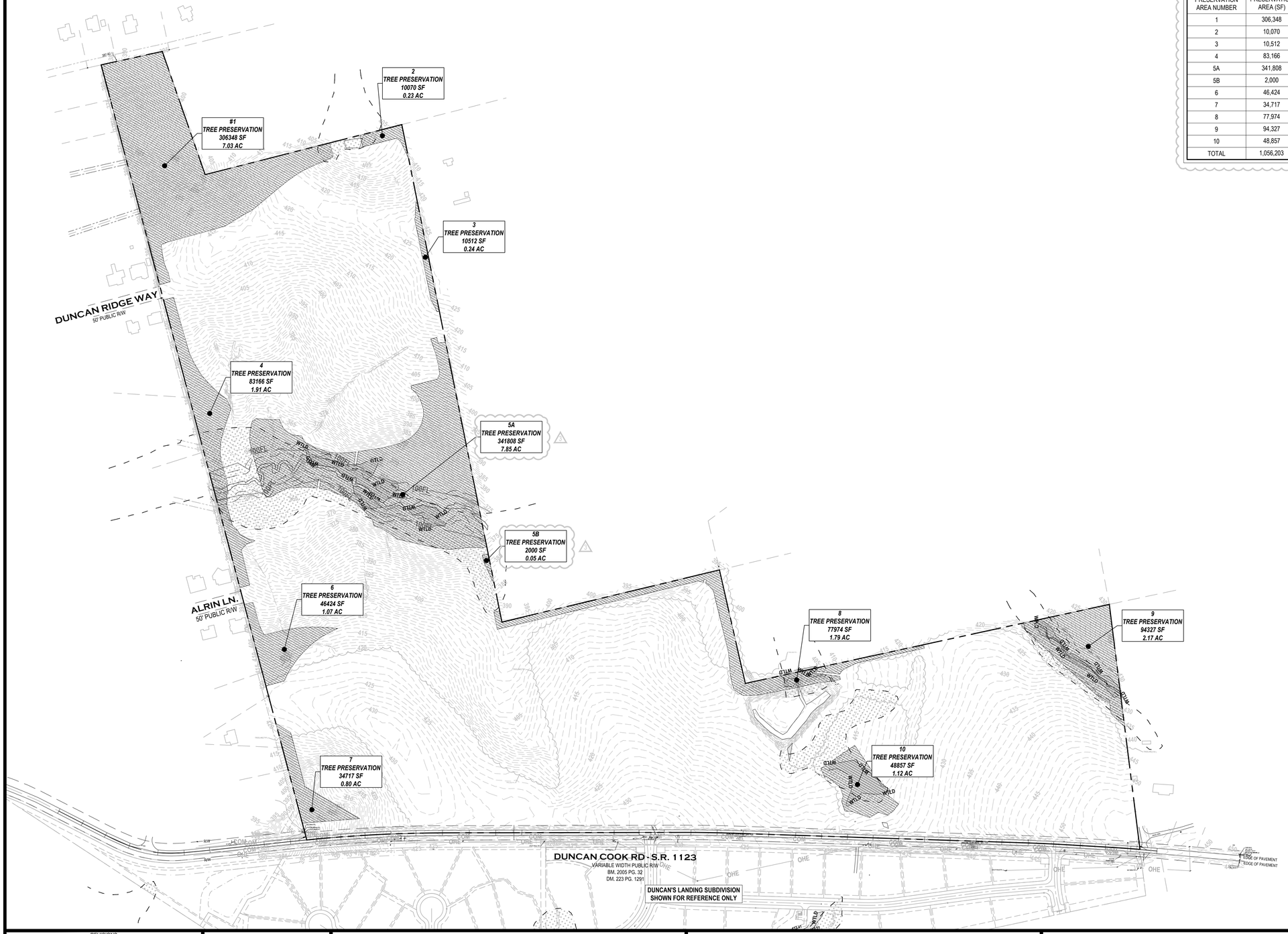
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

EXISTING CONDITIONS PLAN

C-1.0

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-1.0 EXISTING CONDITIONS PLAN.DWG
PLOTTED: 6/10/2025 9:08 AM



TREE PRESERVATION TABLE

TREE PRESERVATION AREA NUMBER	TREE PRESERVATION AREA (SF)	TREE PRESERVATION AREA (AC)
1	306,348	7.03
2	10,070	0.23
3	10,512	0.24
4	83,166	1.91
5A	341,808	7.85
5B	2,000	0.05
6	46,424	1.07
7	34,717	0.80
8	77,974	1.79
9	94,327	2.17
10	48,857	1.12
TOTAL	1,056,203	24.26

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LEGEND:

TP — TREE PROTECTION FENCE

TREE PRESERVATION AREAS

SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET
HORIZONTAL

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1	3/14/2025	TCHS COMMENTS #1	
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PROFESSIONAL ENGINEER SEAL NOT AFFIXED TO SHEET AS ENGINEER DOES NOT CERTIFY INFORMATION PROVIDED BY OTHERS

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

PROPERTY INFORMATION

DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

TREE PRESERVATION PLAN

C-1.1

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-1.1 TREE PRESERVATION PLAN.DWG
PLOTTED: 6/10/2025 9:08 AM

TREE SAMPLE NOTE:

THE 20' X 20' TREE SAMPLE AREAS, PROVIDED BY VILLAGE GREEN LAND DESIGN, ARE REPRESENTATIVE OF THE OVERALL VARIOUS AREAS OF TREE CANOPY THAT EXIST ON THE SITE.



NOTE: DISTANCE "X" FROM TREE SHALL BE A MINIMUM OF 6' OR 1" RADIUS PER 1" OF TREE DIAMETER, WHICH EVER IS GREATER.

1 / C-1.2 **ROOT ZONE PROTECTION**

SCALE: N.T.S



SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET
HORIZONTAL

REVISIONS			
1	X/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 200'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

PROFESSIONAL ENGINEER SEAL NOT AFFIXED TO SHEET AS ENGINEER DOES NOT CERTIFY INFORMATION PROVIDED BY OTHERS

CONSULTANT

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CURRY ENGINEERING EST. 2010 NORTH CAROLINA
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F (919) 552-2043
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DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

OVERALL TREE SAMPLE PLAN

C-1.2

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\SP PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-1.2 OVERALL TREE SAMPLE PLAN.DWG
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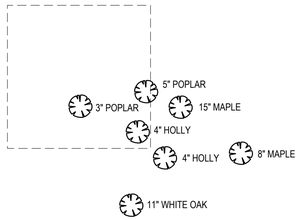
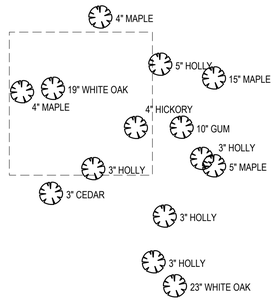


TREE SAMPLE AREA 1



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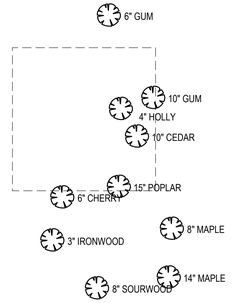

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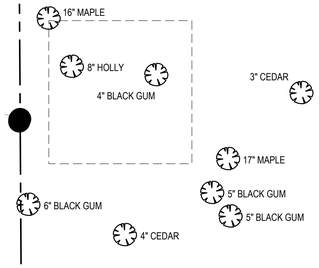

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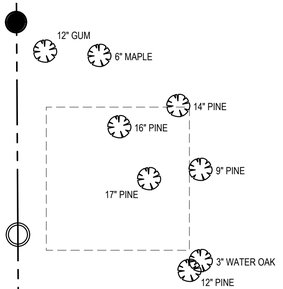

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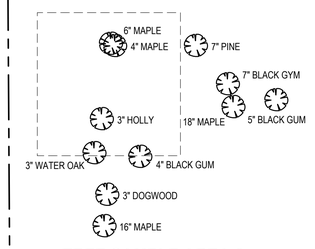

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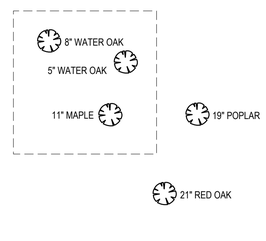

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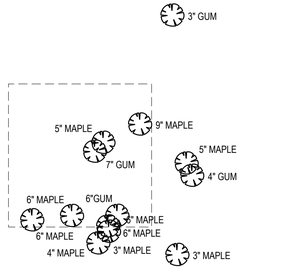

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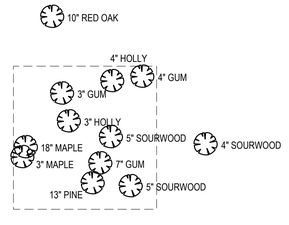

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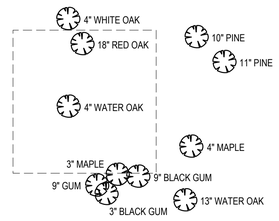

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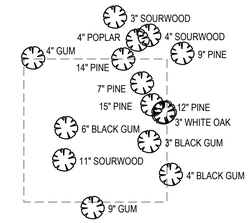

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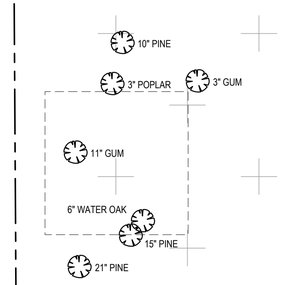

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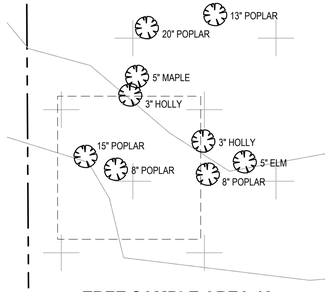

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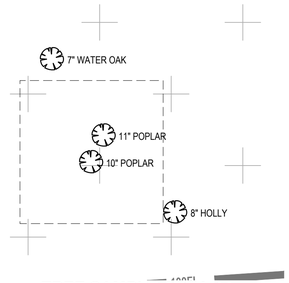

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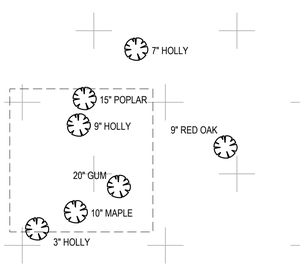

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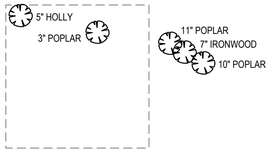
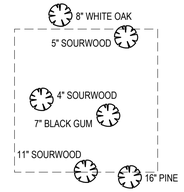
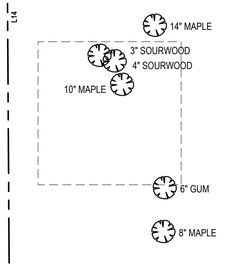


TREE SAMPLE AREA 16



TREE SAMPLE AREA 17



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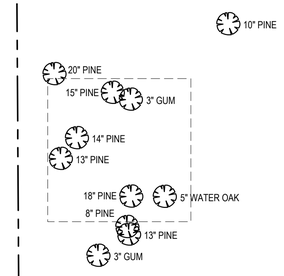
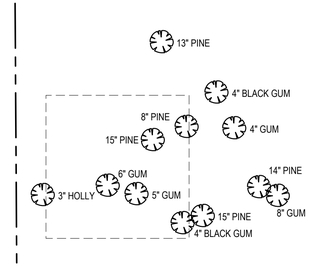


TREE SAMPLE AREA 19



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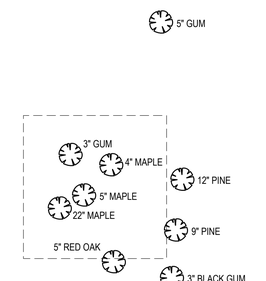

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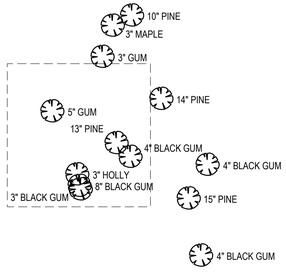

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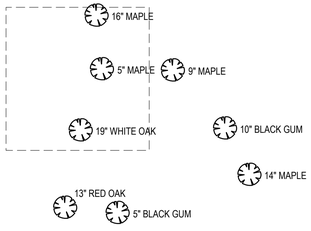

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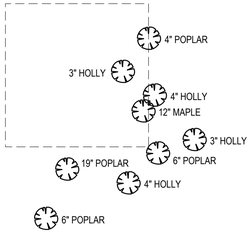
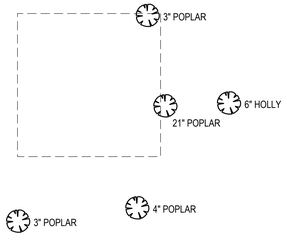
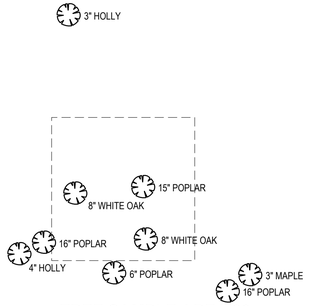


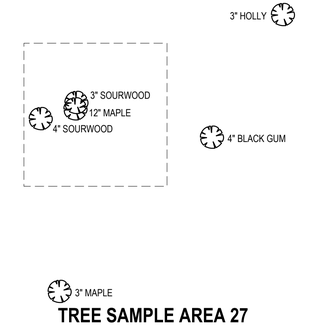
TREE SAMPLE AREA 24



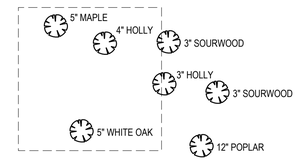
TREE SAMPLE AREA 25



TREE SAMPLE AREA 26



TREE SAMPLE AREA 27



TREE SAMPLE AREA 28

SCALE: 1 IN = 10 FT

10' 5' 0 10' 20'

SCALE IN FEET
HORIZONTAL

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
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NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 200'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

PROFESSIONAL ENGINEER SEAL NOT AFFIXED TO SHEET AS ENGINEER DOES NOT CERTIFY INFORMATION PROVIDED BY OTHERS

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PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL TREE SAMPLE PLAN I

C-1.3

Z:\PROJECTS FOLDER\ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-1.3 PARTIAL TREE SAMPLE PLAN I.DWG
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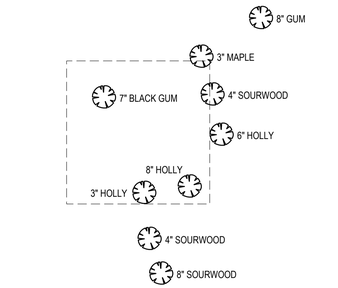
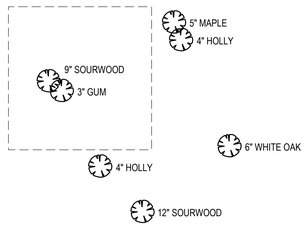
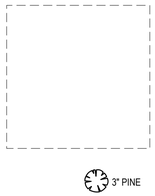


TREE SAMPLE AREA 29



TREE SAMPLE AREA 30



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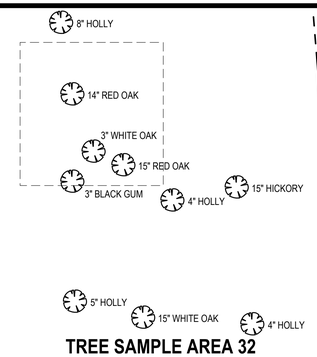

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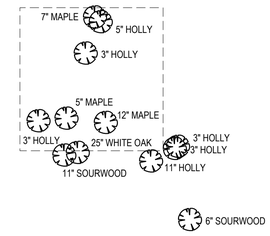

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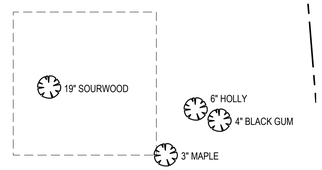
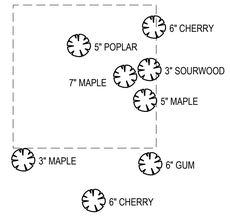
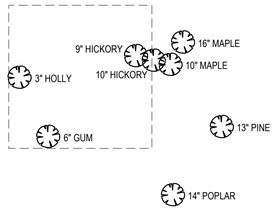


TREE SAMPLE AREA 34



TREE SAMPLE AREA 35



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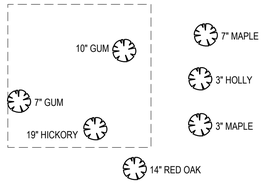
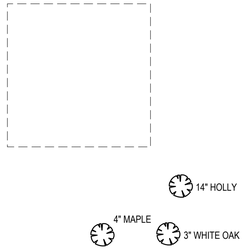
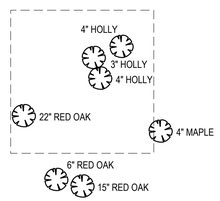


TREE SAMPLE AREA 37



TREE SAMPLE AREA 38



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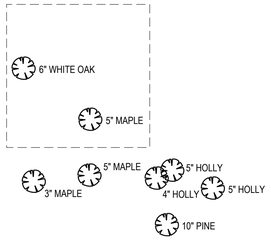
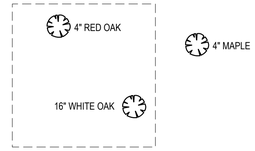
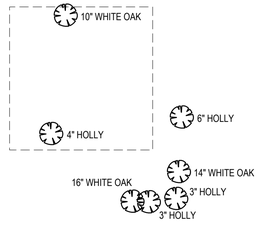


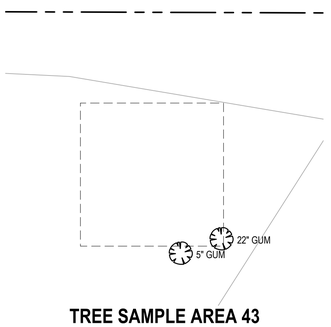
TREE SAMPLE AREA 40



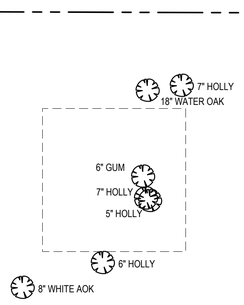
TREE SAMPLE AREA 41



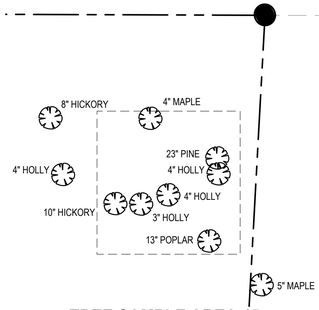
TREE SAMPLE AREA 42



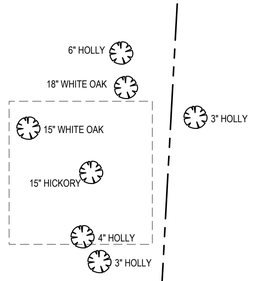
TREE SAMPLE AREA 43



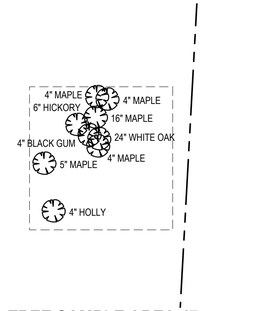
TREE SAMPLE AREA 44



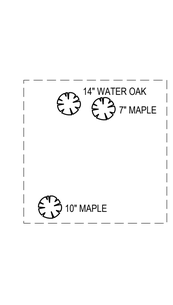
TREE SAMPLE AREA 45



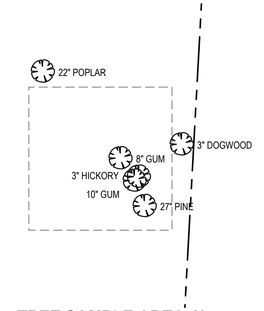
TREE SAMPLE AREA 46



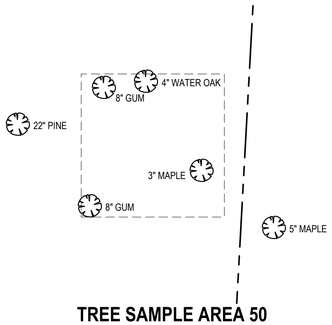
TREE SAMPLE AREA 47



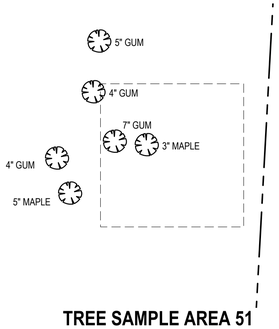
TREE SAMPLE AREA 48



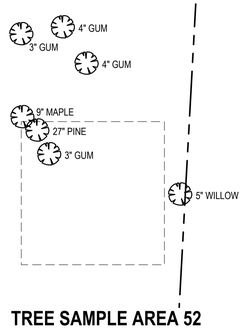
TREE SAMPLE AREA 49



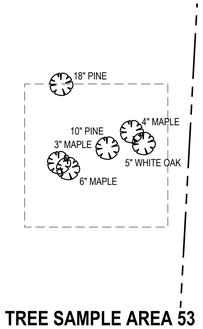
TREE SAMPLE AREA 50



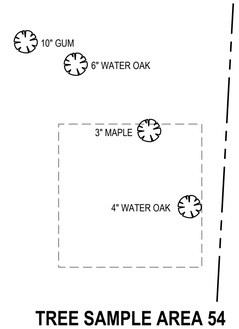
TREE SAMPLE AREA 51



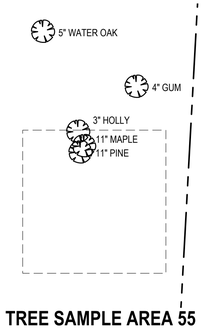
TREE SAMPLE AREA 52



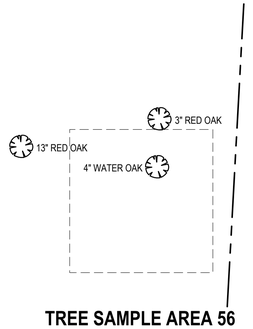
TREE SAMPLE AREA 53



TREE SAMPLE AREA 54



TREE SAMPLE AREA 55



TREE SAMPLE AREA 56

SCALE: 1 IN = 10 FT

5' 0 10' 20'

SCALE IN FEET
HORIZONTAL

10'

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 200'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

PROFESSIONAL ENGINEER SEAL NOT AFFIXED TO SHEET AS ENGINEER DOES NOT CERTIFY INFORMATION PROVIDED BY OTHERS

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA

NC LIC. NO: P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A FAMILY OF REAL ESTATE BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

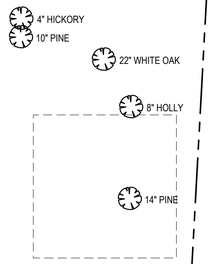
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

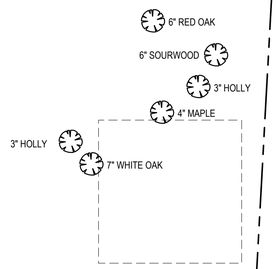
PARTIAL TREE SAMPLE PLAN II

C-1.4

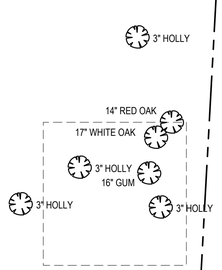
Z:\PROJECTS FOLDER\ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-1.4 PARTIAL TREE SAMPLE PLAN II.DWG
PLOTTED: 6/10/2025 9:18 AM



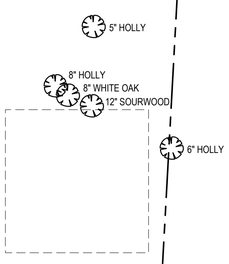
TREE SAMPLE AREA 57



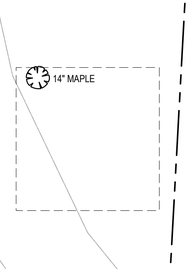
TREE SAMPLE AREA 58



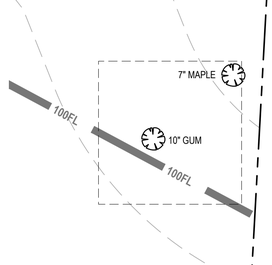
TREE SAMPLE AREA 59



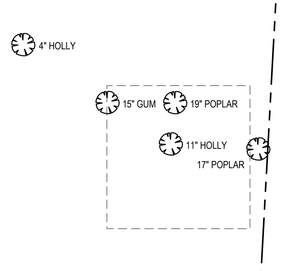
TREE SAMPLE AREA 60



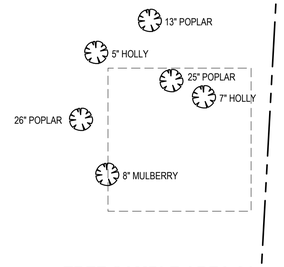
TREE SAMPLE AREA 61



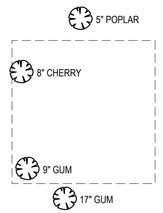
TREE SAMPLE AREA 62



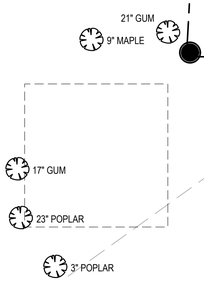
TREE SAMPLE AREA 63



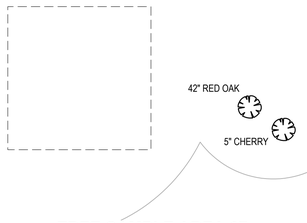
TREE SAMPLE AREA 64



TREE SAMPLE AREA 65



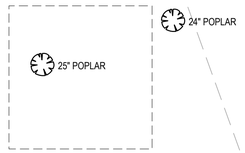
TREE SAMPLE AREA 66



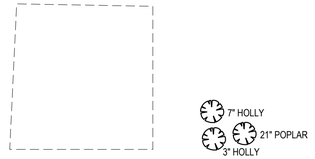
TREE SAMPLE AREA 67



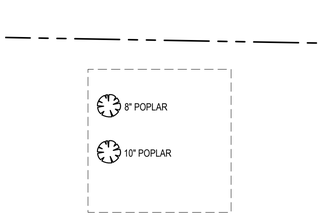
TREE SAMPLE AREA 68



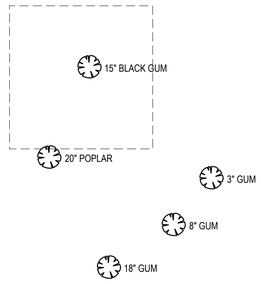
TREE SAMPLE AREA 79



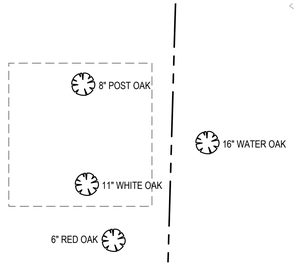
TREE SAMPLE AREA 70



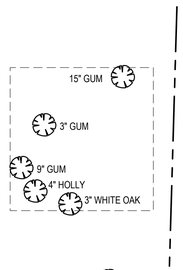
TREE SAMPLE AREA 71



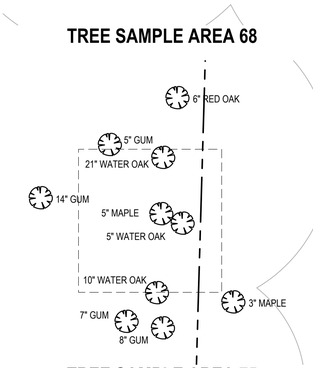
TREE SAMPLE AREA 72



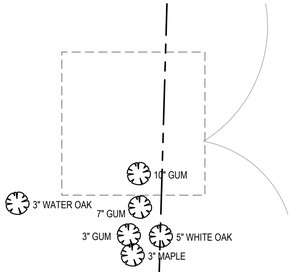
TREE SAMPLE AREA 73



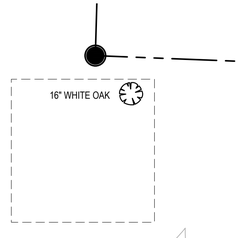
TREE SAMPLE AREA 74



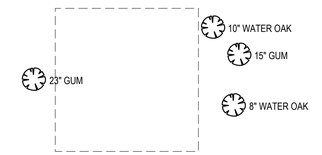
TREE SAMPLE AREA 75



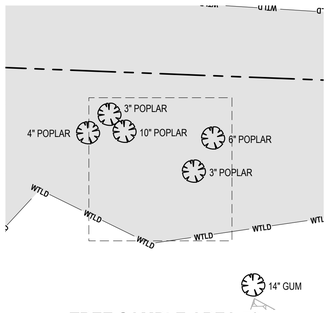
TREE SAMPLE AREA 76



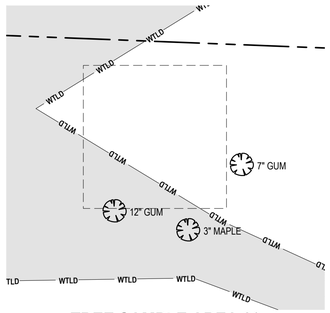
TREE SAMPLE AREA 77



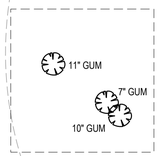
TREE SAMPLE AREA 78



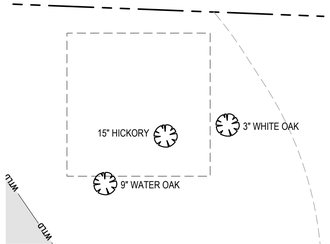
TREE SAMPLE AREA 79



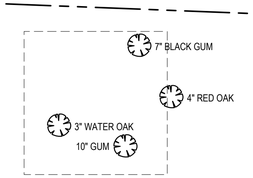
TREE SAMPLE AREA 80



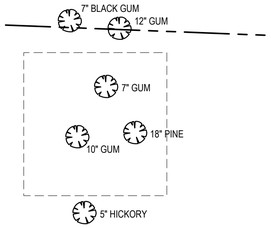
TREE SAMPLE AREA 81



TREE SAMPLE AREA 82



TREE SAMPLE AREA 83



TREE SAMPLE AREA 84

SCALE: 1 IN = 10 FT

10' 5' 0 10' 20'

SCALE IN FEET
HORIZONTAL

REVISIONS		
1	3/14/2025	TCHS COMMENTS #1
2	4/17/2025	TCHS COMMENTS #2
3	5/15/2025	TCHS COMMENTS #3
4	6/10/2025	TCHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 200'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

PROFESSIONAL ENGINEER SEAL
NOT AFFIXED TO SHEET AS
ENGINEER DOES NOT CERTIFY
INFORMATION PROVIDED BY
OTHERS

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING P.A. S.T. 1.0 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

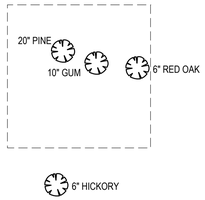
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

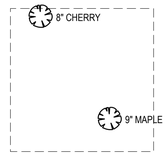
PARTIAL TREE SAMPLE PLAN III

C-1.5

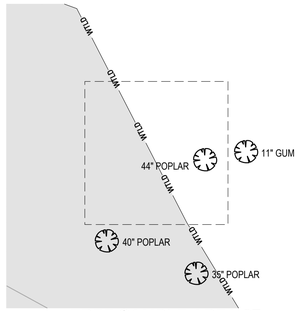
Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-1.5 PARTIAL TREE SAMPLE PLAN III.DWG
PLOTTED: 6/10/2025 9:23 AM



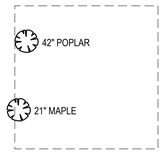
TREE SAMPLE AREA 85



TREE SAMPLE AREA 86



TREE SAMPLE AREA 87



TREE SAMPLE AREA 88

SCALE: 1 IN = 10 FT

10' 5' 0 10' 20'

SCALE IN FEET
HORIZONTAL

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/14/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 200'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

PROFESSIONAL ENGINEER SEAL
NOT AFFIXED TO SHEET AS
ENGINEER DOES NOT CERTIFY
INFORMATION PROVIDED BY
OTHERS

CONSULTANT

Curry ENGINEERING
CURRY ENGINEERING EST. 2010 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

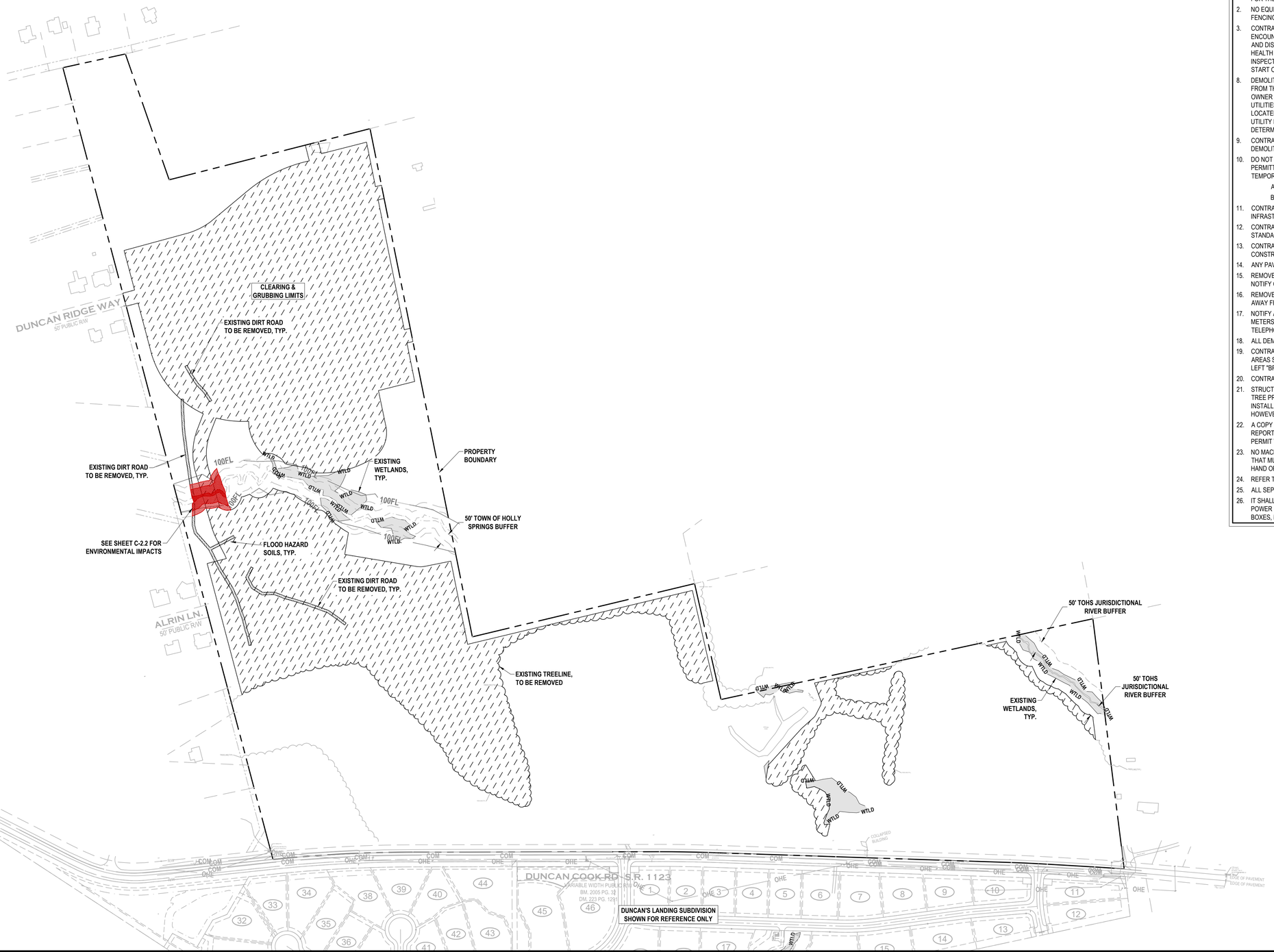
PARTIAL TREE SAMPLE PLAN IV

C-1.6

Z:\PROJECTS FOLDER\ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-1.6 PARTIAL TREE SAMPLE PLAN IV.DWG
PLOTTED: 6/10/2025 9:24 AM

GENERAL NOTES:

1. A COPY OF THE DEMOLITION NOTIFICATION FROM THE NORTH CAROLINA HEALTH HAZARD CONTROL UNTIL AN ASBESTOS INSPECTION REPORT FROM A NORTH CAROLINA ACCREDITED ASBESTOS INSPECTOR MUST ACCOMPANY THE APPLICATION FOR THE DEMOLITION PERMIT WHICH MUST BE OBTAINED PRIOR TO THE START OF DEMOLITION.
2. NO EQUIPMENT IS ALLOWED ON THE SITE OR DISTURBANCE IS PERMITTED UNTIL ALL THE TREE PROTECTION AND SILT FENCING HAS BEEN INSTALLED AND APPROVED.
3. CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER IN THE EVENT THAT UNANTICIPATED HAZARDOUS MATERIALS ARE ENCOUNTERED. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS AND REGULATIONS REGARDING THE HANDLING AND DISPOSAL OF HAZARDOUS MATERIALS. A COPY OF THE DEMOLITION NOTIFICATION FROM THE NORTH CAROLINA HEALTH HAZARD CONTROL UNIT AN ASBESTOS INSPECTION REPORT FROM A NORTH CAROLINA ACCREDITED ASBESTOS INSPECTOR MUST ACCOMPANY THE APPLICATION FOR THE DEMOLITION PERMIT WHICH MUST BE OBTAINED PRIOR TO THE START OF DEMOLITION.
8. DEMOLITION OF STRUCTURES AND/OR UTILITIES BASED ON EXISTING CONDITIONS SURVEY. IF FIELD CONDITIONS DIFFER FROM THOSE SHOWN ON THIS PLAN THAT REQUIRES ADDITIONAL DEMOLITION, THE CONTRACTOR SHALL NOTIFY THE OWNER AND/OR THE ENGINEER PRIOR TO PROCEEDING WITH REMOVAL OF STRUCTURE AND/OR UTILITY. SUBSURFACE UTILITIES AND FEATURES DENOTED ON THIS PLAN SHOULD BE CONSIDERED APPROXIMATE IN NATURE AND HAVE BEEN LOCATED TO THE EXTENT POSSIBLE VIA LEVEL "C" SUE METHODS. CONTRACTOR IS RESPONSIBLE FOR SUBSURFACE UTILITY EXPLORATION, INCLUDING UTILITY "POTHOLING" OR BY THE EXCAVATION OF TEST PITS AS NECESSARY TO DETERMINE THE UTILITY LOCATION, DEPTHS, AND MATERIALS.
9. CONTRACTOR SHALL NOT BEGIN ANY DEMOLITION WORK PRIOR TO APPROVAL AND ISSUANCE OF LAND DISTURBANCE AND DEMOLITION PERMITS ISSUED BY THE TOWN OF HOLLY SPRINGS.
10. DO NOT INTERRUPT EXISTING UTILITY SERVICES FOR FACILITIES OCCUPIED BY THE OWNER OR OTHERS EXCEPT WHEN PERMITTED UNDER THE FOLLOWING CONDITIONS AND THEN ONLY AFTER ARRANGING TO PROVIDE ACCEPTABLE TEMPORARY UTILITY SERVICES.
    A. NOTIFY OWNER NOT LESS THAN 72 HOURS IN ADVANCE OF PROPOSED UTILITY SERVICE INTERRUPTIONS.
    B. DO NOT PROCEED WITH UTILITY INTERRUPTIONS WITHOUT RECEIVING WRITTEN PERMISSION FROM THE OWNER.
11. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DONE TO EXISTING TOWN OF HOLLY SPRINGS OR NCDOT INFRASTRUCTURE, PRIVATE UTILITY, COMPANY INFRASTRUCTURE, OR ADJACENT PROPERTY OWNERS PROPERTY.
12. CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND IMPLEMENTING A TRAFFIC CONTROL PLAN PER NCDOT AND MUTCD STANDARDS.
13. CONTRACTOR IS RESPONSIBLE FOR THE SECURITY OF HIS/HER EQUIPMENT AND MATERIALS STORED ON-SITE DURING CONSTRUCTION.
14. ANY PAVEMENT CUT SHALL BE DONE AS A FULL DEPTH SAW CUT WITH LINES STRAIGHT AND NEAT.
15. REMOVE ALL EXISTING ON-SITE TRASH AND DEBRIS. TRASH SHALL BE REMOVED AND DISPOSED OF IN A LEGAL MANNER. NOTIFY OWNER AND ENGINEER IF ANY HAZARDOUS MATERIALS (ASBESTOS, LEAD PAINT, ETC.) ARE ENCOUNTERED.
16. REMOVE SIDEWALK, CURB AND GUTTER, AND OTHER CONCRETE SECTIONS BY SAW CUTTING THE NEAREST CONTROL JOINT AWAY FROM THE AREA DESIGNATED TO BE REMOVED ON THE DEMOLITION PLAN.
17. NOTIFY AND COORDINATE ANY REQUIRED RELOCATION AND/OR REMOVAL OF EXISTING UNDERGROUND UTILITIES, POLES, METERS, OR OTHER ABOVE GROUND APPURTENANCES WITH THE APPROPRIATE UTILITY PROVIDER (I.E. POWER, TELEPHONE, CABLE, AND NATURAL GAS/PROPANE) PRIOR TO THE START OF SELECTIVE DEMOLITION WORK.
18. ALL DEMOLISHED MATERIALS SHALL BE DISPOSED OF OFF-SITE IN A LAWFUL MANNER.
19. CONTRACTOR SHALL MAINTAIN A CLEAN WORK SITE, FREE OF DEBRIS, TRASH, OR OTHER CONSTRUCTION MATERIALS. AREAS SUBJECT TO SITE CONSTRUCTION ADJACENT TO THE PUBLIC RIGHT OF WAY AND PEDESTRIAN SIDEWALKS SHALL BE LEFT "BROOM CLEAN" AT THE END OF EACH WORK DAY.
20. CONTRACTOR IS RESPONSIBLE FOR ANY TEMPORARY UTILITIES NEEDED DURING CONSTRUCTION.
21. STRUCTURES BEING REMOVED IN, OR IMMEDIATELY ADJACENT TO, THE RESOURCE CONSERVATION AREA (RCA) AND/OR TREE PROTECTION FENCE SHALL BE REMOVED BY HAND. NO HEAVY MACHINERY SHALL BE USED DURING DEMOLITION. INSTALL TREE PROTECTION FENCE IN INITIAL PHASE SUCH THAT EXISTING STRUCTURES AND/OR GRAVEL MAY BE REMOVED HOWEVER AFTER REMOVAL, TREE PROTECTION FENCE SHALL BE INSTALLED IN LOCATION AS SHOWN.
22. A COPY OF THE DEMOLITION NOTIFICATION FROM THE NC HEALTH HAZARD CONTROL UNIT AND AN ASBESTOS INSPECTION REPORT FROM A NC ACCREDITED ASBESTOS INSPECTOR MUST ACCOMPANY THE APPLICATION FOR THE DEMOLITION PERMIT WHICH MUST BE OBTAINED PRIOR TO START OF THE DEMOLITION.
23. NO MACHINERY OF ANY KIND IS ALLOWED BEHIND THE TREE PROTECTION FENCE (TPF). ANY ITEMS SHOWN BEHIND TPF THAT MUST BE REMOVED (EX. ELECTRIC POLES, ELECTRIC LINES, SMALL BUILDINGS, TRASH, ETC.) SHALL BE REMOVED BY HAND OR USING MACHINES STATIONED OUTSIDE THE TPF.
24. REFER TO C-01 FOR APPLICABLE TOWN OF HOLLY SPRINGS NOTES.
25. ALL SEPTIC TANKS AND WELLS FOUND ON-SITE SHALL BE REMOVED/ABANDONED PER LOCAL & STATE STANDARDS.
26. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE WITH POWER COMPANY ON RELOCATION OF OVERHEAD POWER LINES AND COORDINATE WITH PRIVATE UTILITY COMPANIES FOR ANY RELOCATIONS OF PULL BOXES, JUNCTIONS BOXES, MARKERS, OR OTHER PRIVATE UTILITY APPURTENANCES.



LEGEND:

- STRUCTURE REMOVAL
- PERMANENT WETLAND IMPACT
- TEMPORARY WETLAND IMPACT
- GRAVEL/DIRT ROAD REMOVAL
- CLEARING/GRUBBING LIMITS
- UTILITY DEMOLITION
- FENCE DEMOLITION

SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET
HORIZONTAL

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 60'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA 36823 ENGINEER ANDREW S. PETTY

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING
CURRY ENGINEERING COMPANY EST. 1985 NORTH CAROLINA
NC LIC. NO: P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

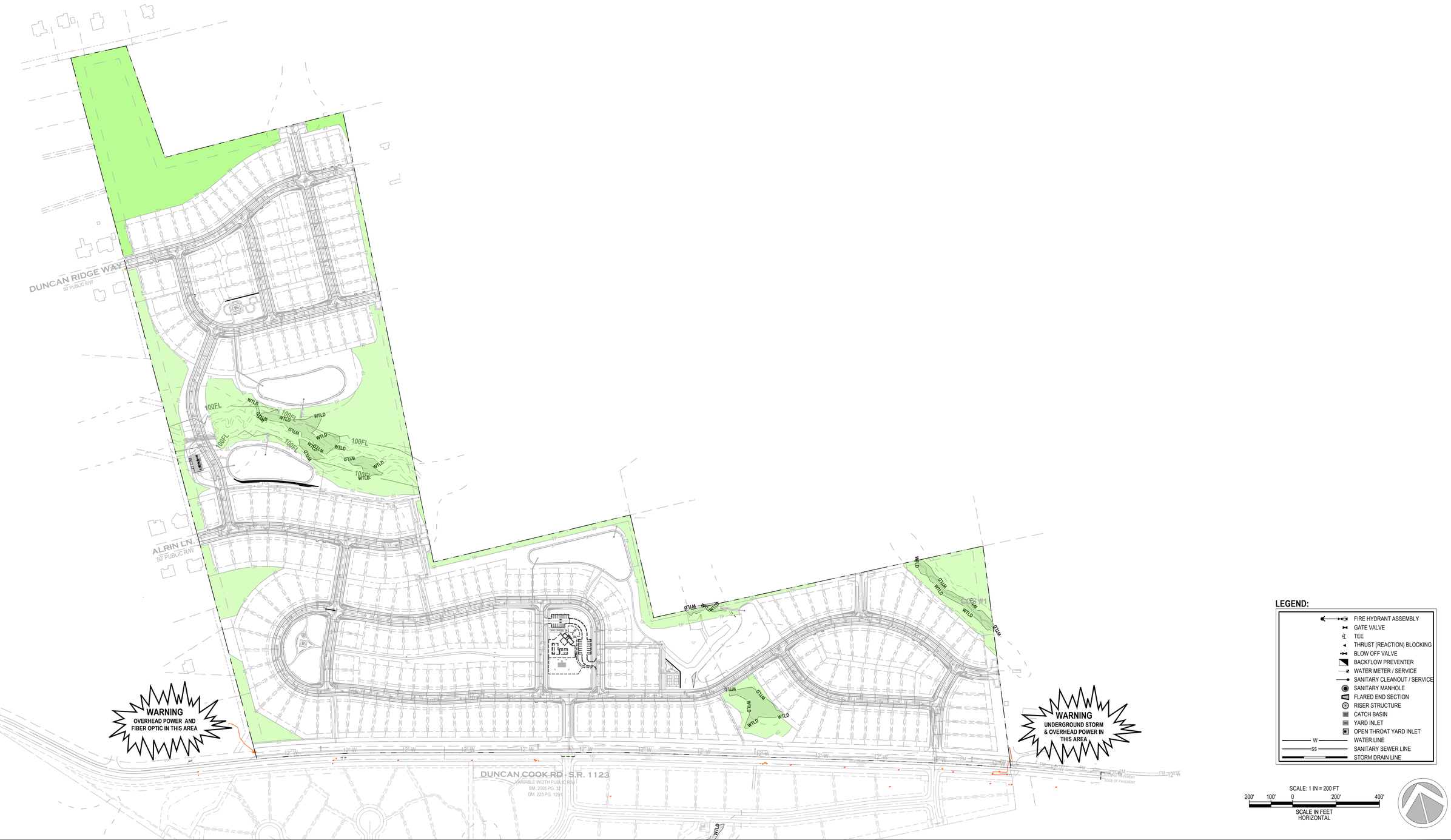
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

DEMOLITION PLAN

C-2.0

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-2.0 DEMOLITION PLAN.DWG
PLOTTED: 6/10/2025 9:24 AM



LEGEND:

- FIRE HYDRANT ASSEMBLY
- GATE VALVE
- TEE
- THRUST (REACTION) BLOCKING
- BLOW OFF VALVE
- BACKFLOW PREVENTER
- WATER METER / SERVICE
- SANITARY CLEANOUT / SERVICE
- SANITARY MANHOLE
- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- OPEN THROAT YARD INLET
- W — WATER LINE
- SS — SANITARY SEWER LINE
- STORM DRAIN LINE

SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET
HORIZONTAL

REVISIONS

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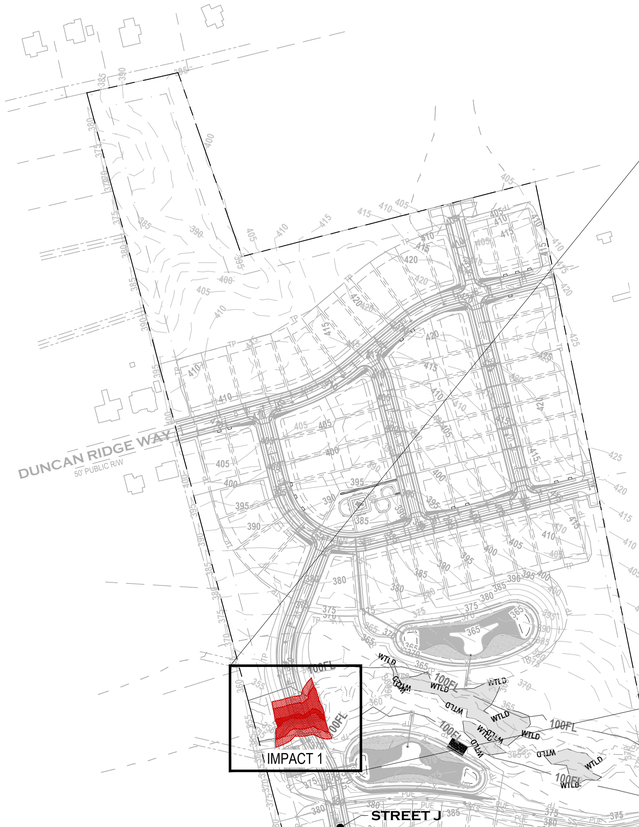
DEVELOPMENT PETITION PLANS

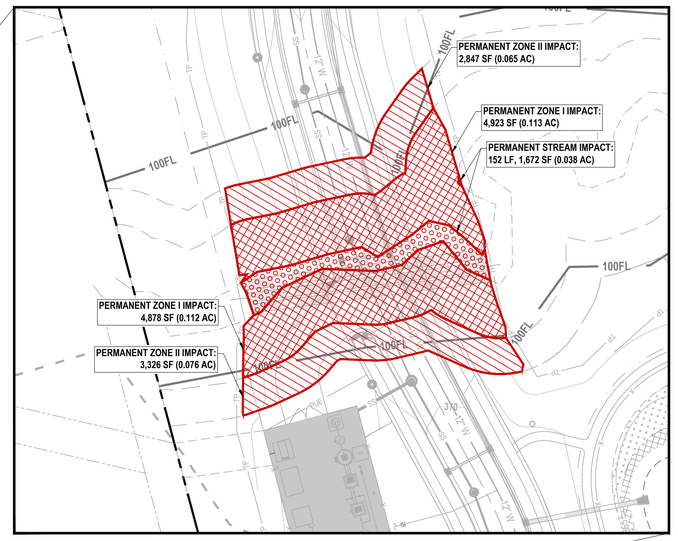
HAZEL RIDGE SUBDIVISION

PRIVATE UTILITY IMPACTS PLAN

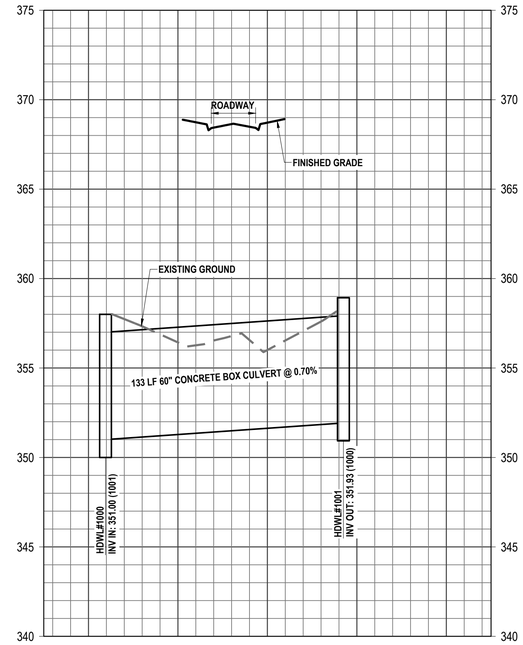
C-2.1

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-2.1 PRIVATE UTILITY IMPACTS PLAN.DWG
PLOTTED: 6/10/2025 9:25 AM





IMPACT 1
SCALE: 1" = 40'



1
C-2.2

STREET J CULVERT PROFILE VIEW
SCALE: 1" = 40' H, 1" = 4' V

LEGEND

- PERMANENT STREAM IMPACT
- PERMANENT-NO PERMANENT STREAM IMPACT
- PERMANENT ZONE 1 IMPACT
- PERMANENT ZONE 2 IMPACT

SCALE: 1 IN = 200 FT
200' 100' 0 200' 400'
SCALE IN FEET
HORIZONTAL

REVISIONS		
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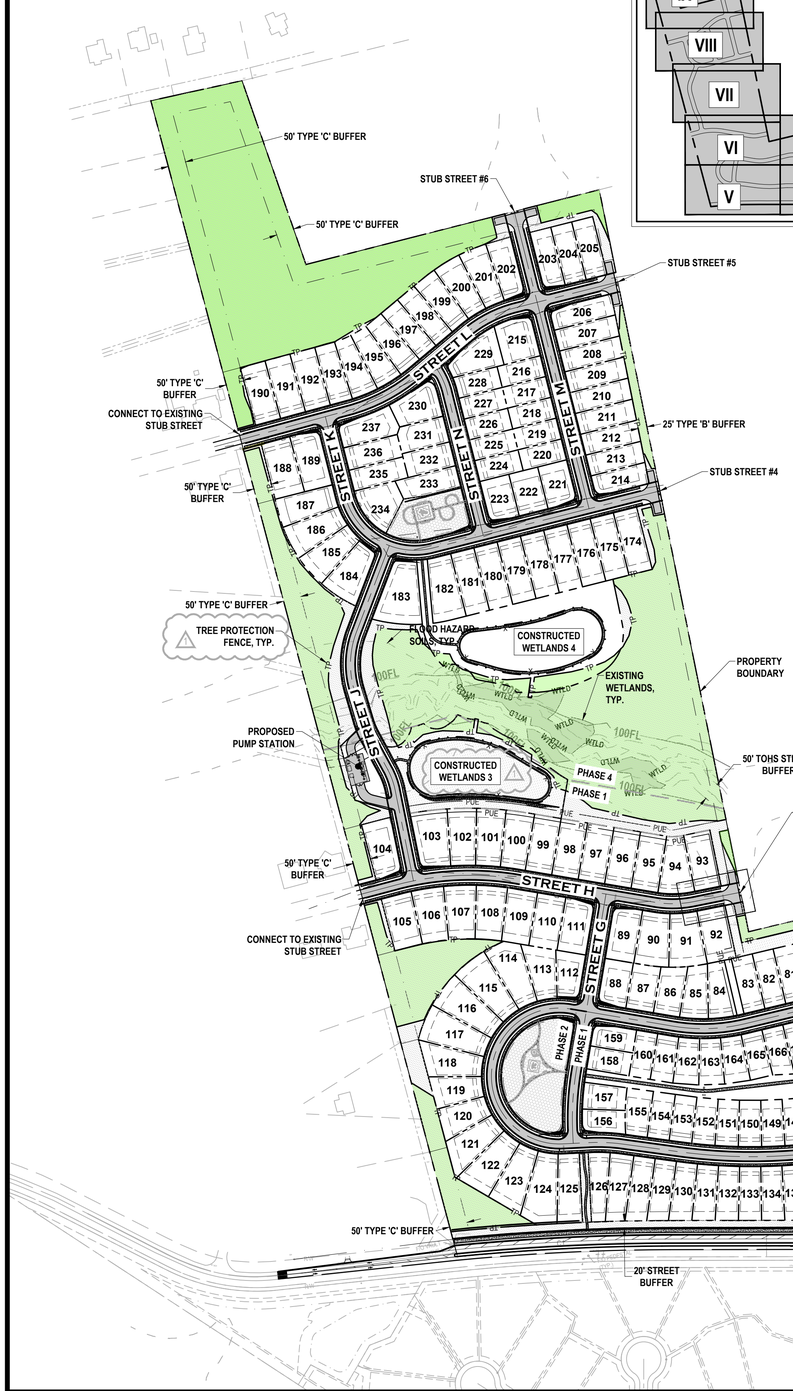
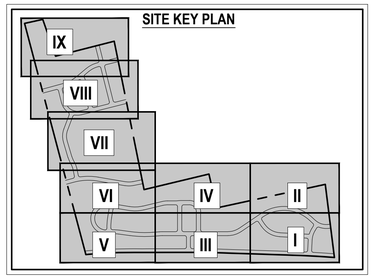
DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
ENVIRONMENTAL IMPACTS PLAN

C-2.2

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-2.2 ENVIRONMENTAL IMPACTS PLAN.DWG
PLOTTED: 6/10/2025 9:26 AM



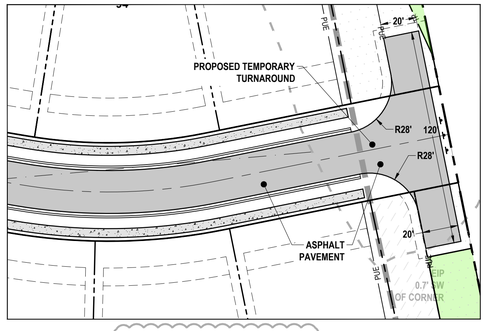
SITE KEY PLAN



SITE INFORMATION TABLE

GENERAL INFORMATION	
LOCATION:	5900 DUNCAN COOK ROAD HOLLY SPRINGS, NC 27540
COUNTY:	WAKE
PARENT PIN:	0646-39-8124
EXISTING PARCEL ACREAGE:	122.29 AC
ROAD WIDENING RIGHT OF WAY DEDICATION:	4.11 AC
PROPERTY ACREAGE AFTER DEDICATION:	118.18 AC
LAND CLASS:	VACANT
PROPOSED USE:	SINGLE FAMILY
FEMA MAP PANEL NUMBER:	3720064600J
MINIMUM BUILDING SETBACKS:	
FRONT:	15'
SIDE - INTERIOR:	5'
SIDE - CORNER:	15'
REAR:	25'
FRONT GARAGE:	25'
MAX. HEIGHT:	35'
RIGHT OF WAY & OTHER AREAS:	
RIGHT OF WAY AREA:	21.57 AC
NATURAL WETLANDS:	1.77 AC
STREAM BUFFER:	4.76 AC
FLOOD PLAIN:	0.00 AC
FLOOD WAY:	0.06 AC
UTILITY CALCULATIONS:	
WRMP PRIORITY LEVEL:	III
UTILITY ALLOCATION	60,690 GPD
ROADWAYS:	
LENGTH OF ROADWAYS	14,246 LF
EST. DISTURBED AREA:	9.22 AC

IMPERVIOUS AREAS:	
ROADWAYS:	401,682 SF (9.22 AC)
OPEN SPACE AREAS (1-4):	46,900 SF (1.08 AC)
PUMP STATION:	8,500 SF (0.20 AC)
MAIL KIOSK / AMENITY:	65,340 SF (1.50 AC)
LOTS (4,700 SF / LOT):	1,113,900 SF (25.57 AC)
SIDEWALK:	202,375 SF (4.65 AC)
TOTAL ON-SITE IMPERVIOUS AREA:	1,838,697 SF (42.21 AC)
TOTAL ON-SITE IMPERVIOUS %:	35.72%
LOT ACREAGE:	
TOTAL NUMBER PROPOSED LOTS:	237
MAXIMUM ALLOWABLE DENSITY:	1.97 DU/AC
PROPOSED OVERALL DENSITY:	1.97 DU/AC
MAXIMUM ALLOWABLE UNITS:	237 DU
MINIMUM ALLOWED LOT SIZE:	7,500 SF
MINIMUM PROPOSED LOT SIZE:	7,500 SF
AVERAGE PROPOSED LOT SIZE:	10,671 SF
MINIMUM ALLOWED LOT WIDTH:	60'
MINIMUM PROVIDED LOT WIDTH:	60'
12,000 SF+ LOTS:	79±
10,000 SF+ LOTS:	72±
7,500 SF+ LOTS:	86±
OPEN SPACE & OTHER AREAS:	
FLEX OPEN SPACE REQUIRED: (5% OF SITE AREA)	6.01 AC
FLEX OPEN SPACE PROVIDED:	11.95 AC
ACTIVE OPEN SPACE REQUIRED: (5% OF SITE AREA)	6.01 AC
ACTIVE OPEN SPACE PROVIDED:	6.19 AC
TREE PRESERVATION REQUIRED:	24.20 AC (PER APPROVED MASTERPLAN)



1 / C-3.0 **STUB STREET #3 ENLARGED VIEW**
SCALE: 1" = 40'

GENERAL NOTES:

THESE NOTES APPLY TO SHEETS C-3.0 - C-3.9.

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARD SPECIFICATIONS AND DETAILS.
2. BOUNDARY INFORMATION IS BASED ON SURVEY BY BASS NIXON, & KENNEDY, INC.
3. COMMON OPEN SPACE SHALL BE MAINTAINED BY HOMEOWNER'S ASSOCIATION.
4. WETLANDS DELINEATED BY MITCHELL ENVIRONMENTAL AND HAVE BEEN USACE CONCURRED AND FIELD SURVEYED.
5. DELINEATED WETLAND AND RIPARIAN BUFFER AREAS SHALL NOT BE CLEARED, DRAINED, OR OTHERWISE DISTURBED UNLESS SPECIFICALLY PERMITTED BY THE US ARMY CORPS OF ENGINEERS AND NCDENR-DWR.
6. ALL STREETS SHALL BE PUBLIC.
7. CONSTRUCTION DRAWING APPROVAL IS REQUIRED BEFORE CONSTRUCTION CAN BEGIN. ALL APPLICABLE FEES SHALL ALSO BE PAID PRIOR TO CONSTRUCTION DRAWING APPROVAL.
8. THE DEVELOPER IS SOLELY RESPONSIBLE FOR THE COST AND COORDINATION WITH DUKE ENERGY FOR THE RELOCATION OR REMOVAL OF ANY ONSITE OVERHEAD POWER POLES AND LINES.
9. TREE PROTECTION FENCING SHALL BE PROVIDED ALONG ALL VEGETATED RIPARIAN AND VEGETATED PERIMETER BUFFER AREAS.
10. ANY ACTIVITY IN THE TOWN OF HOLLY SPRINGS ZONE 1 OR ZONE 2 BUFFERS SHALL BE IN ACCORDANCE WITH SECTION 7.06 OF THE TOWN OF HOLLY SPRINGS UDO.
11. THIS PLAN IS SUBJECT TO REVISION DURING THE CONSTRUCTION DRAWING REVIEW PROCESS FOLLOWING HOLLY SPRINGS TOWN COUNCIL ACTION.
12. A DEVELOPER AGREEMENT HAS BEEN OBTAINED FOR THIS PROJECT TO ADDRESS OFFSITE ROADWAY IMPROVEMENTS.
13. THOROUGHFARE BUFFER YARD FROM HOLLY SPRINGS NEW HILL ROAD BASED ON BOUNDARY SURVEY AND PROPOSED RIGHT OF WAY DEDICATION.
14. ACCESS TO DUNCAN COOK ROAD SUBJECT TO NCDOT DRIVEWAY PERMIT APPROVAL. A TRAFFIC IMPACT ANALYSIS IS REQUIRED FOR THIS PROJECT AND HAS BEEN APPROVED WITH THE REZONING OF THIS PROPERTY.
15. PEDESTRIAN CROSSWALKS SHALL HAVE A VARIATION IN STREET PAVEMENT TEXTURE OR MARKINGS FOR DELINEATION PER TOHS UDO REQUIREMENTS.
16. ALL INTERSECTION RADII SHALL BE 30' UNLESS SHOWN OTHERWISE.
17. THE DEVELOPER MUST SUBMIT DRAFT COVENANTS ESTABLISHING A HOMEOWNERS ASSOCIATION TO COVER MAINTENANCE OF THE FOLLOWING APPLICABLE ITEMS: PRIVATE STREETS, ALLEYS, STREET LIGHTING, SPECIALTY STREET SIGNS, STREET TREES, PRIVATE GREENWAYS, PONDS, LAKES, PRIVATE SEWER COLLECTION, PRIVATE DRAINAGE EASEMENTS, REUSE LINES, AND STORMWATER DEVICES. HOA COVENANTS SHALL BE RECORDED WITH THE FIRST PLAT ASSOCIATED WITH THIS SUBDIVISION.
18. ALL PROPOSED RETAINING WALLS REQUIRE A BUILDING PERMIT. ANY WALL GREATER THAT 4" IN HEIGHT WILL REQUIRE ENGINEERING DESIGN APPROVAL AT CONSTRUCTION DRAWING REVIEW AS WELL AS A PERMIT.
19. STRUCTURAL DESIGN OF RETAINING WALLS SHALL BE PERFORMED BY OTHERS. CONTRACTOR WILL PROVIDE CURRY ENGINEERING SEALED DRAWINGS OF ALL RETAINING WALL DESIGN FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
20. RETAINING WALLS GREATER THAN 30 INCHES IN HEIGHT SHALL INCLUDE A SAFETY HANDRAIL OR FENCE AT THE TOP OF THE WALL.
21. SITE LAYOUTS MEET MINIMUM DRIVEWAY LENGTHS OF 20' FOR SINGLE AND 25' FOR DOUBLE.
22. ADJACENT ROADWAYS WILL BE REQUIRED TO BE LIGHTED PRIOR TO THE FIRST CERTIFICATE OF OCCUPANCY AND INTERNAL ROADWAYS MUST BE LIGHTED PRIOR TO STREET ACCEPTANCE FOR 1 YEAR WARRANTY.
23. FINAL PLAT MAY NOT BE RECORDED UNTIL PUNCHLIST INSPECTION IS COMPLETE.
24. A PRECONSTRUCTION MEETING WITH THE TOWN CONSTRUCTION INSPECTOR AND ENVIRONMENTAL ENGINEER (TELEPHONE 557-3938) WILL BE REQUIRED BEFORE BEGINNING ANY CONSTRUCTION.
25. STREET TREES SHALL BE PLANTED IN THE LOCATIONS SHOWN ON THE LANDSCAPING PLANS. PRIOR TO CONSTRUCTION DRAWING APPROVAL, ONCE STREET LIGHTING IS FINALIZED, A FINAL STREET TREE LAYOUT SHALL BE SUBMITTED FOR APPROVAL.

LEGEND:

- STREET LIGHT
- SIGN
- WCR — WHEELCHAIR RAMP
- CBU — CLUSTER MAILBOX UNIT
- ROADWAY CENTER LINE
- LOT LINE
- RIGHT OF WAY LINE
- SETBACK LINE
- EASEMENT
- BUFFER
- FENCE
- STANDARD CURB & GUTTER
- SPILL CURB & GUTTER
- TP — TREE PRESERVATION AREAS
- CONCRETE SIDEWALK
- ASPHALT PAVEMENT
- ASPHALT MILL/OVERLAY
- GRAVEL SURFACING
- CONCRETE PAVERS
- CRUSHED AGGREGATE
- CONSERVATION OPEN SPACE
- ACTIVE OPEN SPACE
- FLEX OPEN SPACE

SCALE: 1 IN = 200 FT
200' 100' 0 200' 400'
SCALE IN FEET HORIZONTAL

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

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DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
OVERALL SITE LAYOUT

C-3.0

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.0 OVERALL SITE LAYOUT.DWG
PLOTTED: 6/10/2025 9:28 AM

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
DUNCAN COOK RD	45	50	18	500

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
SUBDIVISION	25	30	15	300



REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/15/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER ANDREW S. PETTY 36823
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING P.A. EST. 1.0 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT — A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

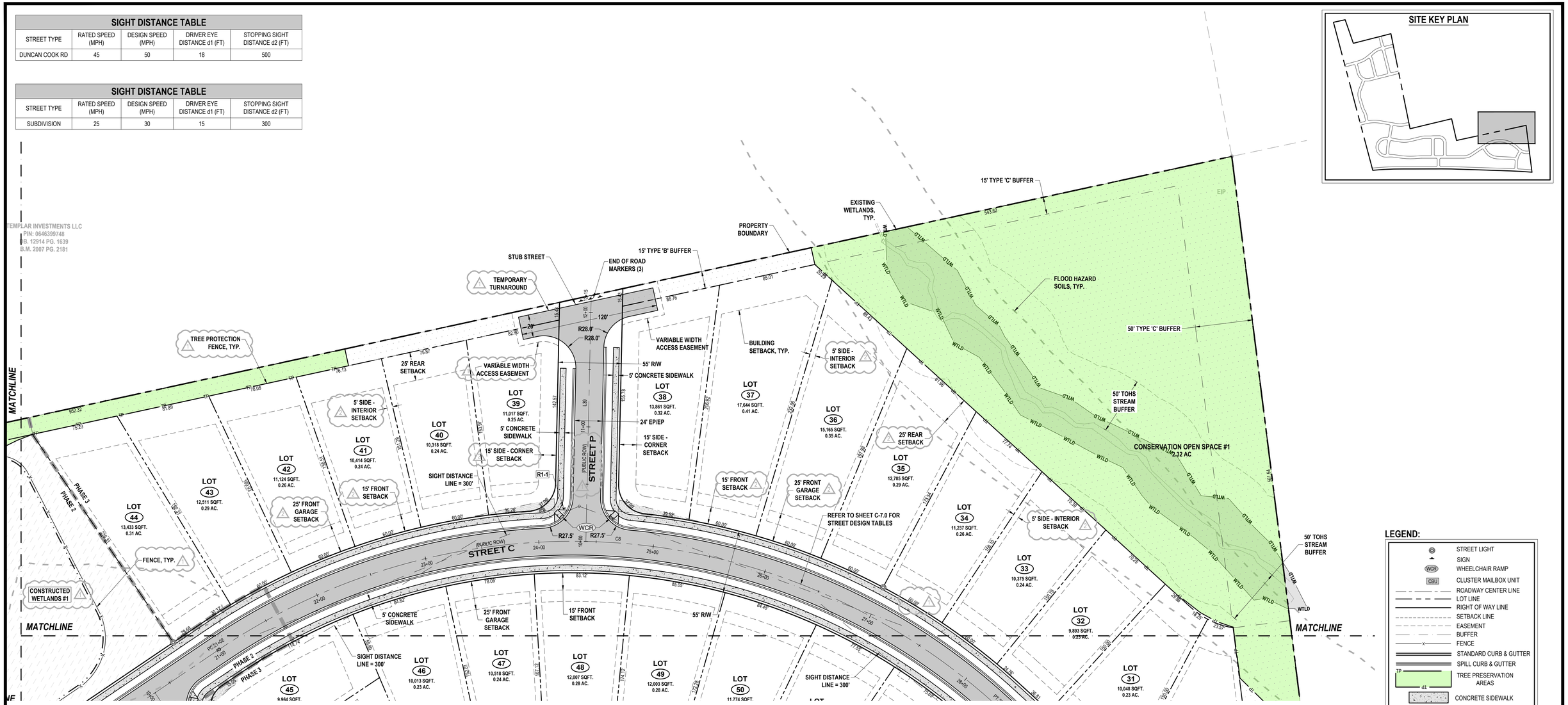
DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
PARTIAL SITE LAYOUT I

C-3.1

Z:\PROJECTS FOLDER-ZEBU\ON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.1 PARTIAL SITE LAYOUT I.DWG
PLOTTED: 6/10/2025 9:27 AM

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
DUNCAN COOK RD	45	50	18	500

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
SUBDIVISION	25	30	15	300



REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/15/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
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DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA ENGINEER ANDREW S. PETTY 36823
PRELIMINARY FOR REVIEW ONLY

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NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
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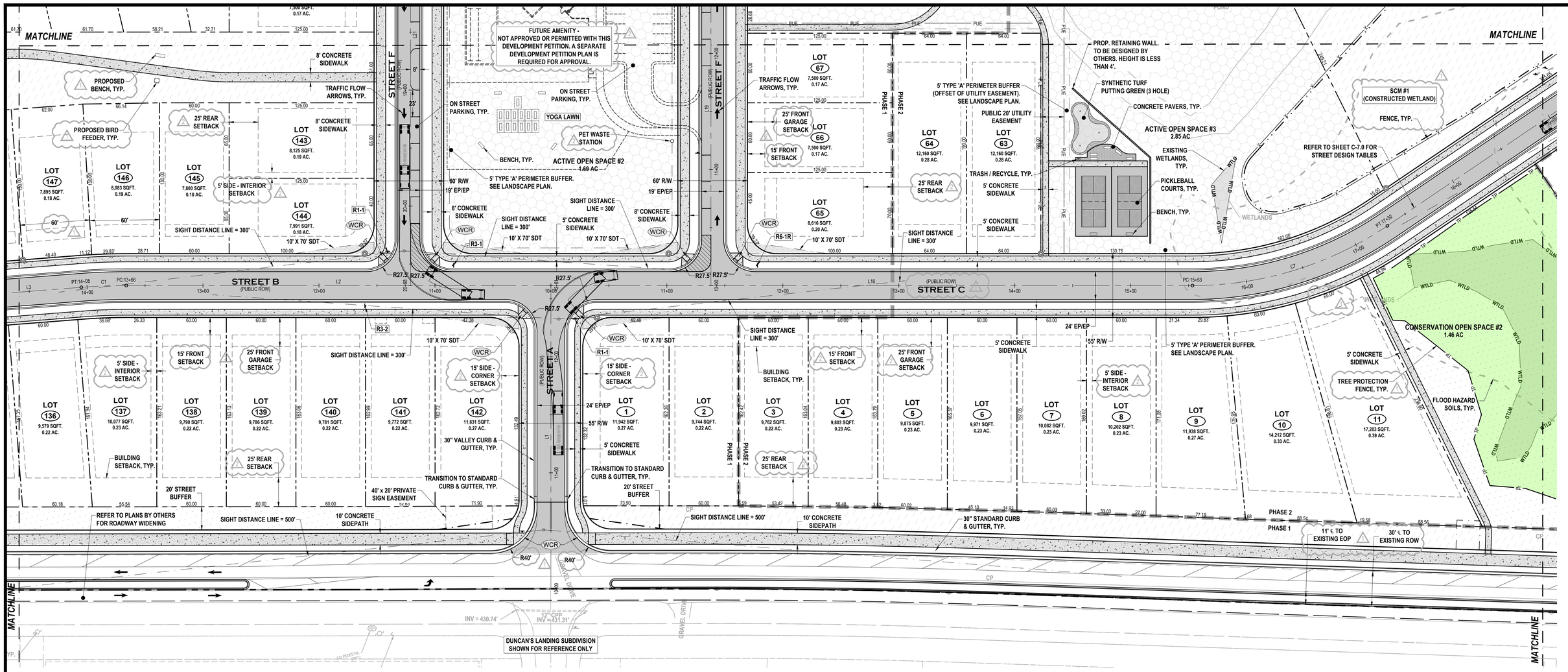
PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

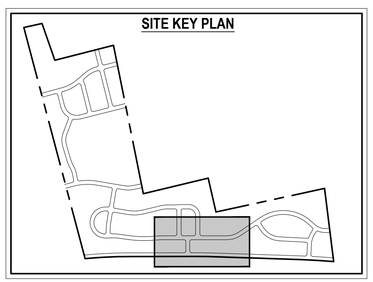
DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
PARTIAL SITE LAYOUT II

C-3.2

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.2 PARTIAL SITE LAYOUT II.DWG
PLOTTED: 6/10/2025 9:28 AM



SITE KEY PLAN



SIGHT DISTANCE TABLE

STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
DUNCAN COOK RD	45	50	18	500

SIGHT DISTANCE TABLE

STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
SUBDIVISION	25	30	15	300

LEGEND:

- STREET LIGHT
- SIGN
- WHEELCHAIR RAMP (WCR)
- CLUSTER MAILBOX UNIT (CBU)
- ROADWAY CENTER LINE
- LOT LINE
- RIGHT OF WAY LINE
- SETBACK LINE
- EASEMENT
- BUFFER
- FENCE
- STANDARD CURB & GUTTER
- SPILL CURB & GUTTER
- TREE PRESERVATION AREAS (TP, d1)
- CONCRETE SIDEWALK
- ASPHALT PAVEMENT
- ASPHALT MILL/OVERLAY
- GRAVEL SURFACING
- CONCRETE PAVERS
- CRUSHED AGGREGATE
- CONSERVATION OPEN SPACE
- ACTIVE OPEN SPACE
- FLEX OPEN SPACE

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

REVISIONS		
1	3/14/2025	TCHS COMMENTS #1
2	4/17/2025	TCHS COMMENTS #2
3	5/16/2025	TCHS COMMENTS #3
4	6/10/2025	TCHS COMMENTS #4

STATUS
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DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 36823 ENGINEER ANDREW S. PETTY

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
AN INVITATION HOMES BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

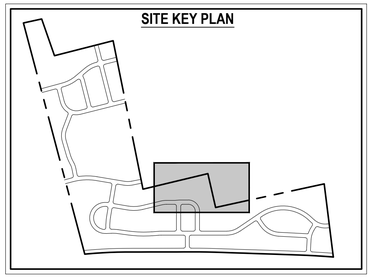
HAZEL RIDGE SUBDIVISION

PARTIAL SITE LAYOUT III

C-3.3

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.3 PARTIAL SITE LAYOUT III.DWG
PLOTTED: 6/10/2025 9:28 AM

SITE KEY PLAN



LEGEND:

- STREET LIGHT
- SIGN
- WHEELCHAIR RAMP (WCR)
- CLUSTER MAILBOX UNIT (CBU)
- ROADWAY CENTER LINE
- LOT LINE
- RIGHT OF WAY LINE
- SETBACK LINE
- EASEMENT
- BUFFER
- FENCE
- STANDARD CURB & GUTTER
- SPILL CURB & GUTTER
- TREE PRESERVATION AREAS
- CONCRETE SIDEWALK
- ASPHALT PAVEMENT
- ASPHALT MILL/OVERLAY
- GRAVEL SURFACING
- CONCRETE PAVERS
- CRUSHED AGGREGATE
- CONSERVATION OPEN SPACE
- ACTIVE OPEN SPACE
- FLEX OPEN SPACE

EXISTING AXLE - BENT

PROPERTY BOUNDARY

25' TYPE 'B' BUFFER

15' TYPE 'B' BUFFER

CONSERVATION OPEN SPACE #9
1.09 AC.

SCM #2
(CONSTRUCTED WETLAND)

FLEX OPEN SPACE #8
2.62 AC

FENCE, TYP.

TREE PROTECTION FENCE, TYP.

5' CONCRETE SIDEWALK

MATCHLINE

25' REAR SETBACK

BUILDING SETBACK, TYP.

LOT 80 — 9,431 SQFT. 0.22 AC.
LOT 79 — 9,429 SQFT. 0.22 AC.
LOT 78 — 12,307 SQFT. 0.28 AC.
LOT 77 — 7,500 SQFT. 0.17 AC.
LOT 76 — 7,500 SQFT. 0.17 AC.
LOT 75 — 7,499 SQFT. 0.17 AC.
LOT 74 — 7,500 SQFT. 0.17 AC.
LOT 73 — 7,500 SQFT. 0.17 AC.
LOT 72 — 9,717 SQFT. 0.22 AC.
LOT 71 — 9,553 SQFT. 0.22 AC.
LOT 70 — 9,553 SQFT. 0.22 AC.
LOT 69 — 9,594 SQFT. 0.22 AC.
LOT 68 — 7,500 SQFT. 0.17 AC.
LOT 67 — 7,500 SQFT. 0.17 AC.
LOT 167 — 8,898 SQFT. 0.20 AC.
LOT 168 — 9,761 SQFT. 0.22 AC.
LOT 169 — 10,728 SQFT. 0.25 AC.
LOT 170 — 9,288 SQFT. 0.21 AC.
LOT 171 — 7,991 SQFT. 0.18 AC.
LOT 172 — 7,500 SQFT. 0.17 AC.
LOT 173 — 7,500 SQFT. 0.17 AC.

REFER TO SHEET C-7.0 FOR STREET DESIGN TABLES

15' FRONT SETBACK

PET WASTE STATION

25' REAR SETBACK

5' SIDE - INTERIOR SETBACK

TRANSITION FROM 8' - 5'

8' CONCRETE SIDEWALK

R3-5R

STREET B (PUBLIC ROW)

R27.5'

88' THROAT

10' X 70' SDT

WCR

15' SIDE - CORNER SETBACK

MONOLITHIC CONCRETE ISLAND

TRAFFIC FLOW ARROWS, TYP.

25' FRONT GARAGE SETBACK

5' CONCRETE SIDEWALK

25' FRONT, GARAGE SETBACK

25' REAR SETBACK

8' CONCRETE SIDEWALK

15' FRONT SETBACK

STREET F (PUBLIC ROW)

R17'

6' CONCRETE SIDEWALK

MAILBOX / CBU

TRANSITION TO STANDARD CURB & GUTTER, TYP.

ON STREET PARKING, TYP.

8' CONCRETE SIDEWALK

FUTURE AMENITY - NOT APPROVED OR PERMITTED WITH THIS DEVELOPMENT PETITION. A SEPARATE DEVELOPMENT PETITION PLAN IS REQUIRED FOR APPROVAL.

PHASE 1

PHASE 2

WETLANDS

EXISTING WETLANDS, TYP.

FLOOD HAZARD SOILS, TYP.

RIP RAP AREA

EIP

8" CPP

SCM #1
(CONSTRUCTED WETLAND)

FLEX OPEN SPACE #3
2.00 AC

FENCE, TYP.

EXISTING POND

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
DUNCAN COOK RD	45	50	18	500

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
SUBDIVISION	25	30	15	300

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
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STATUS
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DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA 36823 ENGINEER ANDREW S. PETTY
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 1.0 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT — A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

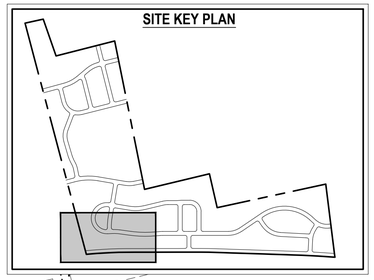
PARTIAL SITE LAYOUT IV

C-3.4

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.4 PARTIAL SITE LAYOUT IV.DWG
PLOTTED: 6/10/2025 9:29 AM

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
DUNCAN COOK RD	45	50	18	500

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
SUBDIVISION	25	30	15	300





LEGEND:

- STREET LIGHT
- SIGN
- WCR — WHEELCHAIR RAMP
- CBU — CLUSTER MAILBOX UNIT
- ROADWAY CENTER LINE
- LOT LINE
- RIGHT OF WAY LINE
- SETBACK LINE
- EASEMENT
- BUFFER
- FENCE
- STANDARD CURB & GUTTER
- SPILL CURB & GUTTER
- TP — TREE PRESERVATION AREAS
- CONCRETE SIDEWALK
- ASPHALT PAVEMENT
- ASPHALT MILL/OVERLAY
- GRAVEL SURFACING
- CONCRETE PAVERS
- CRUSHED AGGREGATE
- CONSERVATION OPEN SPACE
- ACTIVE OPEN SPACE
- FLEX OPEN SPACE

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
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STATUS
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DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA — PRELIMINARY FOR REVIEW ONLY — 36823 — ENGINEER — ANDREW S. PETTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING CORPORATION — SEAL 10 — NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
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Contact: Paul Burger
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PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

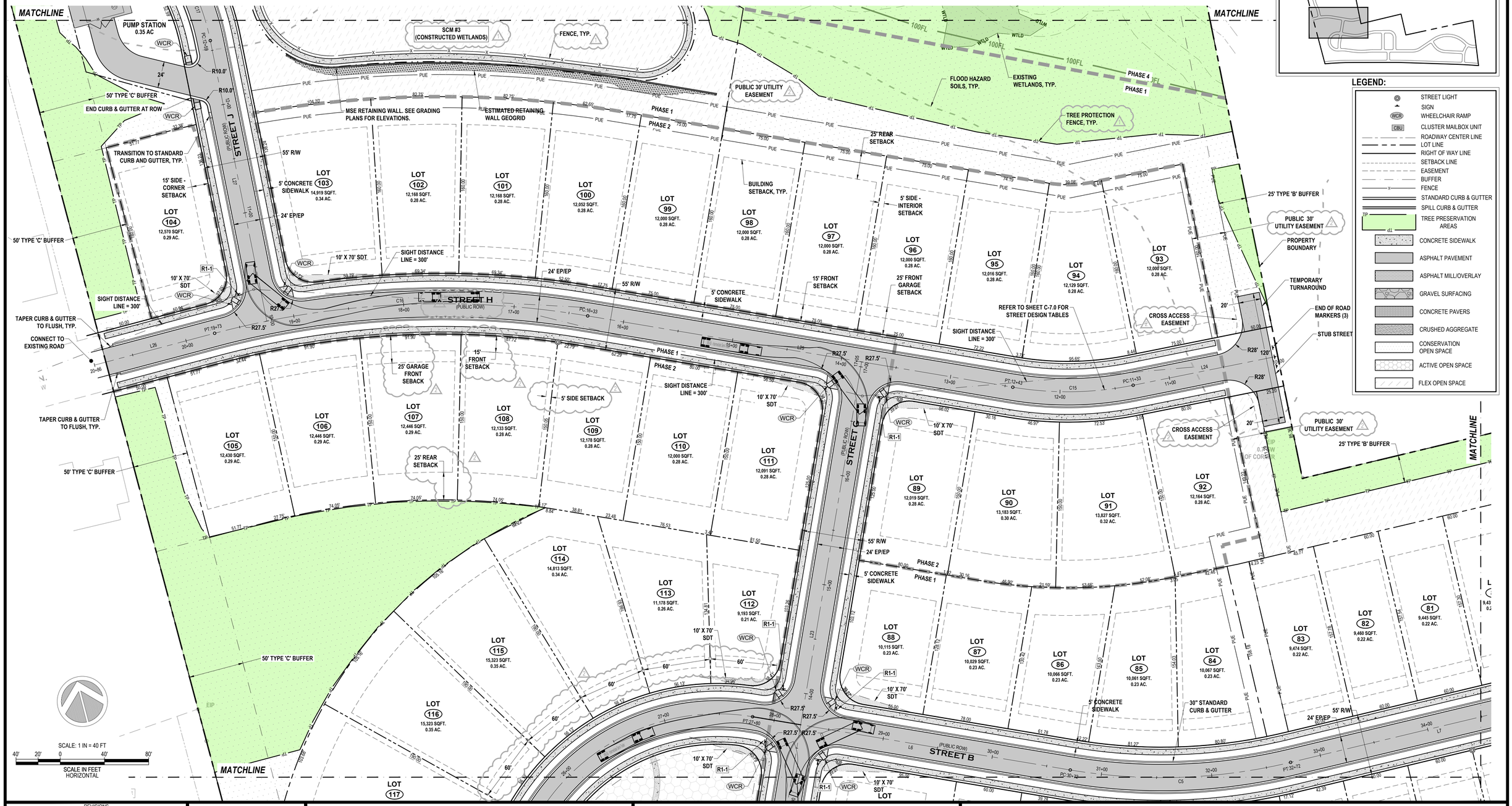
PARTIAL SITE LAYOUT V

C-3.5

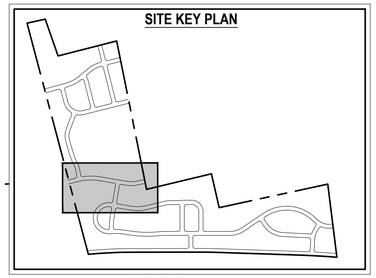
Z:\PROJECTS FOLDER\ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.5 PARTIAL SITE LAYOUT V.DWG
PLOTTED: 6/10/2025 9:30 AM

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
DUNCAN COOK RD	45	50	18	500

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
SUBDIVISION	25	30	15	300



SITE KEY PLAN



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- SPILL CURB & GUTTER
- TP — TREE PRESERVATION AREAS
- d1 — CONCRETE SIDEWALK
- ASPHALT PAVEMENT
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REVISIONS			
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DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA — 36823 — ENGINEER — ANDREW S. PETTY

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING NORTH CAROLINA EST. 10

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t (919) 552-0849
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PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL SITE LAYOUT VI

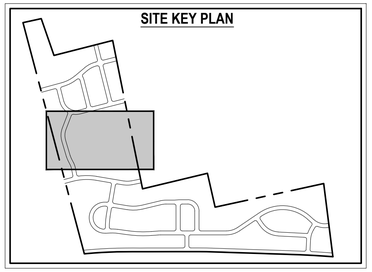
C-3.6

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.6 PARTIAL SITE LAYOUT VI.DWG
PLOTTED: 6/10/2025 9:30 AM

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
DUNCAN COOK RD	45	50	18	500

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
SUBDIVISION	25	30	15	300

SITE KEY PLAN



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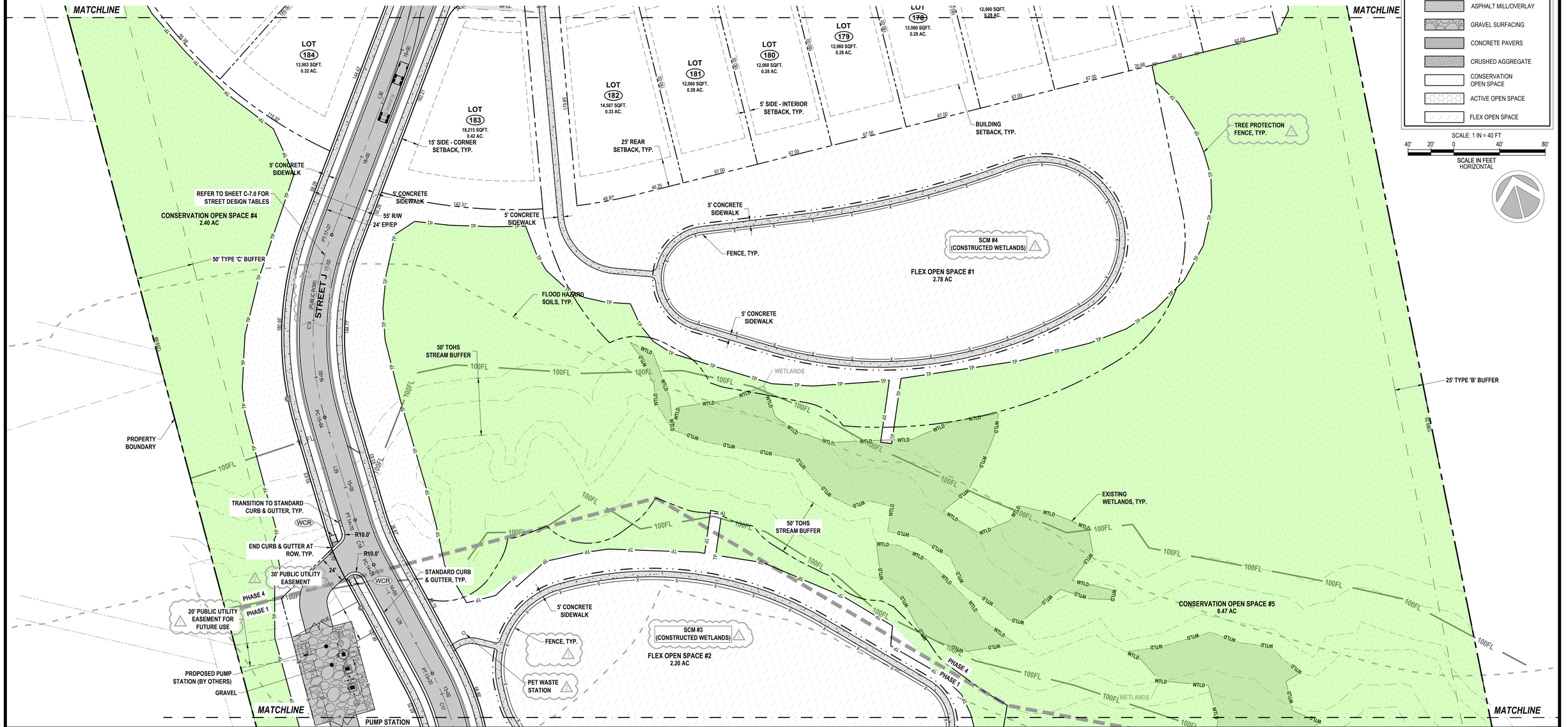
- CRUSHED AGGREGATE
- CONSERVATION OPEN SPACE
- ACTIVE OPEN SPACE
- FLEX OPEN SPACE

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL



REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
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FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA — *PRELIMINARY FOR REVIEW ONLY* — 36823 — ENGINEER — ANDREW S. PETTY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA

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PROPERTY INFORMATION
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PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

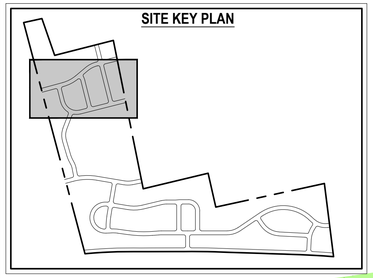
HAZEL RIDGE SUBDIVISION

PARTIAL SITE LAYOUT VII

C-3.7

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.7 PARTIAL SITE LAYOUT VII.DWG
PLOTTED: 6/10/2025 9:31 AM

SITE KEY PLAN



SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
DUNCAN COOK RD	45	50	18	500

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
SUBDIVISION	25	30	15	300

LEGEND:

- STREET LIGHT
- SIGN
- WCR — WHEELCHAIR RAMP
- CBU — CLUSTER MAILBOX UNIT
- ROADWAY CENTER LINE
- LOT LINE
- RIGHT OF WAY LINE
- SETBACK LINE
- EASEMENT
- BUFFER
- FENCE
- STANDARD CURB & GUTTER
- SPILL CURB & GUTTER
- TREE PRESERVATION AREAS
- CONCRETE SIDEWALK
- ASPHALT PAVEMENT
- ASPHALT MILL/OVERLAY
- GRAVEL SURFACING
- CONCRETE PAVERS
- CRUSHED AGGREGATE
- CONSERVATION OPEN SPACE
- ACTIVE OPEN SPACE
- FLEX OPEN SPACE

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

MATCHLINE

STREET L (PUBLIC ROW)

STREET M (PUBLIC ROW)

STREET K (PUBLIC ROW)

GE-WAY

LOT 190 12,026 SQFT. 0.28 AC.
LOT 191 12,031 SQFT. 0.28 AC.
LOT 192 12,036 SQFT. 0.28 AC.
LOT 193 10,147 SQFT. 0.23 AC.
LOT 194 10,466 SQFT. 0.24 AC.
LOT 195 10,469 SQFT. 0.24 AC.
LOT 196 10,248 SQFT. 0.24 AC.
LOT 197 10,047 SQFT. 0.23 AC.
LOT 198 10,033 SQFT. 0.23 AC.
LOT 206 10,498 SQFT. 0.24 AC.
LOT 207 10,461 SQFT. 0.24 AC.
LOT 208 10,289 SQFT. 0.24 AC.
LOT 209 10,118 SQFT. 0.23 AC.
LOT 210 9,946 SQFT. 0.23 AC.
LOT 211 9,775 SQFT. 0.22 AC.
LOT 212 9,603 SQFT. 0.22 AC.
LOT 213 9,432 SQFT. 0.22 AC.
LOT 214 9,126 SQFT. 0.21 AC.
LOT 215 12,225 SQFT. 0.28 AC.
LOT 216 7,500 SQFT. 0.17 AC.
LOT 217 7,500 SQFT. 0.17 AC.
LOT 218 7,500 SQFT. 0.17 AC.
LOT 219 7,500 SQFT. 0.17 AC.
LOT 220 7,500 SQFT. 0.17 AC.
LOT 221 9,920 SQFT. 0.23 AC.
LOT 222 10,018 SQFT. 0.23 AC.
LOT 223 9,920 SQFT. 0.23 AC.
LOT 224 7,500 SQFT. 0.17 AC.
LOT 225 7,500 SQFT. 0.17 AC.
LOT 226 7,500 SQFT. 0.17 AC.
LOT 227 7,500 SQFT. 0.17 AC.
LOT 228 7,532 SQFT. 0.17 AC.
LOT 229 12,437 SQFT. 0.29 AC.
LOT 230 11,719 SQFT. 0.27 AC.
LOT 231 10,023 SQFT. 0.23 AC.
LOT 232 9,408 SQFT. 0.22 AC.
LOT 233 10,047 SQFT. 0.23 AC.
LOT 234 12,001 SQFT. 0.28 AC.
LOT 235 9,322 SQFT. 0.21 AC.
LOT 236 10,008 SQFT. 0.23 AC.
LOT 237 11,910 SQFT. 0.27 AC.
LOT 185 12,431 SQFT. 0.29 AC.
LOT 186 12,639 SQFT. 0.29 AC.
LOT 187 12,001 SQFT. 0.28 AC.
LOT 188 13,323 SQFT. 0.31 AC.
LOT 189 12,959 SQFT. 0.30 AC.
LOT 170 12,060 SQFT. 0.28 AC.
LOT 174 12,060 SQFT. 0.28 AC.
LOT 175 12,060 SQFT. 0.28 AC.
LOT 176 12,060 SQFT. 0.28 AC.
LOT 177 12,060 SQFT. 0.28 AC.

CONSERVATION OPEN SPACE #8 0.31 AC

ACTIVE OPEN SPACE #4 0.55 AC

PROPERTY BOUNDARY

25' TYPE 'B' BUFFER

50' TYPE 'C' BUFFER

VARIABLE WIDTH ACCESS EASEMENT

STUB STREET

END OF ROAD MARKERS (3)

TEMPORARY TURNAROUND

TAPER CURB & GUTTER TO FLUSH, TYP.

CONNECT TO EXISTING ROAD

TREE PROTECTION FENCE, TYP.

SIGHT DISTANCE LINE = 300'

10' X 70' SDT

15' FRONT SETBACK

25' FRONT GARAGE SETBACK

15' SIDE - CORNER SETBACK

5' SIDE - INTERIOR SETBACK

25' REAR SETBACK

BUILDING SETBACK, TYP.

15' SIDE - CORNER SETBACK, TYP.

5' SIDE - INTERIOR SETBACK, TYP.

REFER TO SHEET C-7.0 FOR STREET DESIGN TABLES

55' R/W

24' EP/EP

5' CONCRETE SIDEWALK

TRASH/RECYCLING, TYP.

BENCH, TYP.

CONCRETE PAVERS, TYP.

PLAYGROUND

4' CRUSHED AGGREGATE PATH, TYP.

PET WASTE STATION

25' REAR SETBACK, TYP.

25' GARAGE SETBACK, TYP.

15' FRONT SETBACK, TYP.

BUILDING SETBACK, TYP.

20' DRAINAGE EASEMENT BK. 2007 PG. 1112

62'

61'

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/15/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA — 36823 — ENGINEER — ANDREW S. PETTY

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING P.A. — S.E.T. — NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT — A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL SITE LAYOUT VIII

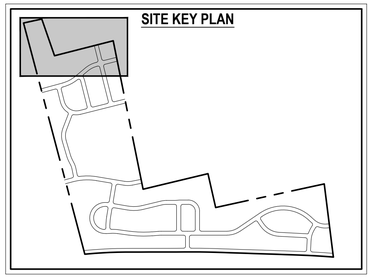
C-3.8

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.8 PARTIAL SITE LAYOUT VIII.DWG
PLOTTED: 6/10/2025 9:32 AM

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
DUNCAN COOK RD	45	50	18	500

SIGHT DISTANCE TABLE				
STREET TYPE	RATED SPEED (MPH)	DESIGN SPEED (MPH)	DRIVER EYE DISTANCE d1 (FT)	STOPPING SIGHT DISTANCE d2 (FT)
SUBDIVISION	25	30	15	300

SITE KEY PLAN



LEGEND:

- STREET LIGHT
- SIGN
- WCR — WHEELCHAIR RAMP
- CBU — CLUSTER MAILBOX UNIT
- ROADWAY CENTER LINE
- LOT LINE
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- CRUSHED AGGREGATE
- CONSERVATION OPEN SPACE
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- FLEX OPEN SPACE

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
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DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA — 36823 — ENGINEER — ANDREW S. PETTY

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT — A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
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PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL SITE LAYOUT IX

C-3.9

Z:\PROJECTS FOLDER\ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.9 PARTIAL SITE LAYOUT IX.DWG
PLOTTED: 6/10/2025 9:33 AM

GENERAL NOTES:

PER TASSEL RIDGE DEVELOPMENT & DESIGN MANUAL ARCHITECTURAL STANDARDS: *NO TWO LOTS WITH A SHARED PROPERTY LINE SHALL HAVE THE SAME FACADE TREATMENT. LOTS IDENTIFIERS RELATED TO FACADE MIXING SHALL BE IMPLEMENTED AT MAJOR SUBDIVISION.*

FACADE IDENTIFIERS, A & B, PROVIDED ON THIS SHEET HAVE DIFFERENT FACADE TREATMENTS AND WILL NOT MATCH. FACADE TREATMENT CONFIRMATION IS TO BE REVIEWED AND CONFIRMED AT BUILDING PERMIT SUBMITTAL.

LEGEND:

- FACADE 'A' TREATMENT
- FACADE 'B' TREATMENT



SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET HORIZONTAL

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/15/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
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DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 200'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER ANDREW S. PETTY 36823

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING CORPORATION EST. 1.0 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

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PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

SITE FACADE PLAN

C-3.10

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.10 SITE FACADE PLAN.DWG
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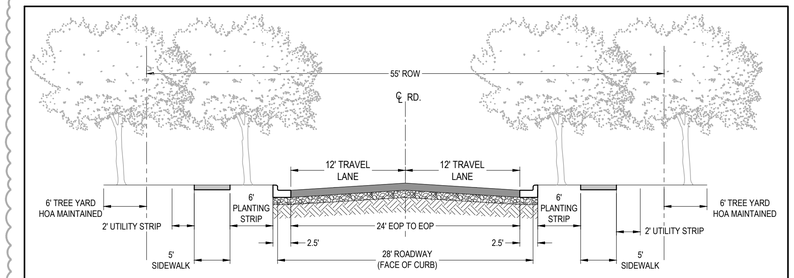
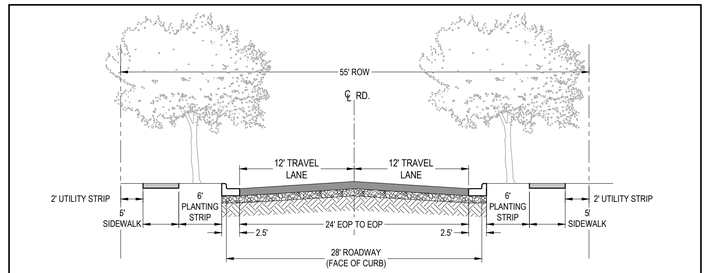


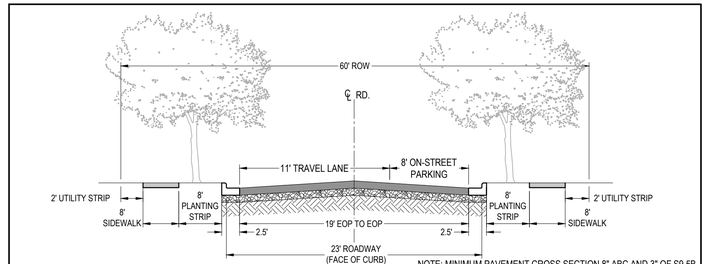
NOTE: MINIMUM PAVEMENT CROSS SECTION 8" ABC AND 3" OF S9.5B

01 LC-2A: 2 LANE COLLECTOR STREET



NOTE: MINIMUM PAVEMENT CROSS SECTION 8" ABC AND 3" OF S9.5B

02 LC-2A: STANDARD RESIDENTIAL STREET



NOTE: MINIMUM PAVEMENT CROSS SECTION 8" ABC AND 3" OF S9.5B

03 UC-1A: 1 WAY STREET w/ ON-STREET PARKING

LEGEND

- LC-2A: 2 LANE COLLECTOR STREET
- LC-2A: STANDARD RESIDENTIAL STREET
- UC-1A: 1-WAY STREET w/ ON-STREET PARKING

SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET HORIZONTAL

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

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FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
PRELIMINARY FOR REVIEW ONLY
36823 ENGINEER ANDREW S PETTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

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2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
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DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

STREET SECTIONS

C-3.11

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEV\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.11 STREET SECTIONS.DWG
PLOTTED: 6/10/2025 9:33 AM

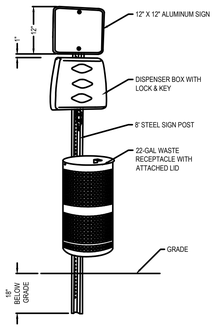


Pet Waste ELIMINATOR
Commercial Pet Waste Disposal System

PET WASTE ELIMINATOR
6701 CONCORD PARK DR
HOUSTON, TX 77040-9802
PHONE: (800)790-8896
www.petwasteeliminator.com

☑ SELECT DESIRED COLOR:
- ☐ BLACK
- ☐ GREEN

☑ SELECT DESIRED FINES ON SIGN:
- ☐ NO FINE
- ☐ $75.00 TO $500.00 FINE



SPECIFICATIONS
COMBO KIT INCLUDES:
1. 1500 PET WASTE BAGS
2. ALL-WEATHER DISPENSER BOX
3. 22 GALLON METAL TRASH CAN WITH LID
4. ALUMINUM SIGN: 12" W X 12" H
5. SIGN POST 8'H, HARDWARE INCLUDED

MANUFACTURERS NOTES
1. **EXCLUSIVE OFFER: TO TAKE 20% OFF YOUR ORDER USE CODE - CAD023**

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWING.
3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
5. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER: C-3.12 PET WASTE STATION & RADAR SIGNAGE LOCATIONS

C-3.12 PET WASTE STATION & RADAR — REVISION DATE 10/06/2025
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1 / C-3.12 **PET WASTE STATION DETAIL**
SCALE: NTS

WWW.ROADWAYSIGNS.COM
We Specialize in Quality
WWW.ROADWAYSIGNS.COM
ROADWAY SIGNS

SOLAR POWER
FLASHING LED RADAR SPEED SIGN
ROADWAY SIGNS

DISPLAY DIMENSIONS
- **MIN 4" Digital Display**
  - Static "Your Speed" Text
  - Ultra Low Power Consumption
- **MID 6" Digital Display**
  - Static "Your Speed" Text
  - Ultra Low Power Consumption
- **FULL 15" Digital Display**
  - Static "Your Speed" Text
  - Ultra Low Power Consumption

SOLAR BATTERY
- **Ultra Low Power Consumption**
- **Solar Compatibility**
- **Cloud Ready**
- **Battery Backup**
- **Universal Mounting**
- **Trailer Compatibility**
- **Dolly and Hitch Compatibility**
- **Assurance Warranty**

LED VARIATIONS
- **Variable LED Mode**
  - **Stealth**
    - Collect Baseline Traffic Data
  - **Speed Alert Strobe**
    - Program Strobe at Speed Threshold

SIGN PLATE
- **MIN 30" x 30"**
  - Conventional
  - Single Lane Road
- **MID 36" x 36"**
  - Conventional
  - Multi-Lane Rd and Expressway

Installation
Solar Power LED Technology
- MUTCD section 2A.07 and 2A.08 compliant
- High visibility, low power consumption
- Solar powered with battery backup, no AC power required
- Installs easily onto any new or existing sign post
- Options: Continuous 24/7 Flashing, Programmable Timer, or Wireless Push-button
- Fast, easy installation, low maintenance

Contact Us
sales@roadwaysigns.com

2 / C-3.12 **RADAR SIGNAL DETAIL**
SCALE: NTS



3 / C-3.12 **WATCH FOR PEDESTRIAL SIGN DETAIL**
SCALE: NTS

SCALE: 1 IN = 100 FT
100' 50' 0 100' 200'
SCALE IN FEET
HORIZONTAL

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

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FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PETTY

CONSULTANT
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PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
PET WASTE STATION AND RADAR SIGNAGE SHEET
C-3.12

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-3.12 PET WASTE STATION & RADAR SIGNAGE LOCATIONS.DWG
PLOTTED: 6/10/2025 9:34 AM



GENERAL NOTES:

THESE NOTES APPLY TO SHEETS C-4.0 - C-4.9.

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARD SPECIFICATIONS AND DETAILS.
2. BOUNDARY, TOPOGRAPHIC & UTILITY INFORMATION IS BASED ON SURVEY BY BASS, NIXON & KENNEDY.
3. WETLANDS DELINEATED BY S&EC AND HAVE BEEN USACE CONCURRED AND FIELD SURVEYED.
4. DELINEATED WETLAND AND RIPARIAN BUFFER AREAS SHALL NOT BE CLEARED, DRAINAGE, OR OTHERWISE DISTURBED UNLESS SPECIFICALLY PERMITTED BY THE US ARMY CORPS OF ENGINEERS AND NCDENR-DWQ.
5. ANY ACTIVITY IN CFRB ZONE 1 OR ZONE 2 BUFFERS SHALL BE IN ACCORDANCE WITH SECTION 7.06 OF THE TOWN OF HOLLY SPRINGS UDO.
6. TREE PROTECTION FENCING SHALL BE PROVIDED ALONG ALL VEGETATED RIPARIAN AND VEGETATED PERIMETER BUFFER AREAS.
7. 20' SEWER EASEMENTS SHALL BE CENTERED ON ALL SANITARY SEWER PIPE LOCATED OUTSIDE OF STREET RIGHT OF WAYS.
8. UTILITY PIPE SIZES & LOCATIONS ARE PRELIMINARY AND SHALL BE FINALIZED DURING CONSTRUCTION DRAWING REVIEW & APPROVAL.
9. NO FLOOD PLAIN EXISTS ON SITE ACCORDING TO FEMA MAP NUMBER 3720064600J WITH EFFECTIVE DATE OF OCTOBER 3, 2006.
10. ALL LOTS SHALL HAVE 3/4" WATER SERVICES & 4" SEWER SERVICES WITH CLEANOUTS. ALL WATER SERVICE TAPS SHALL BE 3/4" BRASS CORPORATION STOPS TO COMPLY WITH TOWN OF HOLLY SPRINGS STANDARDS.
11. ALL PROPOSED SANITARY SEWER MAINS SHALL BE 8" PVC OR DIP. REFER TO PLAN AND PROFILE DRAWINGS FOR MATERIALS. MINIMUM BURIAL DEPTH IS 54" FROM MEASURED FROM TOP OF SUBGRADE.
12. ALL PROPOSED WATER MAINS SHALL BE 6" AND 8" DIP. MATERIAL AND SIZE TO BE VERIFIED DURING THE CD PROCESS. MINIMUM BURIAL DEPTH IS 36" MEASURED FROM TOP OF SUBGRADE.
13. ALL PROPOSED RECLAIMED WATER MAINS SHALL BE 6" C900 PVC. PIPING SHALL BE COLOR CODED PURPLE, PANTONE 522. MATERIAL AND SIZE TO BE VERIFIED DURING THE CD PROCESS.MINIMUM BURIAL DEPTH IS 48" MEASURED FROM FINISHED GRADE.
14. THIS PLAN IS SUBJECT TO REVISION DURING THE CONSTRUCTION DRAWING REVIEW PROCESS FOLLOWING HOLLY SPRINGS TOWN COUNCIL ACTION.
15. ALL PROPOSED POWER LINES SHALL BE INSTALLED UNDERGROUND. THIS COORDINATION HAS BEEN INITIATED WITH DUKE ENERGY.
16. ALL NATURAL GAS LINES SHALL BE INSTALLED UNDERGROUND. COORDINATION WITH PSNC HAS BEEN INITIATED.
17. FIRE FLOW TEST CONDUCTED BY DREW KING & ASSOCIATES.

LEGEND:

- FIRE HYDRANT ASSEMBLY
- GATE VALVE
- TEE
- THRUST (REACTION) BLOCKING
- BLOW OFF VALVE
- BACKFLOW PREVENTER
- WATER METER / SERVICE
- SANITARY CLEANOUT / SERVICE
- SANITARY MANHOLE
- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- OPEN THROAT YARD INLET
- W — WATER LINE
- SS — SANITARY SEWER LINE
- STORM DRAIN LINE

SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET HORIZONTAL

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/15/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 200'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA
PRELIMINARY FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PETTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING CORPORATION S.S.T. 1.0 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

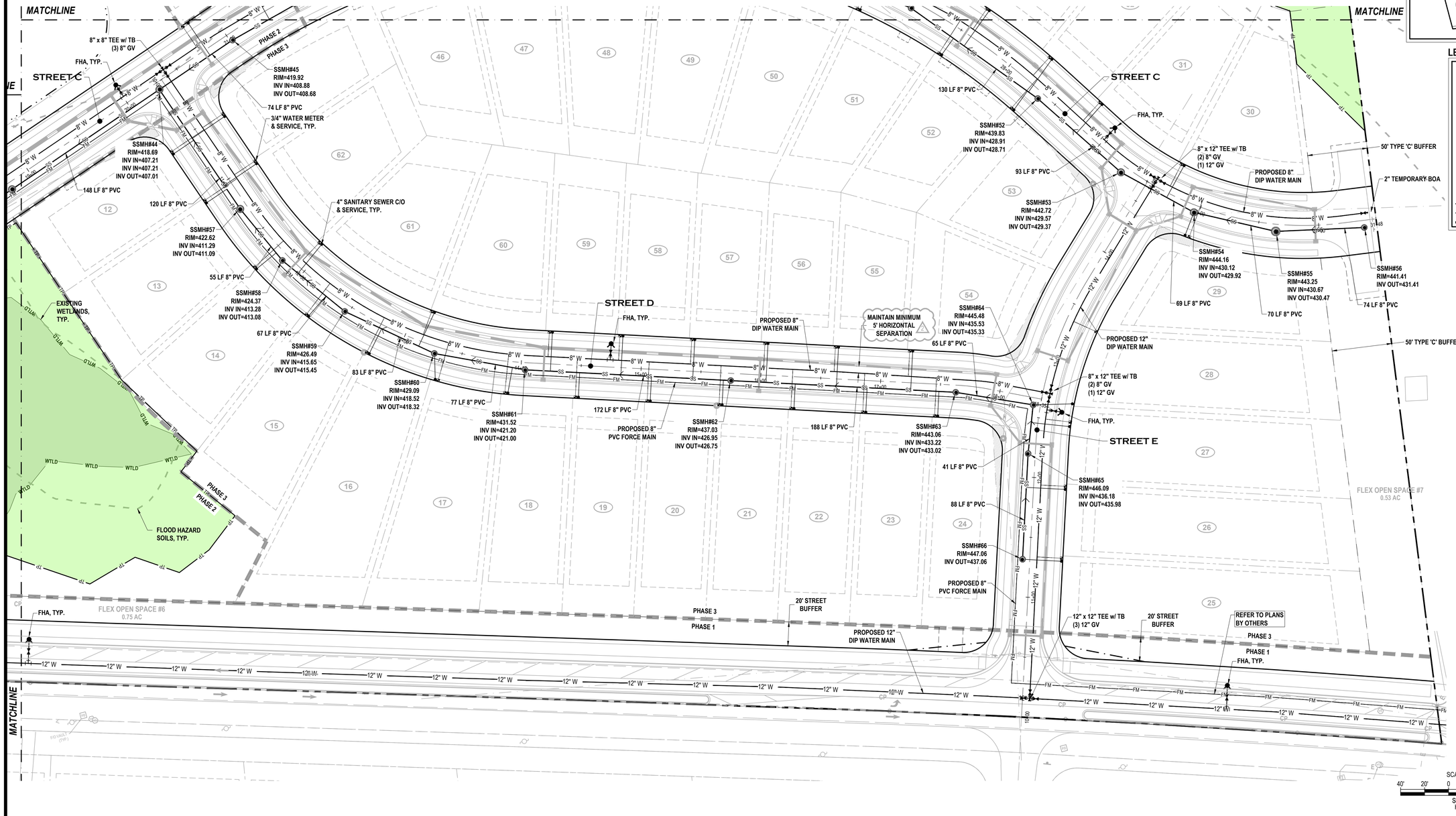
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

OVERALL UTILITY PLAN

C-4.0

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.0 OVERALL UTILITY PLAN.DWG
PLOTTED: 6/10/2025 9:34 AM



SITE KEY PLAN

LEGEND:

- FIRE HYDRANT ASSEMBLY
- GATE VALVE
- TEE
- THRUST (REACTION) BLOCKING
- BLOW OFF VALVE
- BACKFLOW PREVENTER
- WATER METER / SERVICE
- SANITARY CLEANOUT / SERVICE
- SANITARY MANHOLE
- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- OPEN THROAT YARD INLET
- WATER LINE
- SANITARY SEWER LINE
- STORM DRAIN LINE

REVISIONS		
1	3/14/2025	TCHS COMMENTS #1
2	4/17/2025	TCHS COMMENTS #2
3	5/16/2025	TCHS COMMENTS #3
4	6/10/2025	TCHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
56823
ENGINEER
ANDREW S PETTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 1979 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
WE PUT YOU IN THE COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

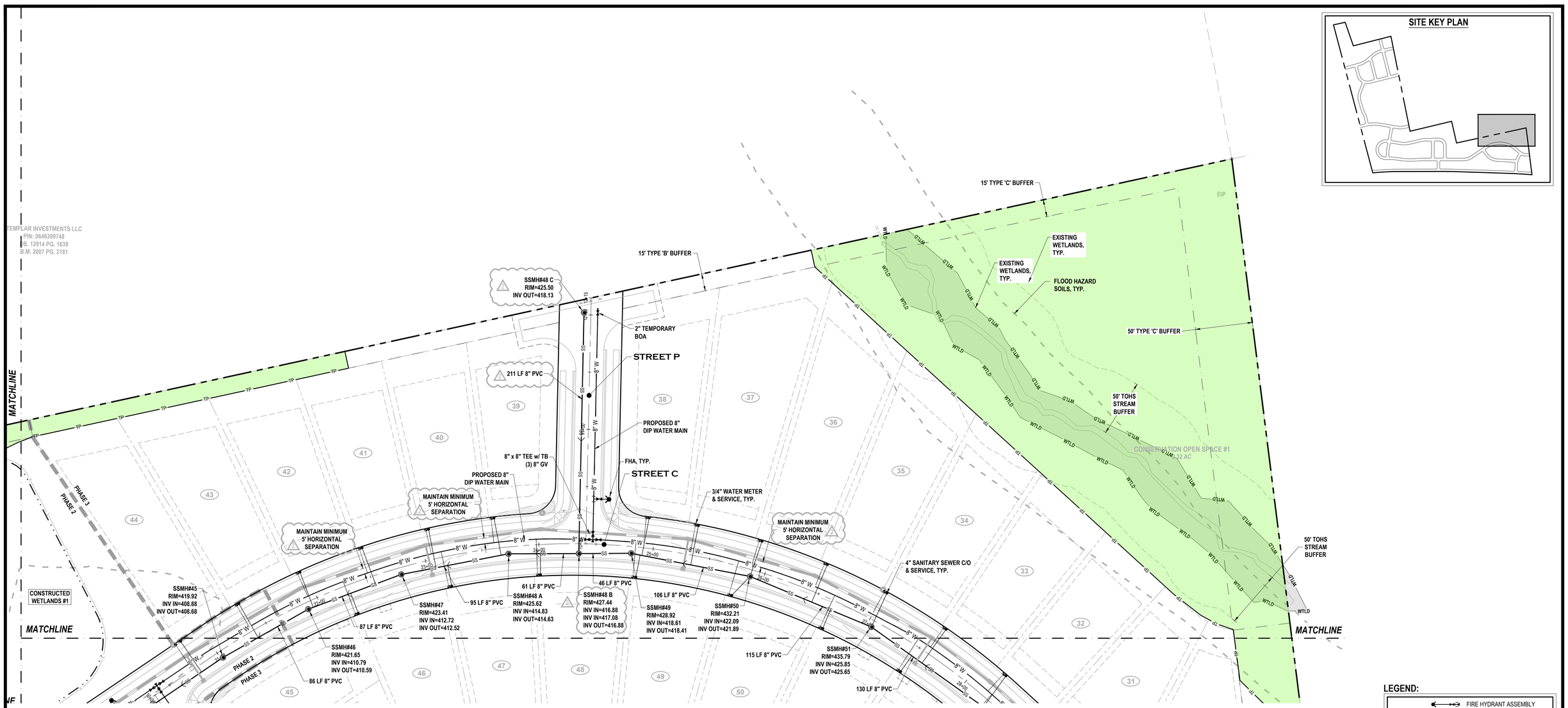
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL UTILITY PLAN I

C-4.1

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.1 PARTIAL UTILITY PLAN I.DWG
PLOTTED: 6/10/2025 9:35 AM



Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.2 PARTIAL UTILITY PLAN II.DWG
PLOTTED: 6/10/2025 9:35 AM

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA ENGINEER ANDREW S. PETTY 36823
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

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Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL UTILITY PLAN II

C-4.2

MATCHLINE

236 LF 8" PVC

SSMH#85
RIM=419.21
INV IN=403.76
INV OUT=403.56

3/4" WATER METER & SERVICE, TYP.

195 LF 8" PVC

4" SANITARY SEWER C/O & SERVICE, TYP.

SSMH#34
RIM=416.12
INV IN=406.34
INV OUT=406.14

STREET B

SSMH#33
RIM=415.99
INV IN=406.77
INV OUT=406.57

46 LF 8" PVC

83 LF 8" PVC

239 LF 8" PVC

SSMH#35
RIM=424.60
INV IN=404.94
INV OUT=404.74

SSMH#36
RIM=426.45
INV OUT=416.17

STREET A

20' STREET BUFFER

FHA, TYP.

PROPOSED 12" DIP WATER MAIN

FUTURE AMENITY - NOT ASSOCIATED WITH THIS REVIEW

STREET F

PROPOSED 8" DIP WATER MAIN

ACTIVE OPEN SPACE #2
1.49 AC

SSMH#80
RIM=413.48
INV IN=397.64
INV IN=397.64
INV OUT=397.44

139 LF 8" PVC

SSMH#81
RIM=418.90
INV OUT=408.90

8" x 8" TEE w/ TB
(3) 8" GV

FHA, TYP.

12" x 12" TEE w/ TB
(3) 12" GV

12" x 8" REDUCER

243 LF 8" PVC

SSMH#37
RIM=421.12
INV IN=411.32
INV OUT=411.12

STREET C

PHASE 1

PHASE 2

300 LF 8" PVC

SSMH#82
RIM=411.88
INV IN=399.34
INV OUT=399.14

PUBLIC 20' UTILITY EASEMENT

242 LF 8" PVC

226 LF 8" PVC

PROPOSED FORCE MAIN

SSMH#38
RIM=415.90
INV IN=400.75
INV IN=400.75
INV OUT=400.55

PROPOSED 8" DIP WATER MAIN

125 LF 8" PVC

SSMH#39
RIM=413.02
INV IN=401.58
INV OUT=401.38

58 LF 8" PVC

SSMH#40
RIM=411.93
INV IN=402.07
INV OUT=401.87

58 LF 8" PVC

SSMH#41
RIM=411.72
INV IN=402.56
INV OUT=402.36

55 LF 8" PVC

CONSTRUCTED WETLANDS #1

ACTIVE OPEN SPACE #3
2.85 AC

EXISTING WETLANDS, TYP.

WTLD

SSMH#43
RIM=415.48
INV IN=404.04
INV OUT=403.84

155 LF 8" PVC

SSMH#42
RIM=412.38
INV IN=403.06
INV OUT=402.86

ACTIVE OPEN SPACE #2
1.46 AC

FLOOD HAZARD SOILS, TYP.

PHASE 2

PHASE 1

PROPOSED 12" DIP WATER MAIN

20' STREET BUFFER

FHA, TYP.

CP

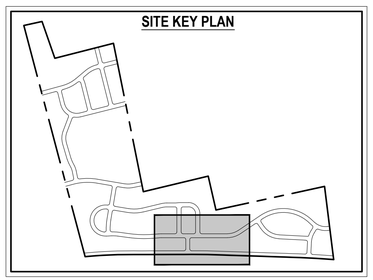
12" x 12" TEE w/ TB
(3) 12" GV

12" CRP
INV = 430.74'
INV = 431.31'

GRAVEL DRIVE

MATCHLINE

SITE KEY PLAN



LEGEND:

- FIRE HYDRANT ASSEMBLY
- GATE VALVE
- TEE
- THRUST (REACTION) BLOCKING
- BLOW OFF VALVE
- BACKFLOW PREVENTER
- WATER METER / SERVICE
- SANITARY CLEANOUT / SERVICE
- SANITARY MANHOLE
- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- OPEN THROAT YARD INLET
- W — WATER LINE
- SS — SANITARY SEWER LINE
- STORM DRAIN LINE

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/15/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
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DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA
PRELIMINARY FOR REVIEW ONLY
56823
ENGINEER
ANDREW S. PETTY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING P.A. S.T. 1.0 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

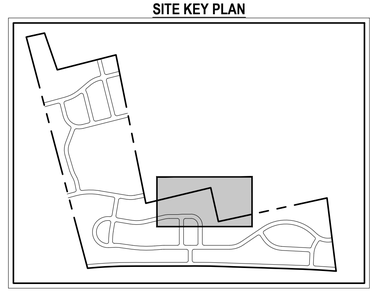
HAZEL RIDGE SUBDIVISION

PARTIAL UTILITY PLAN III

C-4.3

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\3DE\VELOPMENT PETITION PLANS\SHEET FILES\C-4.3 PARTIAL UTILITY PLAN III.DWG
PLOTTED: 6/10/2025 9:36 AM

SITE KEY PLAN



LEGEND:

- FIRE HYDRANT ASSEMBLY
- GATE VALVE
- TEE
- THRUST (REACTION) BLOCKING
- BLOW OFF VALVE
- BACKFLOW PREVENTER
- WATER METER / SERVICE
- SANITARY CLEANOUT / SERVICE
- SANITARY MANHOLE
- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- OPEN THROAT YARD INLET
- W — WATER LINE
- SS — SANITARY SEWER LINE
- STORM DRAIN LINE

MATCHLINE

EXISTING AXLE - BENT

25' TYPE 'B' BUFFER

15' TYPE 'B' BUFFER

CONSERVATION OPEN SPACE #9
1.09 AC

CONSTRUCTED WETLANDS #2

FLEX OPEN SPACE #8
2.62 AC

3/4" WATER METER & SERVICE, TYP.

4" SANITARY SEWER C/O & SERVICE, TYP.

PROPOSED 8" DIP WATER MAIN

8" x 8" TEE w/ TB (3) 8" GV

SSMH#75
RIM=408.22
INV IN=395.34
INV OUT=395.14

MAINTAIN MINIMUM 5' HORIZONTAL SEPARATION

SSMH#76
RIM=407.62
INV IN=395.77
INV OUT=395.57

MAINTAIN MINIMUM 5' HORIZONTAL SEPARATION

SSMH#77
RIM=407.77
INV IN=396.19
INV OUT=395.99

MAINTAIN MINIMUM 5' HORIZONTAL SEPARATION

SSMH#78
RIM=408.80
INV IN=396.63
INV OUT=396.43

MAINTAIN MINIMUM 5' HORIZONTAL SEPARATION

SSMH#79
RIM=410.49
INV IN=397.06
INV OUT=396.86

SSMH#72
RIM=408.79
INV IN=392.87
INV OUT=392.67

SSMH#73
RIM=410.76
INV IN=393.42
INV OUT=393.22

SSMH#74
RIM=412.38
INV IN=394.45
INV IN=394.45
INV OUT=394.25

SSMH#80
RIM=413.48
INV IN=397.64
INV IN=397.64
INV OUT=397.44

SSMH#82
RIM=411.88
INV IN=399.34
INV OUT=399.14

166 LF 12" PVC

69 LF 12" PVC

286 LF 12" PVC

236 LF 8" PVC

45 LF 8" PVC

138 LF 8" PVC

44 LF 8" PVC

49 LF 8" PVC

45 LF 8" PVC

76 LF 8" PVC

300 LF 8" PVC

FHA, TYP.

FHA, TYP.

STREET F

STREET F

FUTURE AMENITY - NOT ASSOCIATED WITH THIS REVIEW

PHASE 1

PHASE 2

EXISTING WETLANDS, TYP.

FLOOD HAZARD SOILS, TYP.

RIP RAP AREA

EIP

8" CPP

CONSTRUCTED WETLANDS #1

FLEX OPEN SPACE #3
2.00 AC

EXISTING POND

PUBLIC 20' UTILITY EASEMENT

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET
HORIZONTAL

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.4 PARTIAL UTILITY PLAN IV.DWG
PLOTTED: 6/10/2025 9:37 AM

REVISIONS

1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA
PRELIMINARY FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PETTY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO: P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

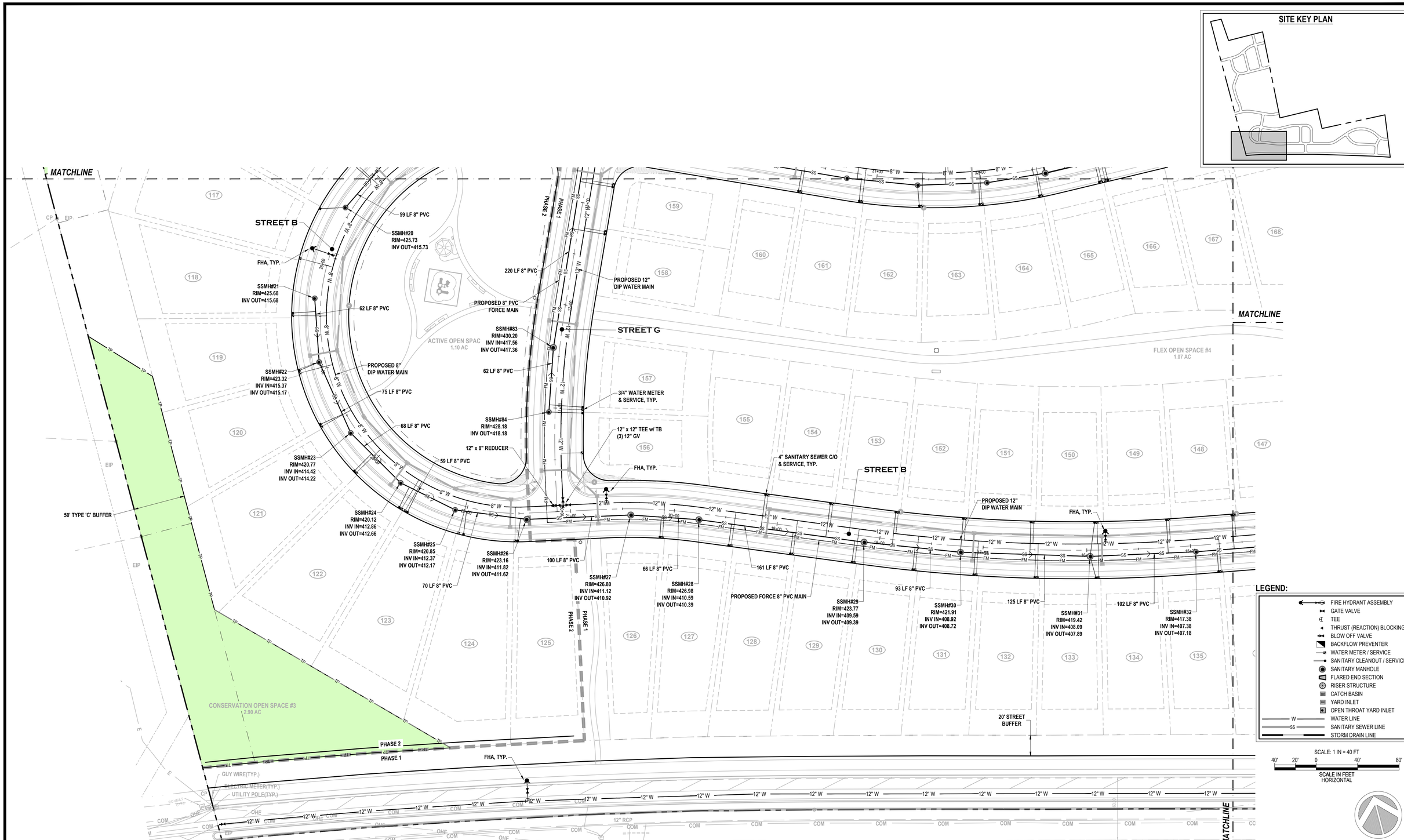
PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL UTILITY PLAN IV

C-4.4



REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
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DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PETTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERS EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
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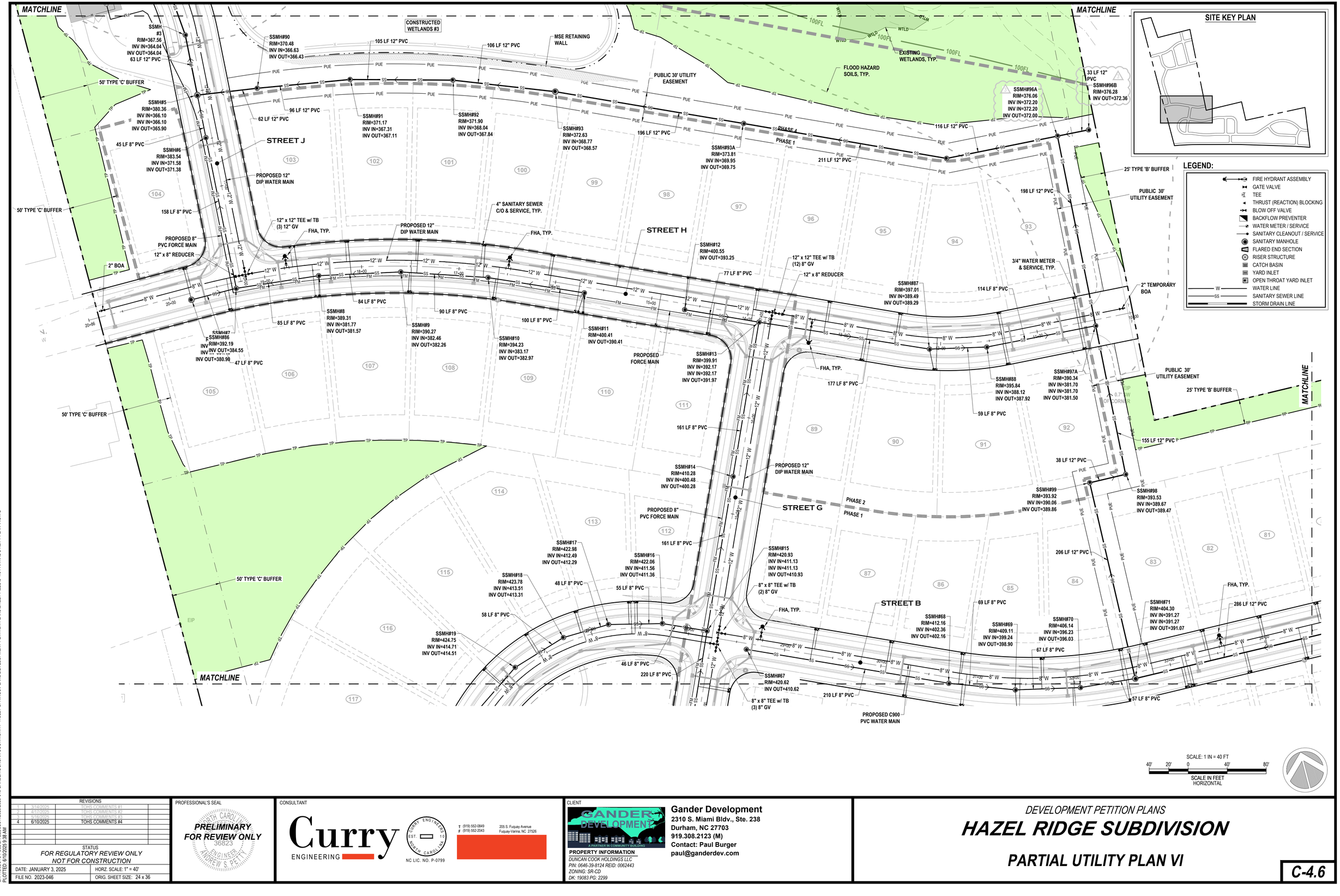
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
PARTIAL UTILITY PLAN V

C-4.5

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.5 PARTIAL UTILITY PLAN V.DWG
PLOTTED: 6/10/2025 9:37 AM



REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
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DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA — ENGINEER — ANDREW S PETTY — 36823
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
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Fuquay-Varina, NC 27526

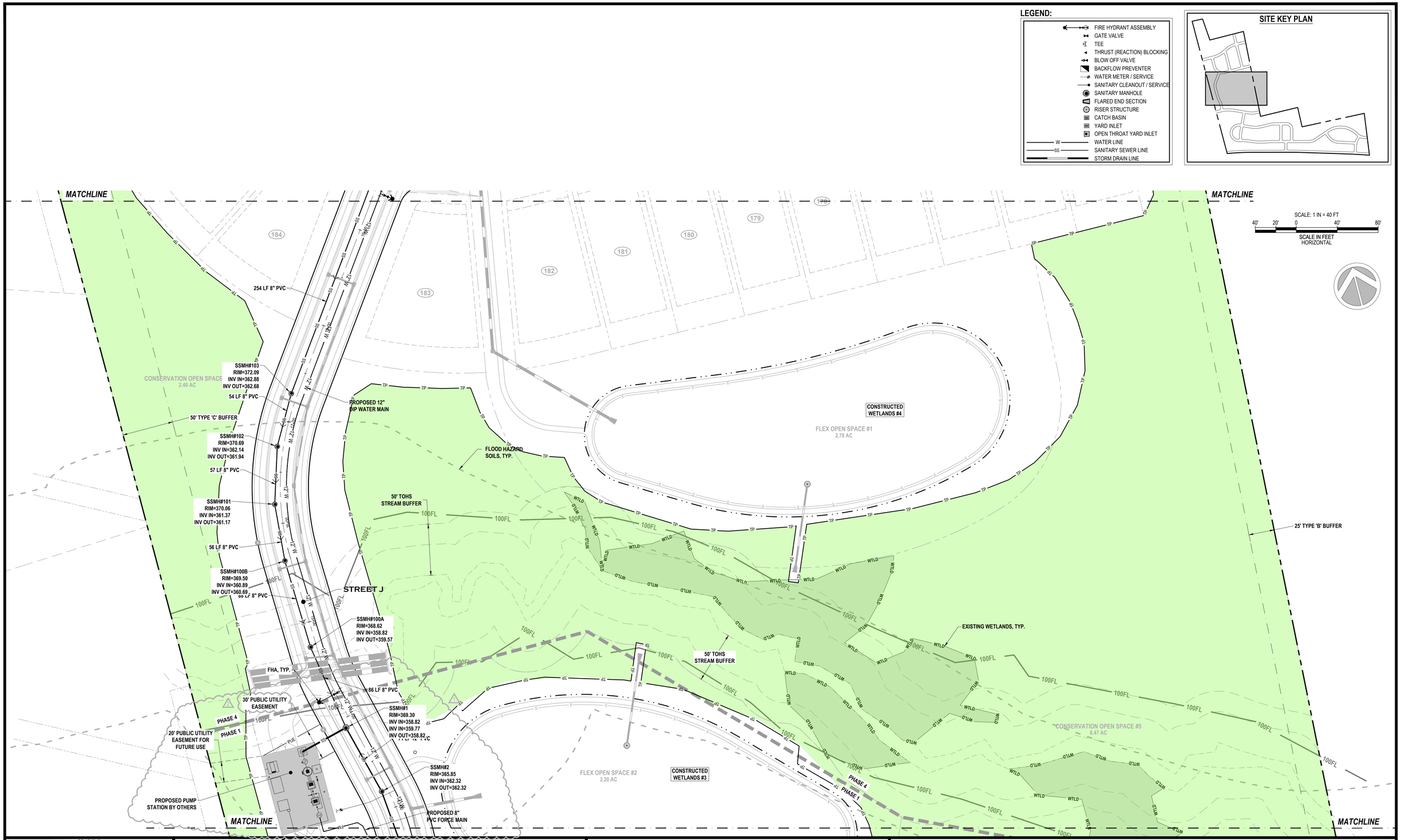
CLIENT
GANDER DEVELOPMENT — A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
PARTIAL UTILITY PLAN VI

C-4.6

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.6 PARTIAL UTILITY PLAN VI.DWG
PLOTTED: 6/10/2025 9:38 AM



REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
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DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA 36823 ENGINEER ANDREW S. PETTY
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERS EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
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Fuquay-Varina, NC 27526

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PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

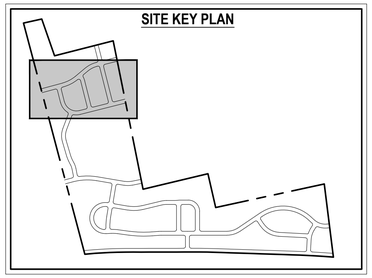
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
PARTIAL UTILITY PLAN VII

C-4.7

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.7 PARTIAL UTILITY PLAN VII.DWG
PLOTTED: 6/10/2025 9:39 AM

SITE KEY PLAN



LEGEND:

- FIRE HYDRANT ASSEMBLY
- GATE VALVE
- TEE
- THRUST (REACTION) BLOCKING
- BLOW OFF VALVE
- BACKFLOW PREVENTER
- WATER METER / SERVICE
- SANITARY CLEANOUT / SERVICE
- SANITARY MANHOLE
- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- OPEN THROAT YARD INLET
- W — WATER LINE
- SS — SANITARY SEWER LINE
- STORM DRAIN LINE

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

MATCHLINE

MATCHLINE

STREET L

STREET K

STREET M

STREET N

GE WAY

50' TYPE 'C' BUFFER

50' TYPE 'C' BUFFER

50' TYPE 'C' BUFFER

25' TYPE 'B' BUFFER

CONSERVATION OPEN SPACE #8
0.31 AC

2" TEMPORARY BOA

2" TEMPORARY BOA

SSMH#112
RIM=414.48
INV IN=400.54
INV IN=400.54
INV OUT=400.34

SSMH#113
RIM=421.31
INV OUT=411.31

SSMH#111
RIM=411.41
INV OUT=401.41

SSMH#110
RIM=409.31
INV OUT=401.56

SSMH#109
RIM=410.77
INV IN=400.94
INV IN=400.94
INV OUT=400.74

SSMH#128
RIM=410.13
INV OUT=402.13

SSMH#125
RIM=411.32
INV IN=400.13
INV OUT=399.93

SSMH#124
RIM=407.80
INV IN=397.96
INV OUT=397.76

SSMH#127
RIM=419.44
INV IN=404.60
INV OUT=404.40

SSMH#126
RIM=413.75
INV IN=403.47
INV OUT=403.27

SSMH#123
RIM=397.81
INV IN=388.01
INV OUT=387.81

SSMH#108
RIM=395.70
INV IN=385.98
INV OUT=385.78

SSMH#107
RIM=391.34
INV IN=381.60
INV OUT=381.40

SSMH#106
RIM=387.34
INV IN=377.59
INV OUT=377.39

SSMH#105
RIM=384.53
INV IN=375.20
INV IN=375.20
INV OUT=375.00

SSMH#117
RIM=383.39
INV IN=375.66
INV OUT=375.46

SSMH#118
RIM=383.05
INV IN=376.17
INV OUT=375.97

SSMH#119
RIM=388.83
INV IN=379.03
INV IN=379.03
INV OUT=378.83

SSMH#120
RIM=399.27
INV IN=389.47
INV OUT=389.27

SSMH#121
RIM=409.72
INV IN=399.92
INV IN=399.92
INV OUT=399.72

SSMH#122
RIM=418.68
INV OUT=408.60

8" x 8" TEE w/ TB
(3) 8" GV

8" x 8" TEE w/ TB
(3) 8" GV

8" x 8" TEE w/ TB
(3) 8" GV

8" x 8" TEE w/ TB
(3) 8" GV

8" x 8" TEE w/ TB
(3) 8" GV

158 LF 8" PVC

42 LF 8" PVC

44 LF 8" PVC

87 LF 8" PVC

94 LF 8" PVC

119 LF 8" PVC

206 LF 8" PVC

223 LF 8" PVC

212 LF 8" PVC

67 LF 8" PVC

63 LF 8" PVC

61 LF 8" PVC

52 LF 8" PVC

157 LF 8" PVC

63 LF 8" PVC

152 LF 8" PVC

152 LF 8" PVC

199 LF 8" PVC

197 LF 8" PVC

186 LF 8" PVC

212 LF 8" PVC

PROPOSED 8"
DIP WATER MAIN

PROPOSED 8"
DIP WATER MAIN

PROPOSED 8"
DIP WATER MAIN

PROPOSED 8"
DIP WATER MAIN

3/4" WATER METER
& SERVICE, TYP.

4" SANITARY SEWER
C/O & SERVICE, TYP.

FHA, TYP.

FHA, TYP.

FHA, TYP.

FHA, TYP.

FHA, TYP.

12" x 8" REDUCER

ACTIVE

REVISIONS		
1	3/14/2025	TCHS COMMENTS #1
2	4/17/2025	TCHS COMMENTS #2
3	5/19/2025	TCHS COMMENTS #3
4	6/10/2025	TCHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
36823
ENGINEER
ANDREW S PETTY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 1979 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A WHITETAIL COMMUNITIES BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

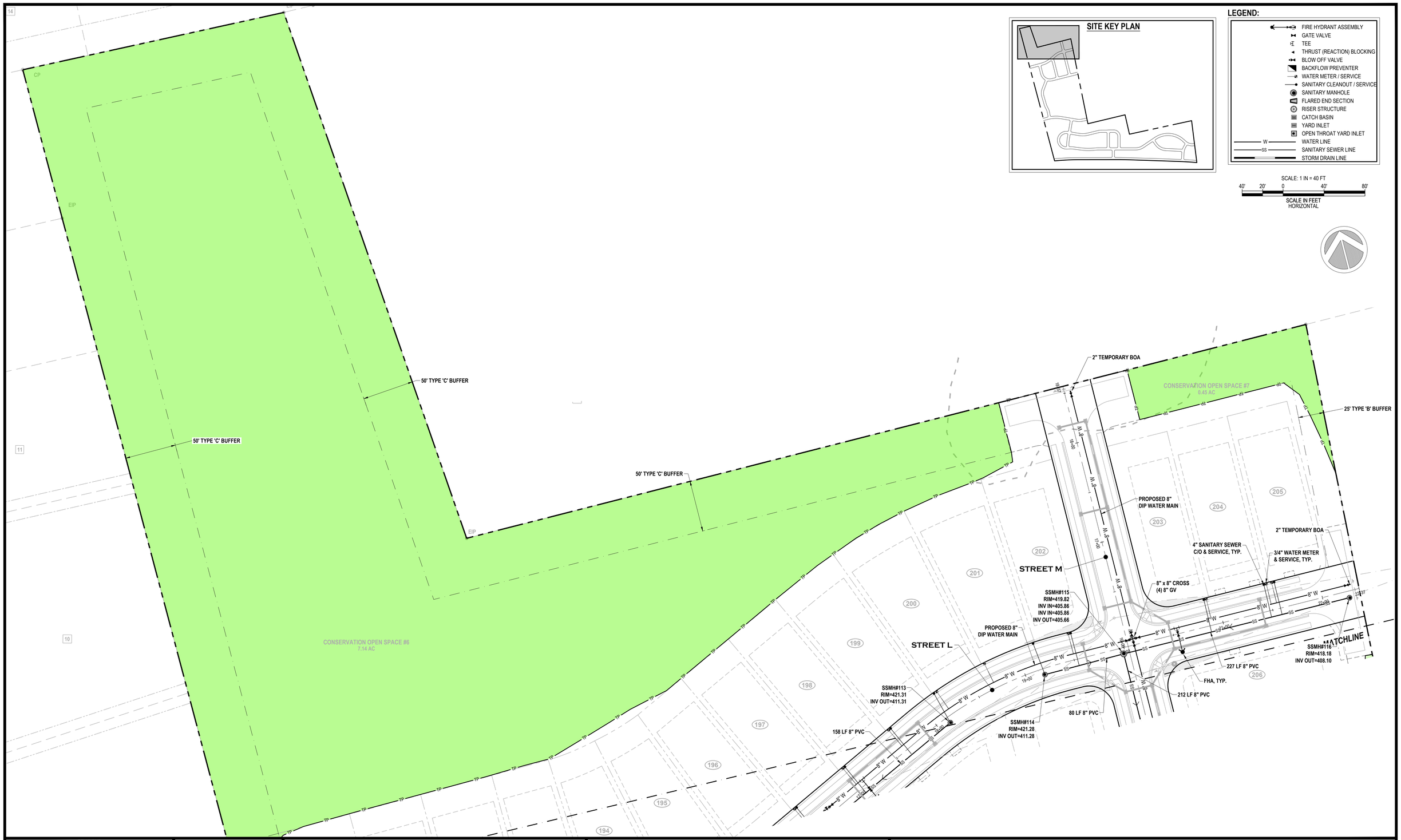
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL UTILITY PLAN VIII

C-4.8

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.8 PARTIAL UTILITY PLAN VIII.DWG
PLOTTED: 6/10/2025 9:40 AM



Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.9 PARTIAL UTILITY PLAN IX.DWG
PLOTTED: 6/10/2025 9:40 AM

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
PRELIMINARY FOR REVIEW ONLY
NORTH CAROLINA 36823 ENGINEER ANDREW S. PETTY

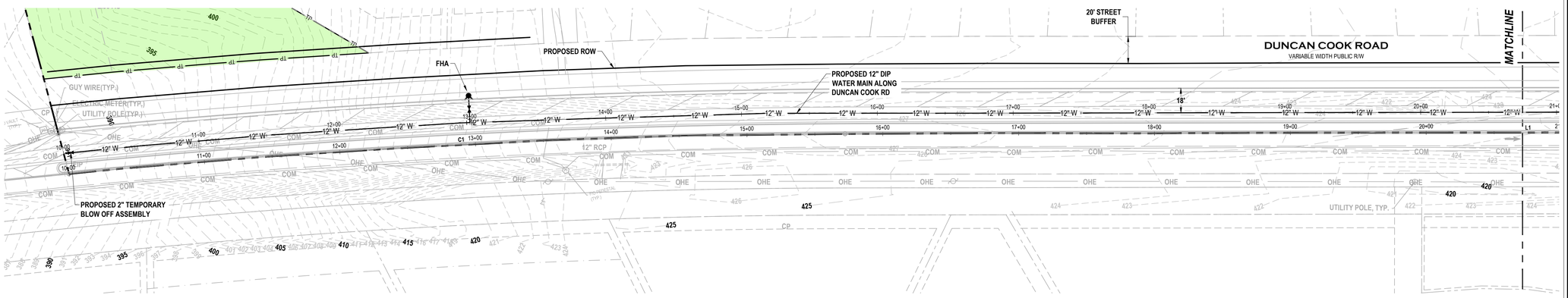
CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

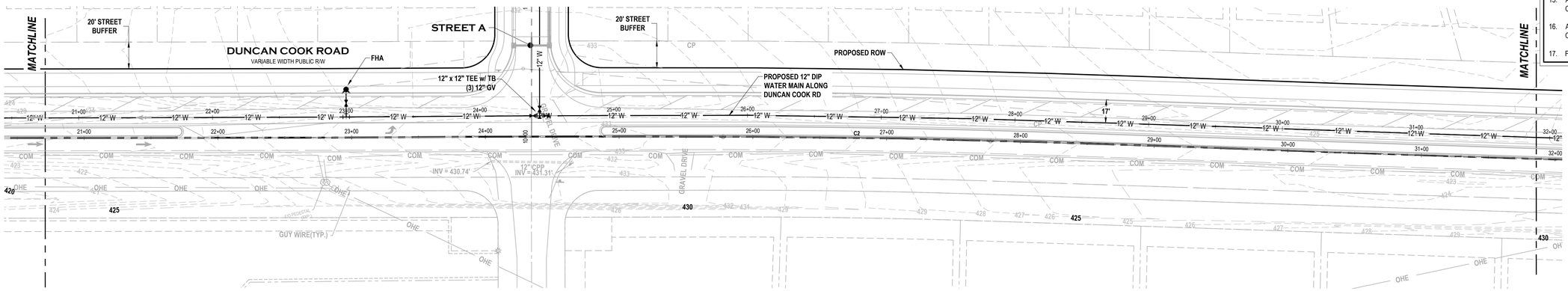
DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
PARTIAL UTILITY PLAN IX

C-4.9



1 C-4.10 **DUNCAN COOK RD WATERMAIN PLAN VIEW STATION 10+00 - 20+50**

SCALE: 1" = 40'



2 C-4.10 **DUNCAN COOK RD WATERMAIN PLAN VIEW STATION 20+50 - 31+50**

SCALE: 1" = 40'

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARD SPECIFICATIONS AND DETAILS.
2. BOUNDARY, TOPOGRAPHIC & UTILITY INFORMATION IS BASED ON SURVEY BY BASS, NIXON & KENNEDY.
3. WETLANDS DELINEATED BY MITCHELL ENVIRONMENTAL AND HAVE BEEN USACE CONCURRED AND FIELD SURVEYED.
4. DELINEATED WETLAND AND RIPARIAN BUFFER AREAS SHALL NOT BE CLEARED, DRAINAGE, OR OTHERWISE DISTURBED UNLESS SPECIFICALLY PERMITTED BY THE US ARMY CORPS OF ENGINEERS AND NCDENR-DWQ.
5. ANY ACTIVITY IN CFRB ZONE 1 OR ZONE 2 BUFFERS SHALL BE IN ACCORDANCE WITH SECTION 7.06 OF THE TOWN OF HOLLY SPRINGS UDO.
6. TREE PROTECTION FENCING SHALL BE PROVIDED ALONG ALL VEGETATED RIPARIAN AND VEGETATED PERIMETER BUFFER AREAS.
7. 20' SEWER EASEMENTS SHALL BE CENTERED ON ALL SANITARY SEWER PIPE LOCATED OUTSIDE OF STREET RIGHT OF WAYS.
8. UTILITY PIPE SIZES & LOCATIONS ARE PRELIMINARY AND SHALL BE FINALIZED DURING CONSTRUCTION DRAWING REVIEW & APPROVAL.
9. NO FLOOD PLAIN EXISTS ON SITE ACCORDING TO FEMA MAP NUMBER 3720064900J WITH EFFECTIVE DATE OF MAY 2, 2006.
10. ALL LOTS SHALL HAVE 3/4" WATER SERVICES & 4" SEWER SERVICES WITH CLEANOUTS. ALL WATER SERVICE TAPS SHALL BE 3/4" BRASS CORPORATION STOPS TO COMPLY WITH TOWN OF HOLLY SPRINGS STANDARDS.
11. ALL PROPOSED SANITARY SEWER MAINS SHALL BE 8" PVC OR DIP. REFER TO PLAN AND PROFILE DRAWINGS FOR MATERIALS. MINIMUM BURIAL DEPTH IS 54" FROM MEASURED FROM TOP OF SUBGRADE.
12. ALL PROPOSED WATER MAINS SHALL BE 6" AND 8" DIP. MATERIAL AND SIZE TO BE VERIFIED DURING THE CD PROCESS. MINIMUM BURIAL DEPTH IS 36" MEASURED FROM TOP OF SUBGRADE.
13. ALL PROPOSED RECLAIMED WATER MAINS SHALL BE 6" C900 PVC. PIPING SHALL BE COLOR CODED PURPLE. PANTONE 522. MATERIAL AND SIZE TO BE VERIFIED DURING THE CD PROCESS.MINIMUM BURIAL DEPTH IS 48" MEASURED FROM FINISHED GRADE.
14. THIS PLAN IS SUBJECT TO REVISION DURING THE CONSTRUCTION DRAWING REVIEW PROCESS FOLLOWING HOLLY SPRINGS TOWN COUNCIL ACTION.
15. ALL PROPOSED POWER LINES SHALL BE INSTALLED UNDERGROUND. THIS COORDINATION HAS BEEN INITIATED WITH DUKE ENERGY.
16. ALL NATURAL GAS LINES SHALL BE INSTALLED UNDERGROUND. COORDINATION WITH PSNC HAS BEEN INITIATED.
17. FIRE FLOW TEST CONDUCTED BY DREW KING & ASSOCIATES.

LEGEND:

- FIRE HYDRANT ASSEMBLY
- GATE VALVE
- TEE
- THRUST (REACTION) BLOCKING
- BLOW OFF VALVE
- BACKFLOW PREVENTER
- WATER METER / SERVICE
- SANITARY CLEANOUT / SERVICE
- SANITARY MANHOLE
- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- OPEN THROAT YARD INLET
- W — WATER LINE
- SS — SANITARY SEWER LINE
- STORM DRAIN LINE

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/19/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA 36823 ENGINEER ANDREW S. PETTY
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849 F (919) 552-2043
205 S. Fuquay Avenue Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

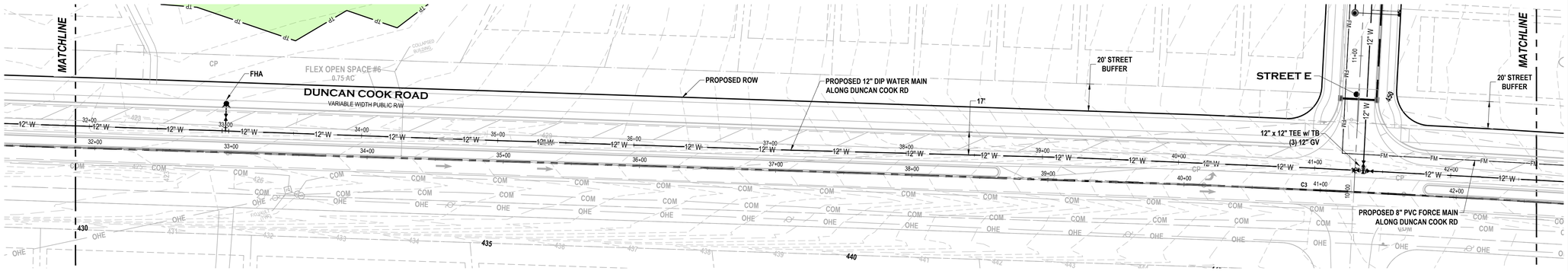
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

OFFSITE UTILITY PLAN I

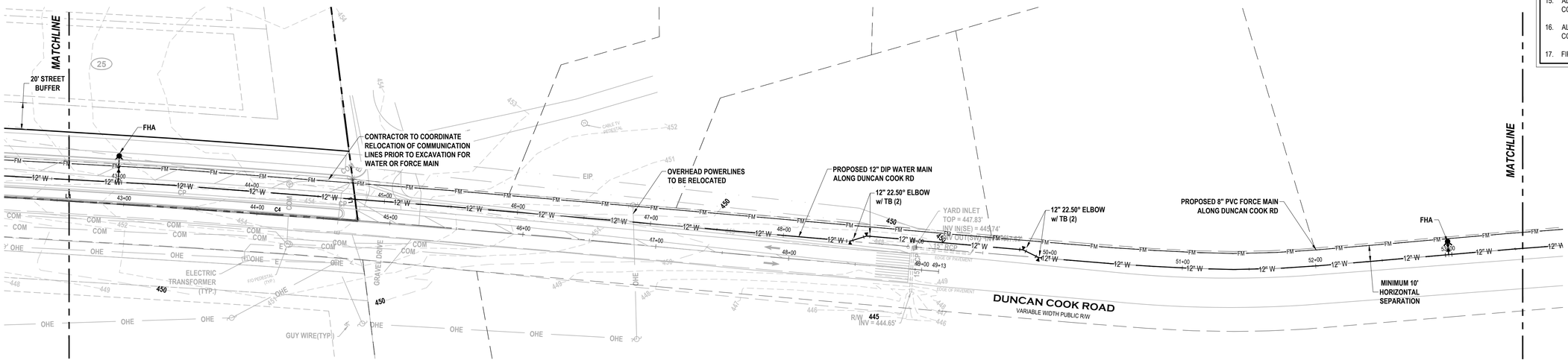
C-4.10

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.10 OFFSITE UTILITY PLAN I.DWG
PLOTTED: 6/10/2025 9:41 AM



1
C-4.11

DUNCAN COOK RD WATERMAIN
PLAN VIEW STATION 31+50 - 42+50
SCALE: 1" = 40'



2
C-4.11

DUNCAN COOK RD WATERMAIN
PLAN VIEW STATION 42+50 - 53+50
SCALE: 1" = 40'

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARD SPECIFICATIONS AND DETAILS.
2. BOUNDARY, TOPOGRAPHIC & UTILITY INFORMATION IS BASED ON SURVEY BY BASS, NIXON & KENNEDY.
3. WETLANDS DELINEATED BY MITCHELL ENVIRONMENTAL AND HAVE BEEN USACE CONCURRED AND FIELD SURVEYED.
4. DELINEATED WETLAND AND RIPARIAN BUFFER AREAS SHALL NOT BE CLEARED, DRAINAGE, OR OTHERWISE DISTURBED UNLESS SPECIFICALLY PERMITTED BY THE US ARMY CORPS OF ENGINEERS AND NCDENR-DWQ.
5. ANY ACTIVITY IN CFRB ZONE 1 OR ZONE 2 BUFFERS SHALL BE IN ACCORDANCE WITH SECTION 7.06 OF THE TOWN OF HOLLY SPRINGS UDO.
6. TREE PROTECTION FENCING SHALL BE PROVIDED ALONG ALL VEGETATED RIPARIAN AND VEGETATED PERIMETER BUFFER AREAS.
7. 20' SEWER EASEMENTS SHALL BE CENTERED ON ALL SANITARY SEWER PIPE LOCATED OUTSIDE OF STREET RIGHT OF WAYS.
8. UTILITY PIPE SIZES & LOCATIONS ARE PRELIMINARY AND SHALL BE FINALIZED DURING CONSTRUCTION DRAWING REVIEW & APPROVAL.
9. NO FLOOD PLAIN EXISTS ON SITE ACCORDING TO FEMA MAP NUMBER 3720064900J WITH EFFECTIVE DATE OF MAY 2, 2006.
10. ALL LOTS SHALL HAVE 3/4" WATER SERVICES & 4" SEWER SERVICES WITH CLEANOUTS. ALL WATER SERVICE TAPS SHALL BE 3/4" BRASS CORPORATION STOPS TO COMPLY WITH TOWN OF HOLLY SPRINGS STANDARDS.
11. ALL PROPOSED SANITARY SEWER MAINS SHALL BE 8" PVC OR DIP. REFER TO PLAN AND PROFILE DRAWINGS FOR MATERIALS. MINIMUM BURIAL DEPTH IS 54" FROM MEASURED FROM TOP OF SUBGRADE.
12. ALL PROPOSED WATER MAINS SHALL BE 6" AND 8" DIP. MATERIAL AND SIZE TO BE VERIFIED DURING THE CD PROCESS. MINIMUM BURIAL DEPTH IS 36" MEASURED FROM TOP OF SUBGRADE.
13. ALL PROPOSED RECLAIMED WATER MAINS SHALL BE 6" C900 PVC. PIPING SHALL BE COLOR CODED PURPLE, PANTONE 522. MATERIAL AND SIZE TO BE VERIFIED DURING THE CD PROCESS.MINIMUM BURIAL DEPTH IS 48" MEASURED FROM FINISHED GRADE.
14. THIS PLAN IS SUBJECT TO REVISION DURING THE CONSTRUCTION DRAWING REVIEW PROCESS FOLLOWING HOLLY SPRINGS TOWN COUNCIL ACTION.
15. ALL PROPOSED POWER LINES SHALL BE INSTALLED UNDERGROUND. THIS COORDINATION HAS BEEN INITIATED WITH DUKE ENERGY.
16. ALL NATURAL GAS LINES SHALL BE INSTALLED UNDERGROUND. COORDINATION WITH PSNC HAS BEEN INITIATED.
17. FIRE FLOW TEST CONDUCTED BY DREW KING & ASSOCIATES.

LEGEND:

- FIRE HYDRANT ASSEMBLY
- GATE VALVE
- TEE
- THRUST (REACTION) BLOCKING
- BLOW OFF VALVE
- BACKFLOW PREVENTER
- WATER METER / SERVICE
- SANITARY CLEANOUT / SERVICE
- SANITARY MANHOLE
- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- OPEN THROAT YARD INLET
- W — WATER LINE
- SS — SANITARY SEWER LINE
- STORM DRAIN LINE

SCALE: 1 IN = 40 FT
40' 20' 0 40' 80'
SCALE IN FEET
HORIZONTAL

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PETTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-0043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

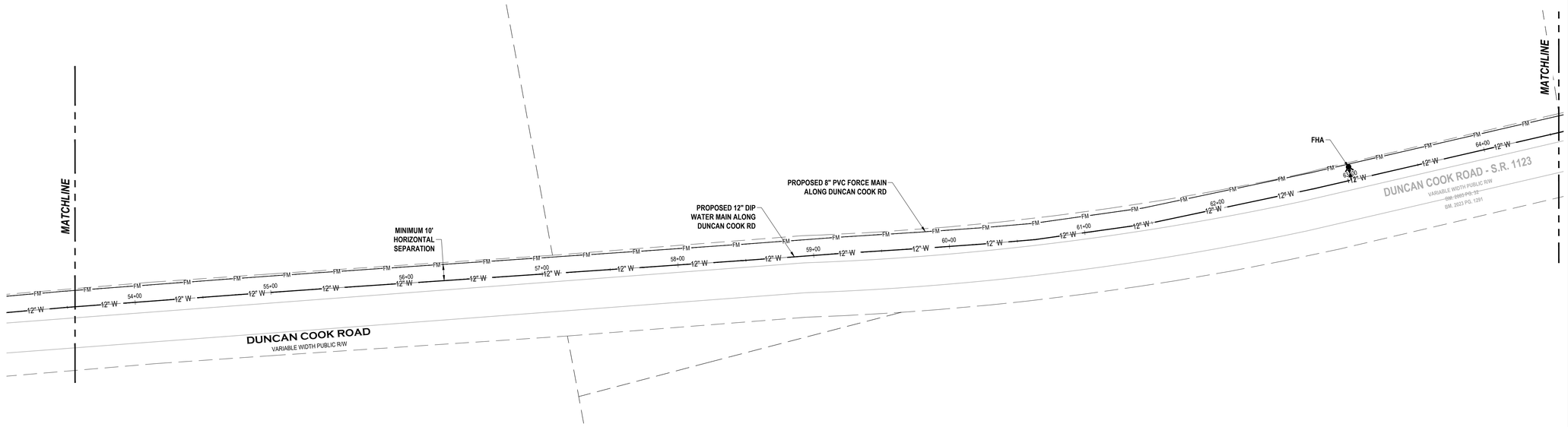
CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
OFFSITE UTILITY PLAN II

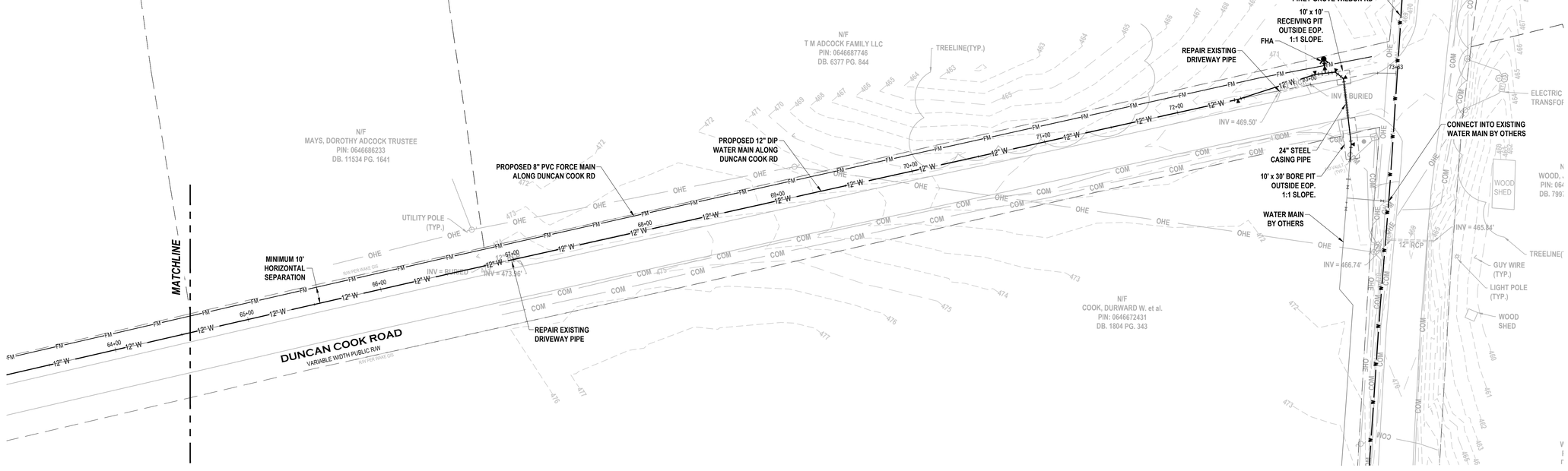
C-4.11

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C4.11 OFFSITE UTILITY PLAN II.DWG
PLOTTED: 6/10/2025 9:42 AM



1 C-4.12

DUNCAN COOK RD WATERMAIN
PLAN VIEW STATION 53+50 - 64+00
SCALE: 1" = 40'



2 C-4.12

DUNCAN COOK RD WATERMAIN
PLAN VIEW STATION 64+00 - 73+63
SCALE: 1" = 40'

LEGEND:

- FIRE HYDRANT ASSEMBLY
- GATE VALVE
- TEE
- THRUST (REACTION) BLOCKING
- BLOW OFF VALVE
- BACKFLOW PREVENTER
- WATER METER / SERVICE
- SANITARY CLEANOUT / SERVICE
- SANITARY MANHOLE
- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- OPEN THROAT YARD INLET
- W — WATER LINE
- SS — SANITARY SEWER LINE
- STORM DRAIN LINE

SCALE: 1 IN = 40 FT
40' 20' 0 40' 80'
SCALE IN FEET HORIZONTAL

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARD SPECIFICATIONS AND DETAILS.
2. BOUNDARY, TOPOGRAPHIC & UTILITY INFORMATION IS BASED ON SURVEY BY BASS, NIXON & KENNEDY.
3. WETLANDS DELINEATED BY MITCHELL ENVIRONMENTAL AND HAVE BEEN USACE CONCURRED AND FIELD SURVEYED.
4. DELINEATED WETLAND AND RIPARIAN BUFFER AREAS SHALL NOT BE CLEARED, DRAINAGE, OR OTHERWISE DISTURBED UNLESS SPECIFICALLY PERMITTED BY THE US ARMY CORPS OF ENGINEERS AND NCDENR-DWQ.
5. ANY ACTIVITY IN CFRB ZONE 1 OR ZONE 2 BUFFERS SHALL BE IN ACCORDANCE WITH SECTION 7.06 OF THE TOWN OF HOLLY SPRINGS UDO.
6. TREE PROTECTION FENCING SHALL BE PROVIDED ALONG ALL VEGETATED RIPARIAN AND VEGETATED PERIMETER BUFFER AREAS.
7. 20' SEWER EASEMENTS SHALL BE CENTERED ON ALL SANITARY SEWER PIPE LOCATED OUTSIDE OF STREET RIGHT OF WAYS.
8. UTILITY PIPE SIZES & LOCATIONS ARE PRELIMINARY AND SHALL BE FINALIZED DURING CONSTRUCTION DRAWING REVIEW & APPROVAL.
9. NO FLOOD PLAIN EXISTS ON SITE ACCORDING TO FEMA MAP NUMBER 3720064900J WITH EFFECTIVE DATE OF MAY 2, 2006.
10. ALL LOTS SHALL HAVE 3/4" WATER SERVICES & 4" SEWER SERVICES WITH CLEANOUTS. ALL WATER SERVICE TAPS SHALL BE 3/4" BRASS CORPORATION STOPS TO COMPLY WITH TOWN OF HOLLY SPRINGS STANDARDS.
11. ALL PROPOSED SANITARY SEWER MAINS SHALL BE 8" PVC OR DIP. REFER TO PLAN AND PROFILE DRAWINGS FOR MATERIALS. MINIMUM BURIAL DEPTH IS 54" FROM MEASURED FROM TOP OF SUBGRADE.
12. ALL PROPOSED WATER MAINS SHALL BE 6" AND 8" DIP. MATERIAL AND SIZE TO BE VERIFIED DURING THE CD PROCESS. MINIMUM BURIAL DEPTH IS 36" MEASURED FROM TOP OF SUBGRADE.
13. ALL PROPOSED RECLAIMED WATER MAINS SHALL BE 6" C900 PVC. PIPING SHALL BE COLOR CODED PURPLE. PANTONE 522. MATERIAL AND SIZE TO BE VERIFIED DURING THE CD PROCESS.MINIMUM BURIAL DEPTH IS 48" MEASURED FROM FINISHED GRADE.
14. THIS PLAN IS SUBJECT TO REVISION DURING THE CONSTRUCTION DRAWING REVIEW PROCESS FOLLOWING HOLLY SPRINGS TOWN COUNCIL ACTION.
15. ALL PROPOSED POWER LINES SHALL BE INSTALLED UNDERGROUND. THIS COORDINATION HAS BEEN INITIATED WITH DUKE ENERGY.
16. ALL NATURAL GAS LINES SHALL BE INSTALLED UNDERGROUND. COORDINATION WITH PSNC HAS BEEN INITIATED.
17. FIRE FLOW TEST CONDUCTED BY DREW KING & ASSOCIATES.

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA ENGINEER ANDREW S PETTY 36823
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

OFFSITE UTILITY PLAN III

C-4.12

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.12 OFFSITE UTILITY PLAN III.DWG
PLOTTED: 6/10/2025 9:43 AM

PROPOSED HAZEL RIDGE PUMP STATION

PROPOSED ELLIOTT FARM PUMP STATION (BY OTHERS)

PROPOSED 8" C900 PVC FORCE MAIN TO ELLIOTT FARM

PROPOSED 12" DIP WATERLINE

PROPOSED 10" C900 PVC FORCE MAIN TO HONEYCUTT FARMS ALTERNATIVE 1

PROPOSED 10" C900 PVC FORCE MAIN TO HONEYCUTT FARMS ALTERNATIVE 2

PROPOSED 20' TOWN OF HOLLY SPRINGS FORCE MAIN EASEMENT, TYP.

PROPOSED 30' FORCE MAIN EASEMENT

EXISTING HONEYCUTT FARMS PUMP STATION

OLIVER CREEK PKWY

POWELL RIDGE ROAD

ROUSE ROAD

SCARBOROWOOD DR

DUNCAN COOK ROAD

AVOCET ROAD

FLEMING ROAD

KNIGHTWOOD ROAD

PHELPS WEST ROAD

PINEY GROVE WILBON ROAD

PRESCOTT DOWNS DR

STICKLEBACK DR

WILBON ROAD

WILBON RIDGE DR

SPENCE FARM ROAD

LEGEND:

- FIRE HYDRANT ASSEMBLY
- GATE VALVE
- TEE
- THRUST (REACTION) BLOCKING
- BLOW OFF VALVE
- BACKFLOW PREVENTER
- WATER METER / SERVICE
- SANITARY CLEANOUT / SERVICE
- SANITARY MANHOLE
- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- OPEN THROAT YARD INLET
- W — WATER LINE
- SS — SANITARY SEWER LINE
- STORM DRAIN LINE

SCALE: 1 IN = 500 FT

500' 250' 0 500' 1000'

SCALE IN FEET HORIZONTAL

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 200'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 36823 ANDREW S PETTY

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA

NC LIC. NO. P-0799

t (919) 552-0849
f (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

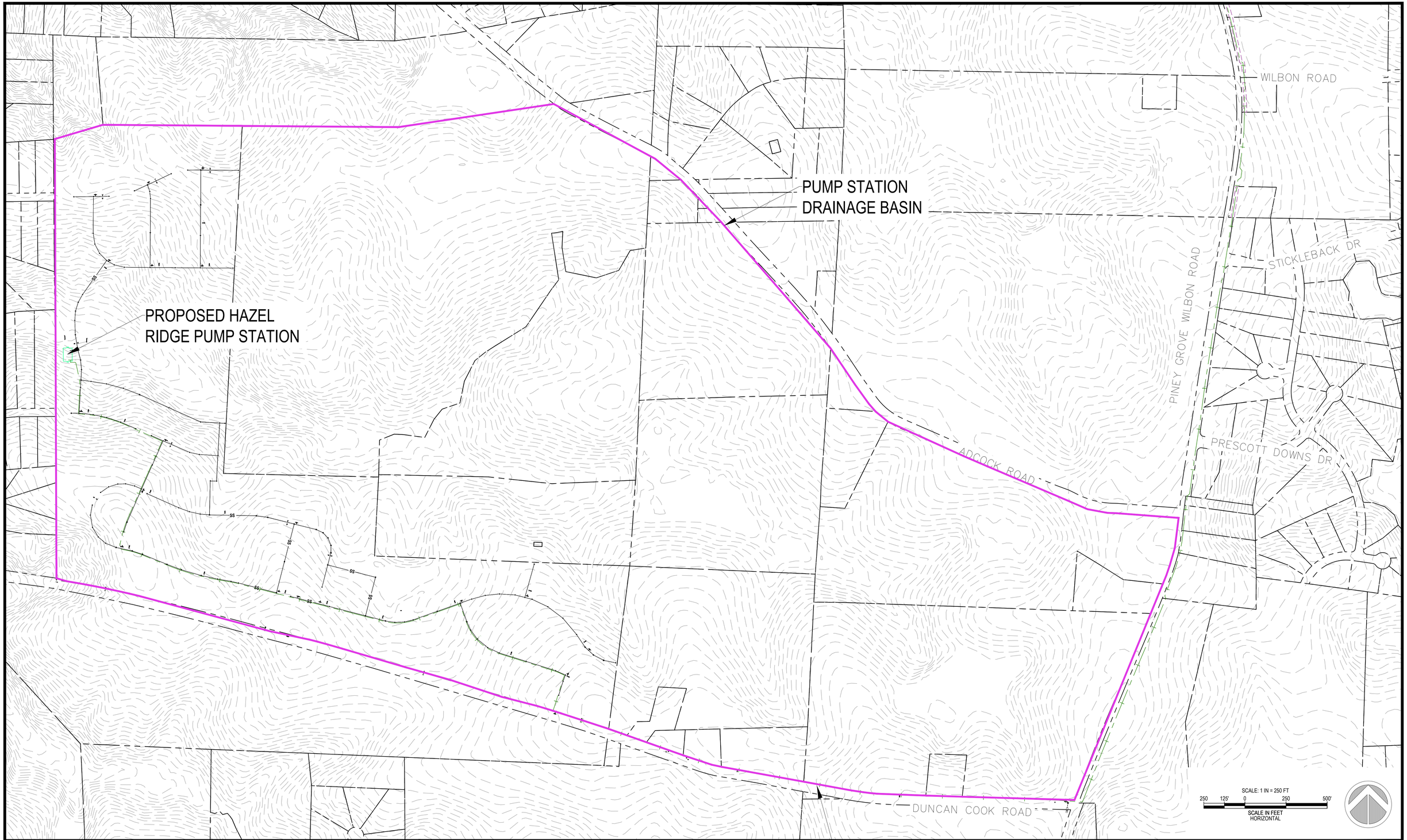
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

OVERALL UTILITY MAP

C-4.13

Z:\PROJECTS FOLDER-ZTEB\LON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.13 OVERAL UTILITY MAP.DWG
PLOTTED: 6/10/2025 9:43 AM



REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
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DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 200'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PETTY

CONSULTANT

Curry
ENGINEERING

CURRY ENGINEERS
EST. 10
NORTH CAROLINA
NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

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PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

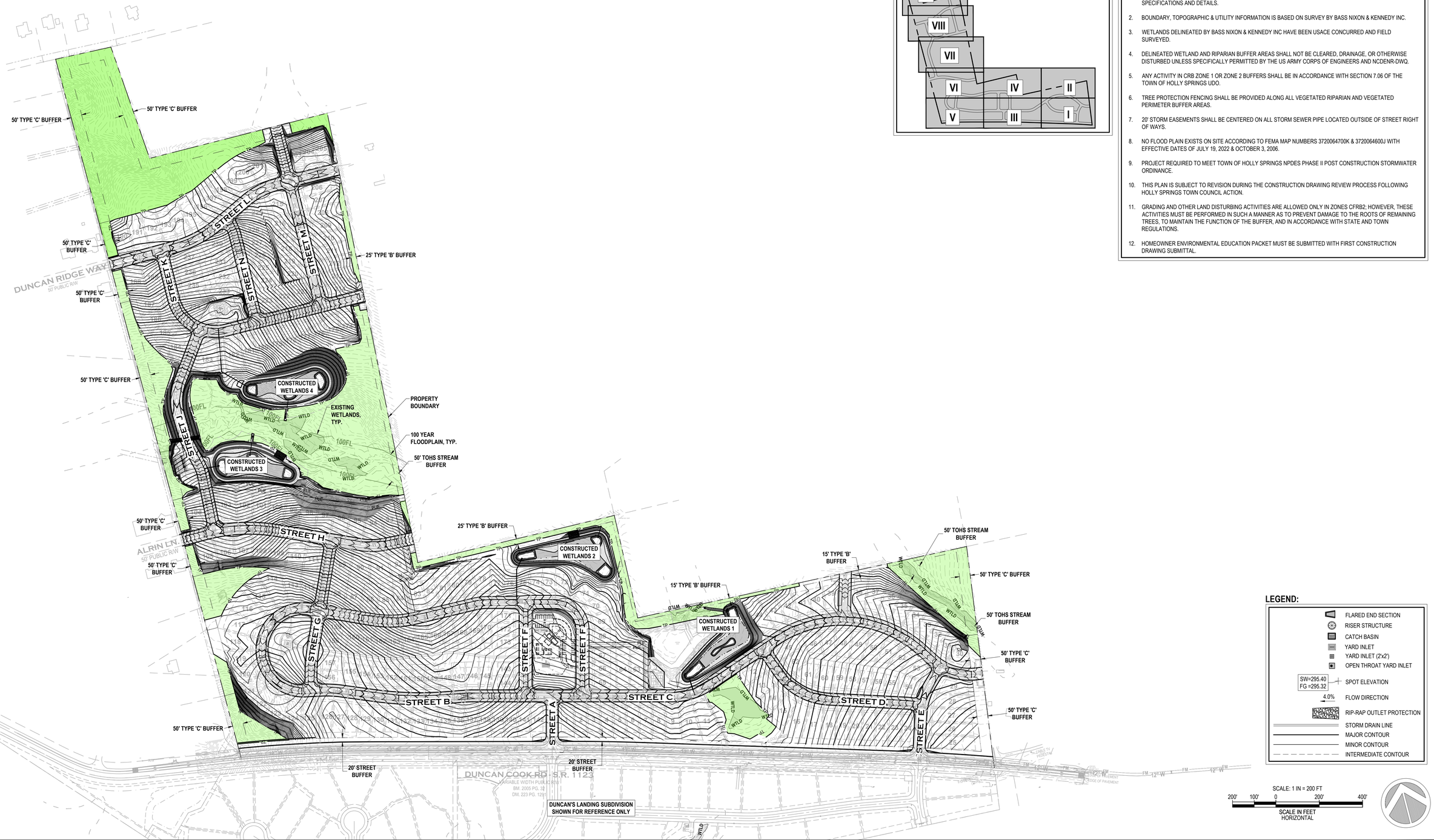
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

SEWER BASIN MAP

C-4.14

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-4.14 SEWER BASIN MAP.DWG
PLOTTED: 6/10/2025 9:43 AM



SITE KEY PLAN

GENERAL NOTES:

THESE NOTES APPLY TO SHEETS C-5.0 - C-5.9.

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARD SPECIFICATIONS AND DETAILS.
2. BOUNDARY, TOPOGRAPHIC & UTILITY INFORMATION IS BASED ON SURVEY BY BASS NIXON & KENNEDY INC.
3. WETLANDS DELINEATED BY BASS NIXON & KENNEDY INC HAVE BEEN USACE CONCURRED AND FIELD SURVEYED.
4. DELINEATED WETLAND AND RIPARIAN BUFFER AREAS SHALL NOT BE CLEARED, DRAINAGE, OR OTHERWISE DISTURBED UNLESS SPECIFICALLY PERMITTED BY THE US ARMY CORPS OF ENGINEERS AND NCDENR-DWQ.
5. ANY ACTIVITY IN CRB ZONE 1 OR ZONE 2 BUFFERS SHALL BE IN ACCORDANCE WITH SECTION 7.06 OF THE TOWN OF HOLLY SPRINGS UDO.
6. TREE PROTECTION FENCING SHALL BE PROVIDED ALONG ALL VEGETATED RIPARIAN AND VEGETATED PERIMETER BUFFER AREAS.
7. 20' STORM EASEMENTS SHALL BE CENTERED ON ALL STORM SEWER PIPE LOCATED OUTSIDE OF STREET RIGHT OF WAYS.
8. NO FLOOD PLAIN EXISTS ON SITE ACCORDING TO FEMA MAP NUMBERS 3720064700K & 3720064600J WITH EFFECTIVE DATES OF JULY 19, 2022 & OCTOBER 3, 2006.
9. PROJECT REQUIRED TO MEET TOWN OF HOLLY SPRINGS NPDES PHASE II POST CONSTRUCTION STORMWATER ORDINANCE.
10. THIS PLAN IS SUBJECT TO REVISION DURING THE CONSTRUCTION DRAWING REVIEW PROCESS FOLLOWING HOLLY SPRINGS TOWN COUNCIL ACTION.
11. GRADING AND OTHER LAND DISTURBING ACTIVITIES ARE ALLOWED ONLY IN ZONES CFRB2; HOWEVER, THESE ACTIVITIES MUST BE PERFORMED IN SUCH A MANNER AS TO PREVENT DAMAGE TO THE ROOTS OF REMAINING TREES, TO MAINTAIN THE FUNCTION OF THE BUFFER, AND IN ACCORDANCE WITH STATE AND TOWN REGULATIONS.
12. HOMEOWNER ENVIRONMENTAL EDUCATION PACKET MUST BE SUBMITTED WITH FIRST CONSTRUCTION DRAWING SUBMITTAL.

LEGEND:

- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- YARD INLET (2'x2')
- OPEN THROAT YARD INLET
- SW=295.40 / FG =295.32 — SPOT ELEVATION
- 4.0% — FLOW DIRECTION
- RIP-RAP OUTLET PROTECTION
- STORM DRAIN LINE
- MAJOR CONTOUR
- MINOR CONTOUR
- INTERMEDIATE CONTOUR

SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET HORIZONTAL

REVISIONS		
1	5/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
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NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 200'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

PRELIMINARY FOR REVIEW ONLY
36823
ENGINEER
ANDREW S PETTY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

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A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

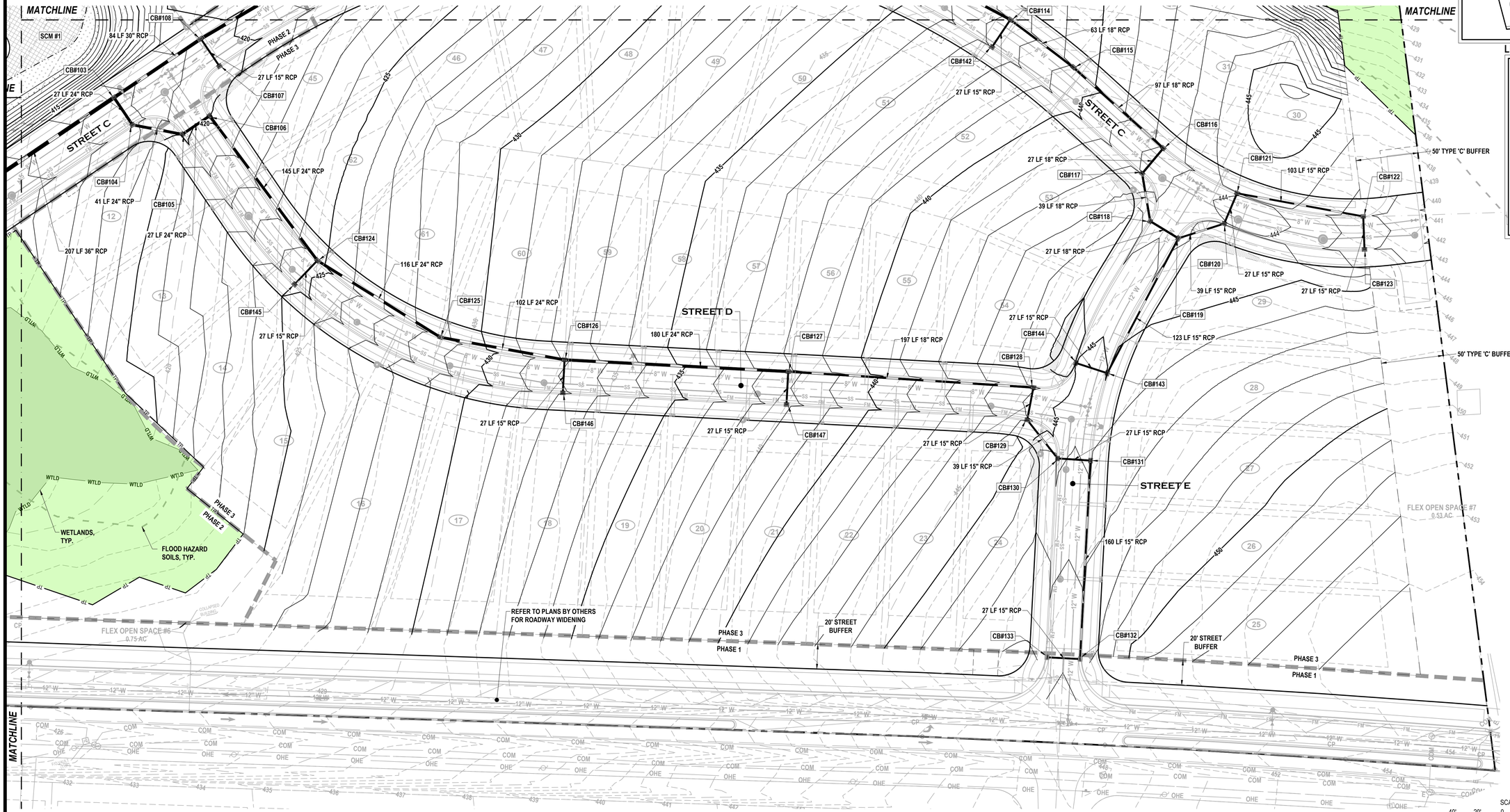
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

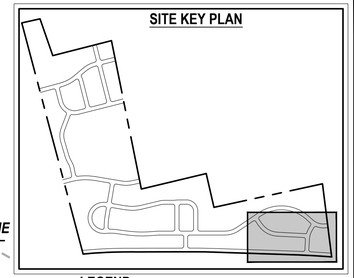
OVERALL GRADING AND DRAINAGE PLAN

C-5.0

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-5.0 OVERALL GRADING AND DRAINAGE PLAN.DWG
PLOTTED: 6/10/2025 9:44 AM



SITE KEY PLAN



LEGEND:

- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- YARD INLET (2'x2')
- OPEN THROAT YARD INLET
- SW=295.40 / FG =295.32 — SPOT ELEVATION
- 4.0% — FLOW DIRECTION
- RIP-RAP OUTLET PROTECTION
- STORM DRAIN LINE
- 400 — MAJOR CONTOUR
- MINOR CONTOUR
- INTERMEDIATE CONTOUR

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

REVISIONS			
1	3/14/2025	TCHS COMMENTS #1	
2	4/17/2025	TCHS COMMENTS #2	
3	5/16/2025	TCHS COMMENTS #3	
4	6/10/2025	TCHS COMMENTS #4	

STATUS
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DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA — PRELIMINARY FOR REVIEW ONLY — 36823 — ENGINEER — ANDREW S. PETTY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

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Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL GRADING AND DRAINAGE PLAN I

C-5.1

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-5.1 PARTIAL GRADING AND DRAINAGE PLAN I.DWG
PLOTTED: 6/10/2025 9:45 AM

TEMPLAR INVESTMENTS LLC
PIN: 0646399748
DB. 12914 PG. 1639
B.M. 2007 PG. 2181

MATCHLINE

MATCHLINE

STREET C

15' TYPE 'C' BUFFER

15' TYPE 'B' BUFFER

FLOOD HAZARD SOILS, TYP.

50' TYPE 'C' BUFFER

50' TOHS STREAM BUFFER

CONSERVATION OPEN SPACE #1
32 AC

EXISTING WETLANDS, TYP.

MAX 3:1 SLOPE

50' TOHS STREAM BUFFER

MAX 3:1 SLOPE

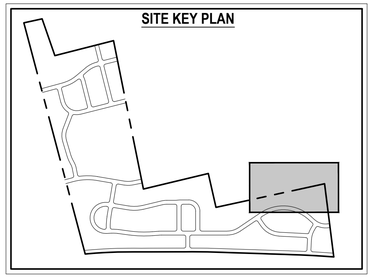
CONSTRUCTED WETLANDS #1

CB#107 CB#108 CB#109 CB#110 CB#111 CB#112 CB#113 CB#114 CB#115 CB#140 CB#141 CB#142

129 LF 24" RCP
102 LF 24" RCP
115 LF 30" RCP
116 LF 30" RCP
27 LF 15" RCP
27 LF 15" RCP
27 LF 15" RCP
115 LF 24" RCP
115 LF 24" RCP
63 LF 18" RCP
27 LF 15" RCP

PHASE 2
PHASE 3
PHASE 2
PHASE 3

SITE KEY PLAN



LEGEND:

- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
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- RIP-RAP OUTLET PROTECTION
- STORM DRAIN LINE
- 400 — MAJOR CONTOUR
- MINOR CONTOUR
- INTERMEDIATE CONTOUR

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET
HORIZONTAL

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-5.2 PARTIAL GRADING AND DRAINAGE PLAN II.DWG
PLOTTED: 6/10/2025 9:45 AM

REVISIONS

1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/15/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
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DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PETTY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING CORPORATION
S.S.T. 1.0
NORTH CAROLINA
NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

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2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

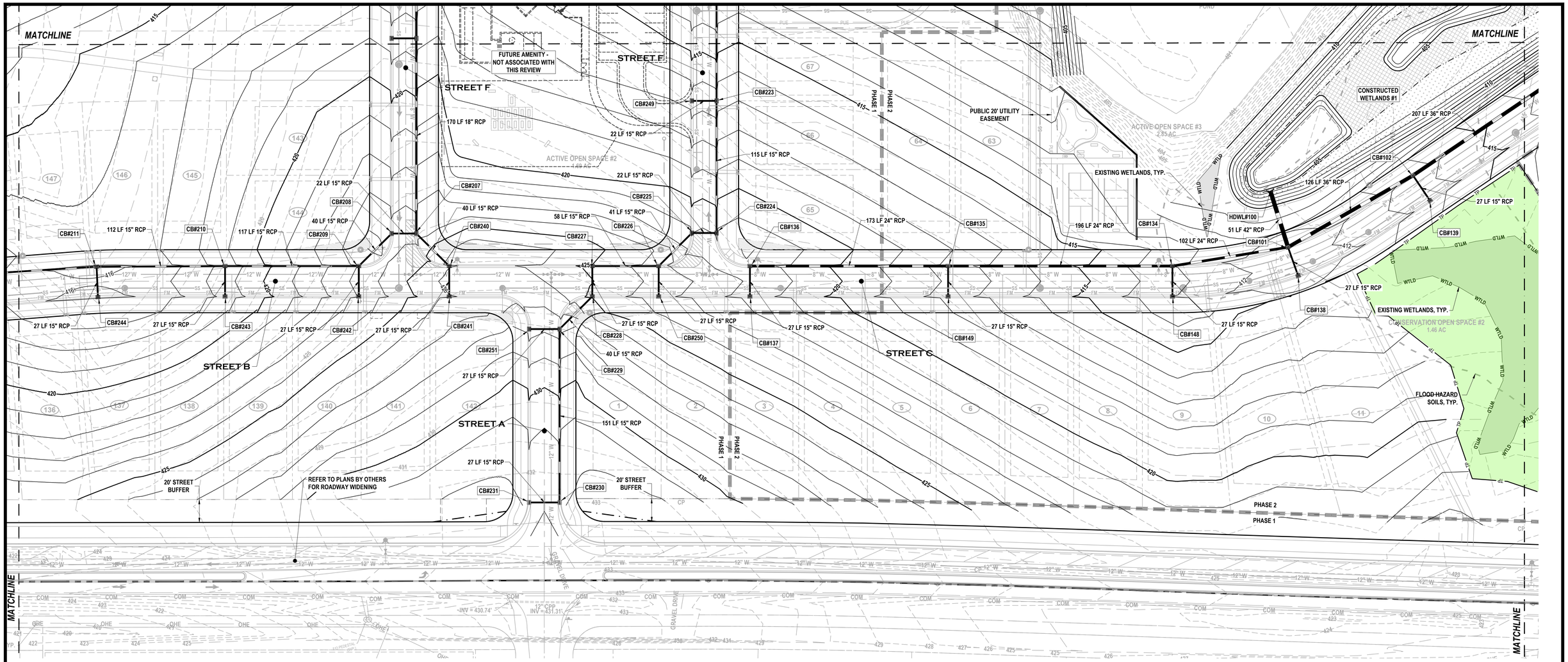
PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

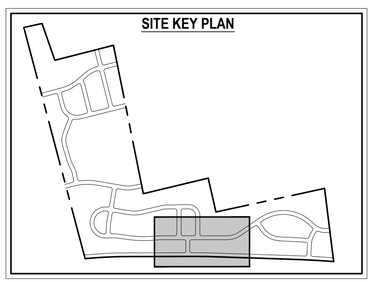
HAZEL RIDGE SUBDIVISION

PARTIAL GRADING AND DRAINAGE PLAN II

C-5.2



SITE KEY PLAN



LEGEND:

- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- YARD INLET (2'x2')
- OPEN THROAT YARD INLET
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- 4.0% — FLOW DIRECTION
- RIP-RAP OUTLET PROTECTION
- STORM DRAIN LINE
- 400 — MAJOR CONTOUR
- MINOR CONTOUR
- INTERMEDIATE CONTOUR

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET
HORIZONTAL

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/15/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
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DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA
ENGINEER
ANDREW S. PETTY
36823
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING CORPORATION
S.S.T. 1.0
NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
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205 S. Fuquay Avenue
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919.308.2123 (M)
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PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL GRADING AND DRAINAGE PLAN III

C-5.3

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-5.3 PARTIAL GRADING AND DRAINAGE PLAN III.DWG
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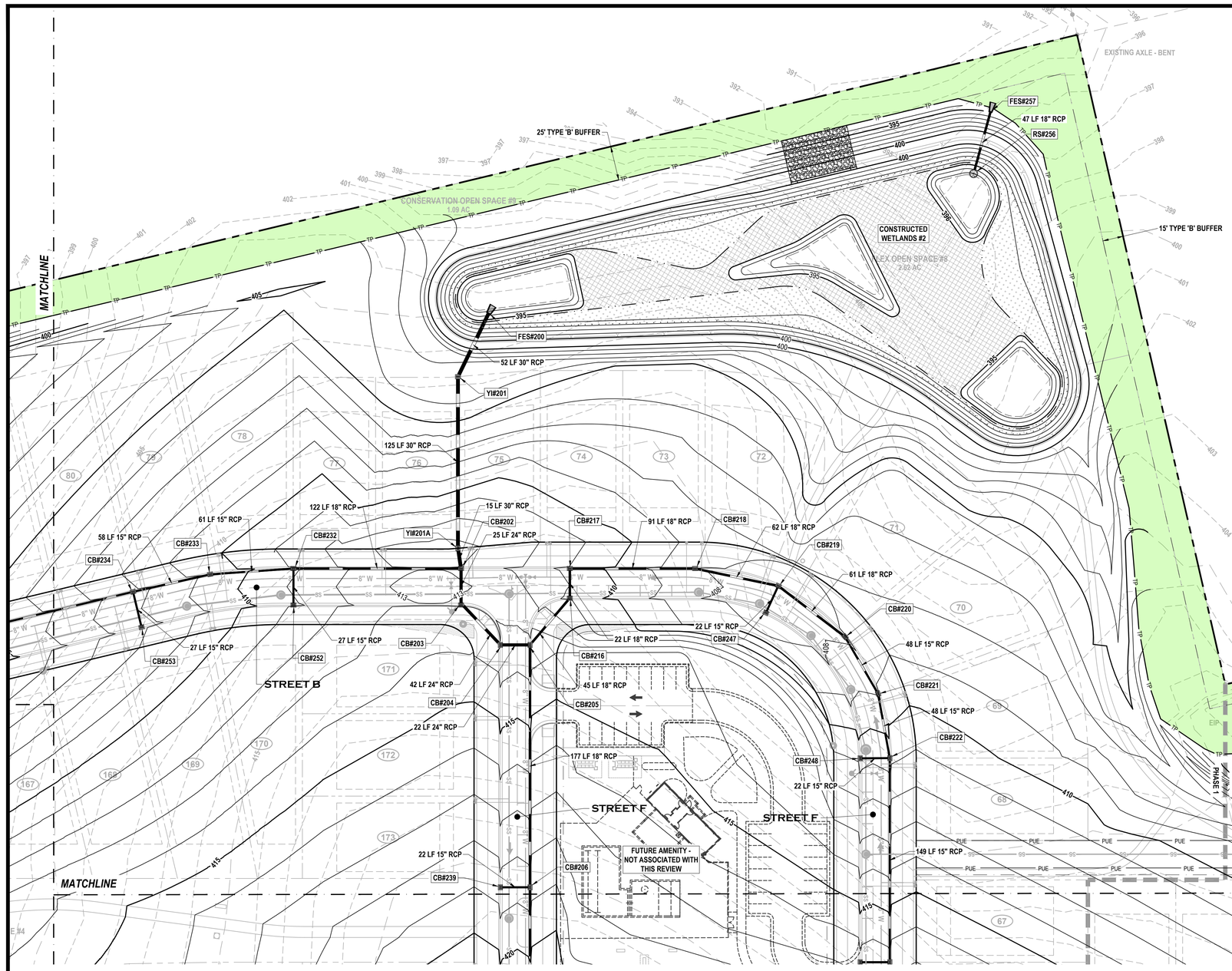
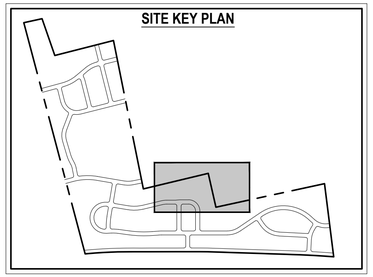


SITE KEY PLAN



LEGEND:

- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- YARD INLET (2'x2')
- OPEN THROAT YARD INLET
- SW=295.40 FG =295.32 — SPOT ELEVATION
- 4.0% — FLOW DIRECTION
- RIP-RAP OUTLET PROTECTION
- STORM DRAIN LINE
- 400 — MAJOR CONTOUR
- MINOR CONTOUR
- INTERMEDIATE CONTOUR

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

NORTH CAROLINA — ENGINEER — ANDREW S PETTY — 36823

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING
CURRY ENGINEERING EST. 19 NORTH CAROLINA
NC LIC. NO: P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

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2310 S. Miami Bldv., Ste. 238
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919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

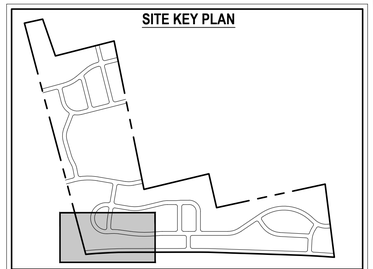
PARTIAL GRADING AND DRAINAGE PLAN IV

C-5.4

Z:\PROJECTS FOLDER\ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-5.4 PARTIAL GRADING AND DRAINAGE PLAN IV.DWG
PLOTTED: 6/10/2025 9:47 AM



SITE KEY PLAN



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- RISER STRUCTURE
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SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET
HORIZONTAL

REVISIONS		
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ANDREW S. PETTY

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CURRY ENGINEERING CORPORATION EST. 1.0 NORTH CAROLINA
NC LIC. NO. P-0799

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DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL GRADING AND DRAINAGE PLAN V

C-5.5

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-5.5 PARTIAL GRADING AND DRAINAGE PLAN V.DWG
PLOTTED: 6/10/2025 9:47 AM

MATCHLINE

MATCHLINE

CONSTRUCTED WETLANDS #3

100 YEAR FLOOD PLAIN

FLOOD HAZARD SOILS, TYP.

EXISTING WETLANDS, TYP.

MAX 3:1 SLOPE, TYP.

PUBLIC 30' UTILITY EASEMENT

RETAINING WALL GRID MUST BE OUTSIDE OF TOHS PUBLIC UTILITY EASEMENT

STREET J

STREET H

STREET G

STREET B

PHASE 4

PHASE 1

PHASE 2

PHASE 1

50' TYPE 'C' BUFFER

25' TYPE 'B' BUFFER

PUBLIC 30' UTILITY EASEMENT

CB#302 CB#359 CB#303 CB#360 CB#304 CB#323 CB#305 CB#306 CB#307 CB#308 CB#309 CB#324 CB#326 CB#362 CB#361 CB#363 CB#325 CB#327 CB#310 CB#329 CB#330 CB#333 CB#311 CB#312 CB#328 CB#332 CB#334 CB#313 CB#364 CB#314 CB#335 CB#336 CB#315 CB#316 CB#340 CB#338 CB#337 CB#365 CB#317 CB#339 CB#318 CB#237 CB#236 CB#235 CB#238 CB#255 CB#254

TW: 376.50 BW: 376.00 CP

TW: 376.50 BW: 369.00

TW: 377.00 BW: 376.50

27 LF 15" RCP · 103 LF 15" RCP · 40 LF 15" RCP · 53 LF 15" RCP · 83 LF 15" RCP · 68 LF 15" RCP · 69 LF 15" RCP · 39 LF 15" RCP · 97 LF 15" RCP · 191 LF 15" RCP · 27 LF 15" RCP · 100 LF 15" RCP · 106 LF 15" RCP · 53 LF 15" RCP · 27 LF 15" RCP · 27 LF 15" RCP · 25 LF 15" RCP · 27 LF 15" RCP · 41 LF 15" RCP · 27 LF 15" RCP · 24 LF 15" RCP · 27 LF 15" RCP · 41 LF 15" RCP · 135 LF 15" RCP · 27 LF 15" RCP · 113 LF 15" RCP · 27 LF 15" RCP · 41 LF 15" RCP · 27 LF 15" RCP · 41 LF 15" RCP · 26 LF 15" RCP · 91 LF 15" RCP · 72 LF 15" RCP · 27 LF 15" RCP · 40 LF 15" RCP · 185 LF 15" RCP · 167 LF 15" RCP · 132 LF 15" RCP · 25 LF 15" RCP · 27 LF 15" RCP

MAX 3:1 SLOPE, TYP.

EIP

MATCHLINE

SITE KEY PLAN

LEGEND:

- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- YARD INLET (2'x2')
- OPEN THROAT YARD INLET
- SW=295.40 FG =295.32 — SPOT ELEVATION
- 4.0% — FLOW DIRECTION
- RIP-RAP OUTLET PROTECTION
- STORM DRAIN LINE
- 400 — MAJOR CONTOUR
- MINOR CONTOUR
- INTERMEDIATE CONTOUR

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA
PRELIMINARY FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PATTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL GRADING AND DRAINAGE PLAN VI

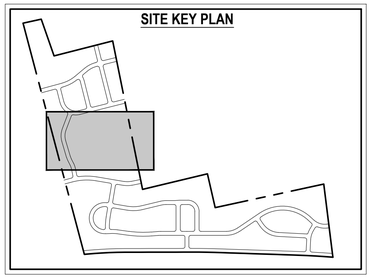
C-5.6

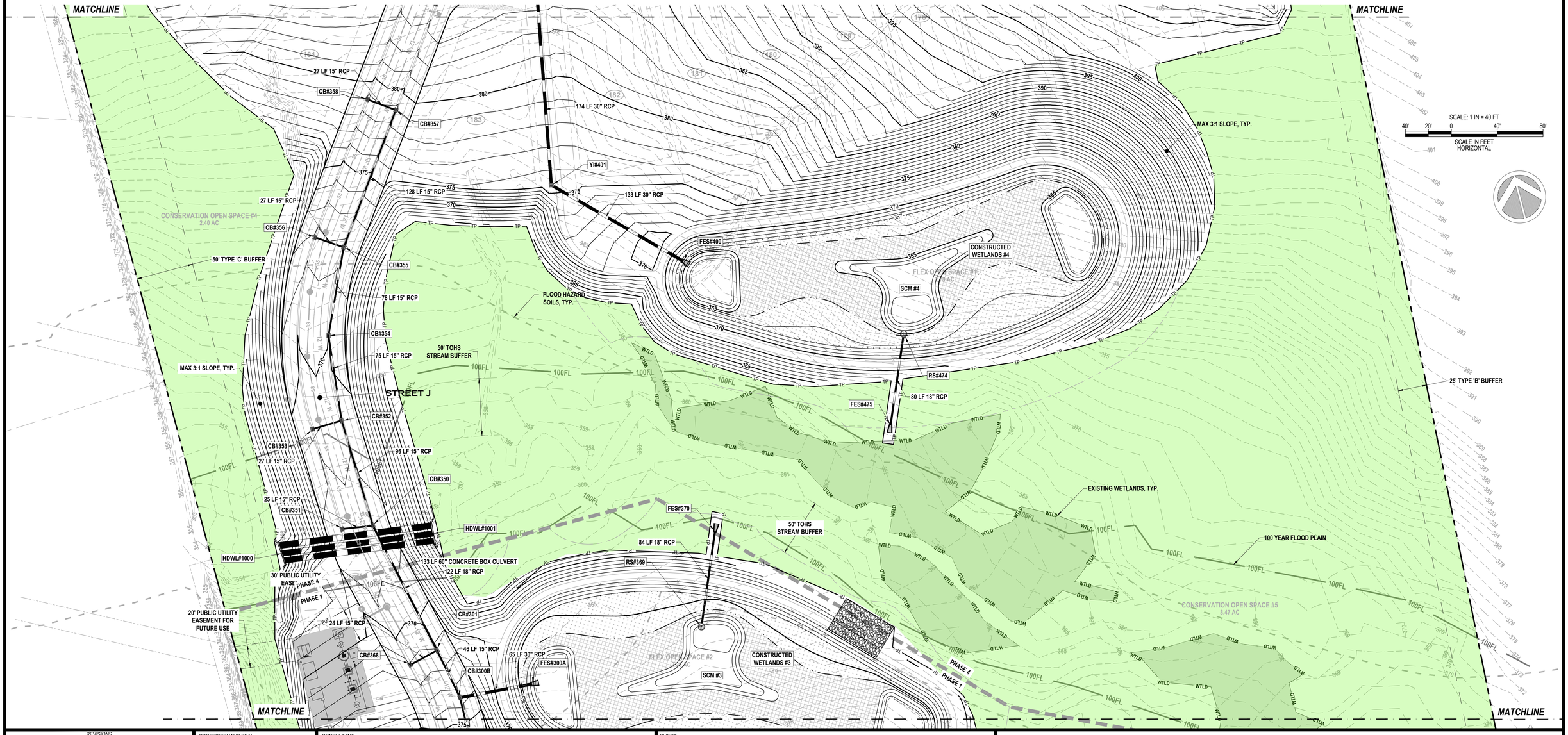
Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-5.6 PARTIAL GRADING AND DRAINAGE PLAN VI.DWG
PLOTTED: 6/10/2025 9:48 AM

LEGEND:

- FLARED END SECTION
- RISER STRUCTURE
- CATCH BASIN
- YARD INLET
- YARD INLET (2'x2')
- OPEN THROAT YARD INLET
- SW=295.40 / FG =295.32 — SPOT ELEVATION
- 4.0% — FLOW DIRECTION
- RIP-RAP OUTLET PROTECTION
- STORM DRAIN LINE
- 400 — MAJOR CONTOUR
- MINOR CONTOUR
- INTERMEDIATE CONTOUR

SITE KEY PLAN





REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
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DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA ENGINEER ANDREW S. PETTY 36823
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEER EST. 1.0 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT — A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL GRADING AND DRAINAGE PLAN VII

C-5.7

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-5.7 PARTIAL GRADING AND DRAINAGE PLAN VII.DWG
PLOTTED: 6/10/2025 9:49 AM



REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

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FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PETTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING CORPORATION EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

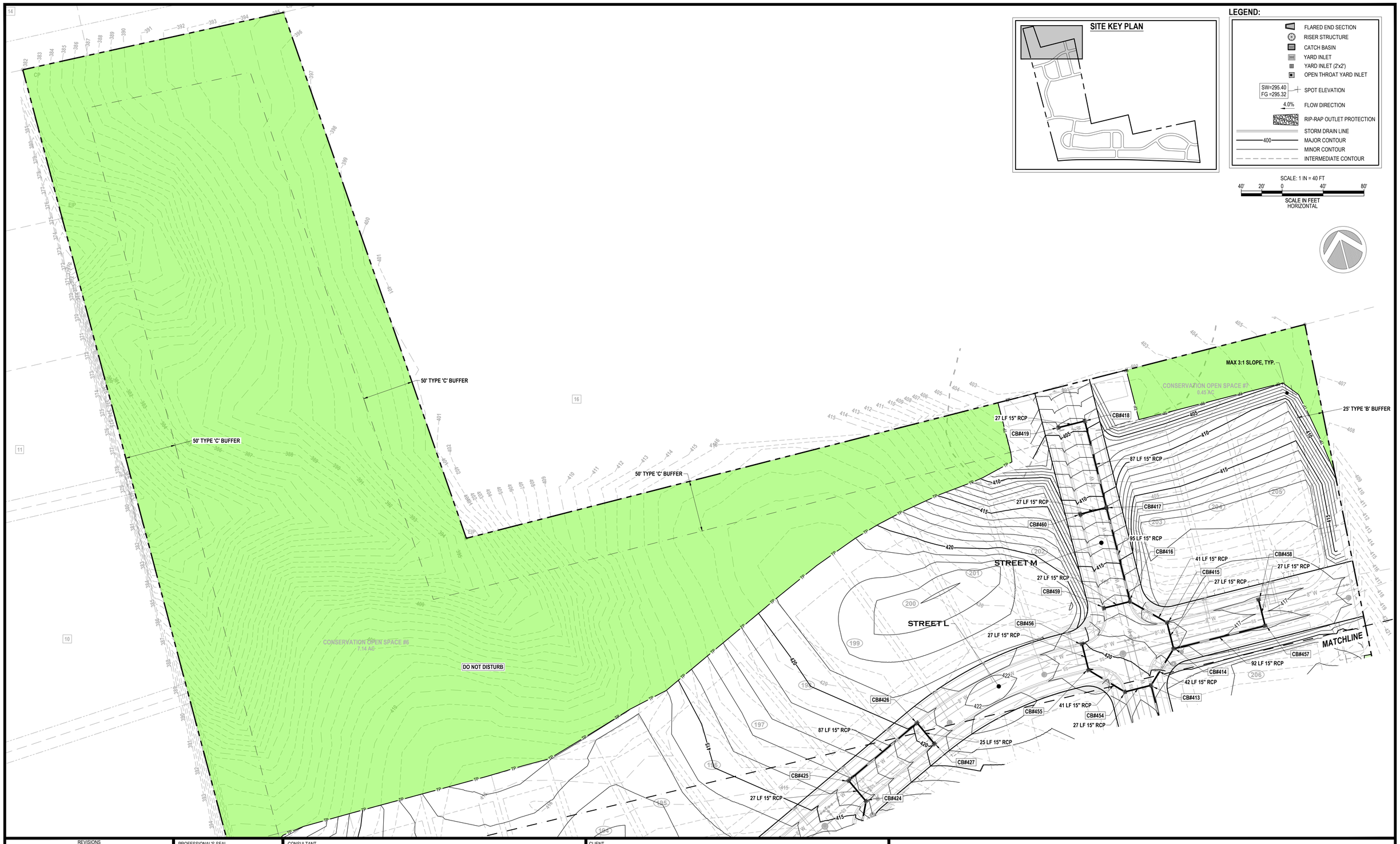
CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
PARTIAL GRADING AND DRAINAGE PLAN VIII

C-5.8

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-5.8 PARTIAL GRADING AND DRAINAGE PLAN VIII.DWG
PLOTTED: 6/10/2025 9:49 AM



REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

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FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

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ENGINEER
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CONSULTANT
Curry ENGINEERING
CURRY ENGINEERS EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL GRADING AND DRAINAGE PLAN IX

C-5.9

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-5.9 PARTIAL GRADING AND DRAINAGE PLAN IX.DWG
PLOTTED: 6/10/2025 9:50 AM

LINE TABLE

NAME	ROADWAY	LENGTH	DIRECTION	BEGIN STATION	END STATION
L1	STREET A	261.40'	N14°30'16"E	10+00.00	12+61.40
L2	STREET B	366.21'	N75°29'44"W	10+00.00	13+66.21
L3	STREET B	90.08'	N79°56'36"W	14+05.02	14+95.10
L4	STREET B	160.73'	N67°44'23"W	18+14.60	19+75.32
L5	STREET B	75.72'	N78°13'54"W	20+66.88	21+42.60
L6	STREET B	291.43'	S65°58'09"E	27+80.16	30+71.59
L7	STREET B	275.13'	S88°58'31"E	32+72.36	35+47.49
L8	STREET B	122.67'	S75°29'44"E	36+18.07	37+40.74
L9	STREET B	49.55'	S76°39'07"E	37+40.74	37+90.29
L10	STREET C	553.25'	S75°29'44"E	10+00.00	15+53.25
L11	STREET C	370.34'	N70°25'33"E	17+31.68	21+02.02
L12	STREET C	66.68'	S33°06'54"E	28+35.97	29+02.65
L13	STREET C	29.36'	S82°38'30"E	31+18.75	31+48.11
L14	STREET D	126.22'	S19°34'27"E	10+00.00	11+26.22
L15	STREET D	359.66'	S72°30'13"E	14+03.36	17+63.02
L16	STREET D	44.10'	S64°37'49"E	17+91.19	18+35.29
L17	STREET E	224.43'	N17°29'47"E	10+00.00	12+24.43
L18	STREET E	94.50'	N45°54'09"E	13+74.37	14+68.87
L19	STREET F	305.00'	N14°30'16"E	10+00.00	13+05.00
L20	STREET F	132.00'	N75°29'44"W	15+04.49	16+36.49

LINE TABLE

NAME	ROADWAY	LENGTH	DIRECTION	BEGIN STATION	END STATION
L21	STREET F	432.00'	S14°30'16"W	16+36.49	20+68.49
L22	STREET G	32.20'	N11°46'06"E	10+00.00	10+32.20
L23	STREET G	501.12'	N24°01'51"E	12+03.42	17+04.54
L24	STREET H	133.44'	S86°52'30"E	10+00.00	11+33.44
L25	STREET H	389.97'	N65°58'09"W	12+42.90	16+32.88
L26	STREET H	112.35'	S89°38'54"W	19+73.32	20+85.67
L27	STREET J	259.04'	N3°07'23"E	10+00.00	12+59.04
L28	STREET J	107.99'	N13°51'37"W	13+19.81	14+27.80
L29	STREET J	93.63'	N1°57'22"W	14+70.39	15+64.02
L30	STREET J	259.49'	N35°19'29"E	17+26.69	19+86.18
L31	STREET K	229.18'	S0°23'53"W	10+00.00	12+29.18
L32	STREET K	656.13'	S89°36'07"E	15+43.34	21+99.47
L33	STREET L	387.72'	N89°20'37"E	10+00.00	13+87.72
L34	STREET L	179.94'	N64°25'21"E	16+05.20	17+85.14
L35	STREET L	293.07'	S89°36'07"E	19+43.81	22+36.88
L36	STREET M	856.96'	N0°23'53"E	10+00.00	18+56.96
L37	STREET N	412.63'	N0°23'53"E	10+00.00	14+12.63
L38	STREET N	2.47'	N25°34'39"W	15+05.57	15+08.04
L39	STREET P	214.81'	N15°44'40"E	10+00.00	12+14.81

CURVE TABLE

NAME	ROADWAY	RADIUS	ARC LENGTH	CHORD LENGTH	TANGENT LENGTH	MIDDLE ORDINATE	EXTERNAL DISTANCE	CHORD DIRECTION	BEGIN STATION	END STATION
C1	STREET B	500.00'	38.81'	38.80'	19.42'	0.38	0.38'	N77°43'10"W	13+66.21	14+05.02
C2	STREET B	1500.00'	319.49'	318.89'	160.35'	8.50	8.55'	N73°50'30"W	14+95.10	18+14.60
C3	STREET B	500.00'	91.56'	91.43'	45.91'	2.09	2.10'	N72°59'08"W	19+75.32	20+66.88
C4	STREET B	190.00'	637.57'	377.83'	1768.74'	210.29	1968.91'	N17°53'59"E	21+42.60	27+80.16
C5	STREET B	500.00'	200.77'	199.42'	101.75'	10.04	10.25'	S77°28'20"E	30+71.59	32+72.36
C6	STREET B	300.00'	70.58'	70.42'	35.45'	2.07	2.09'	S82°14'08"E	35+47.49	36+18.07
C7	STREET C	300.00'	178.43'	175.82'	91.94'	13.17	13.77'	N87°27'55"E	15+53.25	17+31.68
C8	STREET C	550.00'	733.95'	680.69'	433.27'	117.95	150.16'	S71°20'40"E	21+02.02	28+35.97
C9	STREET C	250.00'	216.10'	209.43'	115.32'	22.99	25.32'	S57°52'42"E	29+02.65	31+18.75
C10	STREET D	300.00'	277.14'	267.39'	149.34'	31.44	35.12'	S46°02'20"E	11+26.22	14+03.36
C11	STREET D	205.00'	28.17'	28.15'	14.11'	0.48	0.48'	S68°34'01"E	17+63.02	17+91.19
C12	STREET E	300.00'	149.94'	148.38'	76.57'	9.32	9.62'	N31°48'51"E	12+24.43	13+74.37

CURVE TABLE

NAME	ROADWAY	RADIUS	ARC LENGTH	CHORD LENGTH	TANGENT LENGTH	MIDDLE ORDINATE	EXTERNAL DISTANCE	CHORD DIRECTION	BEGIN STATION	END STATION
C13	STREET F	127.00'	199.49'	179.61'	127.00'	37.20	52.61'	N30°29'44"W	13+05.00	15+04.49
C14	STREET G	800.00'	171.22'	170.89'	85.94'	4.58	4.60'	N17°53'59"E	10+32.20	12+03.42
C15	STREET H	300.00'	109.46'	108.86'	55.35'	4.98	5.06'	N76°25'19"W	11+33.44	12+42.90
C16	STREET H	800.00'	340.45'	337.88'	172.84'	18.04	18.46'	N78°09'37"W	16+32.88	19+73.32
C17	STREET J	205.00'	60.77'	60.54'	30.61'	2.25	2.27'	N5°22'07"W	12+59.04	13+19.81
C18	STREET J	205.00'	42.59'	42.52'	21.37'	1.11	1.11'	N7°54'29"W	14+27.80	14+70.39
C19	STREET J	250.00'	162.67'	159.81'	84.33'	13.11	13.84'	N16°41'03"E	15+64.02	17+26.69
C20	STREET K	200.00'	314.16'	282.84'	200.00'	58.58	82.84'	S44°36'07"E	12+29.18	15+43.34
C21	STREET L	500.00'	217.48'	215.77'	110.49'	11.78	12.06'	N76°52'59"E	13+87.72	16+05.20
C22	STREET L	350.00'	158.68'	157.32'	80.73'	8.95	9.19'	N77°24'37"E	17+85.14	19+43.81
C23	STREET N	205.00'	92.94'	92.15'	47.28'	5.24	5.38'	N12°35'23"W	14+12.63	15+05.57

SANITARY SEWER MANHOLE DEPTH TABLE

MANHOLE NO.	TYPE	DIA. (IN)	DEPTH (FT)
1	SSMH	60"	10.98'
2	SSMH	48"	4.02'
3	SSMH	48"	4.02'
5	SSMH	60"	14.96'
6	SSMH	48"	12.66'
7	SSMH	48"	10.50'
8	SSMH	48"	8.24'
9	SSMH	48"	8.51'
10	SSMH	48"	11.75'
11	SSMH	48"	10.50'
12	SSMH	48"	7.80'
13	SSMH	48"	8.44'
14	SSMH	48"	10.50'
15	SSMH	48"	10.50'
16	SSMH	48"	11.20'
17	SSMH	48"	11.19'
18	SSMH	48"	10.97'
19	SSMH	48"	10.74'
20	SSMH	48"	10.50'
21	SSMH	48"	10.50'

SANITARY SEWER MANHOLE DEPTH TABLE

MANHOLE NO.	TYPE	DIA. (IN)	DEPTH (FT)
22	SSMH	48"	8.65'
23	SSMH	48"	7.05'
24	SSMH	48"	7.96'
25	SSMH	48"	9.18'
26	SSMH	60"	12.04'
27	SSMH	60"	16.38'
28	SSMH	60"	17.09'
29	SSMH	60"	14.88'
30	SSMH	60"	13.69'
31	SSMH	60"	12.03'
32	SSMH	48"	10.70'
33	SSMH	48"	9.92'
34	SSMH	48"	10.48'
35	SSMH	60"	20.36'
36	SSMH	48"	10.77'
37	SSMH	48"	10.50'
38	SSMH	60"	15.85'
39	SSMH	60"	12.14'
40	SSMH	48"	10.56'
41	SSMH	48"	9.86'

SANITARY SEWER MANHOLE DEPTH TABLE

MANHOLE NO.	TYPE	DIA. (IN)	DEPTH (FT)
42	SSMH	48"	10.02'
43	SSMH	60"	12.14'
44	SSMH	60"	12.18'
45	SSMH	48"	11.74'
46	SSMH	48"	11.56'
47	SSMH	48"	11.38'
48 C	SSMH	48"	7.87'
48 A	SSMH	48"	11.50'
48 B	SSMH	48"	11.06'
49	SSMH	48"	11.01'
50	SSMH	48"	10.82'
51	SSMH	48"	10.64'
52	SSMH	48"	11.62'
53	SSMH	60"	13.85'
54	SSMH	60"	14.74'
55	SSMH	60"	13.28'
56	SSMH	48"	10.50'
57	SSMH	60"	12.03'
58	SSMH	48"	11.79'
59	SSMH	48"	11.54'

SANITARY SEWER MANHOLE DEPTH TABLE

MANHOLE NO.	TYPE	DIA. (IN)	DEPTH (FT)
60	SSMH	48"	11.27'
61	SSMH	48"	11.02'
62	SSMH	48"	10.78'
63	SSMH	48"	10.54'
64	SSMH	48"	10.65'
65	SSMH	48"	10.61'
66	SSMH	48"	10.50'
67	SSMH	48"	10.50'
68	SSMH	48"	10.50'
69	SSMH	48"	10.70'
70	SSMH	48"	10.61'
71	SSMH	60"	13.73'
72	SSMH	60"	16.62'
73	SSMH	60"	18.04'
74	SSMH	60"	18.63'
75	SSMH	60"	13.58'
76	SSMH	60"	12.55'
77	SSMH	60"	12.28'
78	SSMH	60"	12.87'
79	SSMH	60"	14.13'

SANITARY SEWER MANHOLE DEPTH TABLE

MANHOLE NO.	TYPE	DIA. (IN)	DEPTH (FT)
80	SSMH	60"	16.54'
81	SSMH	48"	10.50'
82	SSMH	60"	13.24'
83	SSMH	60"	13.34'
84	SSMH	48"	10.50'
85	SSMH	60"	16.15'
86	SSMH	60"	8.14'
87	SSMH	48"	8.22'
88	SSMH	48"	8.42'
90	SSMH	48"	4.55'
91	SSMH	48"	4.56'
92	SSMH	48"	4.56'
93	SSMH	60"	4.56'
93A	SSMH	48"	4.56'
95	SSMH	48"	4.93'
96A	SSMH	48"	4.56'
96B	SSMH	48"	4.42'
97A	SSMH	48"	9.34'
98	SSMH	48"	4.56'
99	SSMH	48"	4.56'

SANITARY SEWER MANHOLE DEPTH TABLE

MANHOLE NO.	TYPE	DIA. (IN)	DEPTH (FT)
100A	SSMH	48"	10.30'
100B	SSMH	48"	9.32'
101	SSMH	48"	9.39'
102	SSMH	48"	9.25'
103	SSMH	48"	9.91'
105	SSMH	48"	10.03'
106	SSMH	48"	10.45'
107	SSMH	48"	10.44'
108	SSMH	48"	10.42'
109	SSMH	48"	10.53'
110	SSMH	48"	8.25'
111	SSMH	48"	10.50'
112	SSMH	60"	14.64'
113	SSMH	48"	10.50'
114	SSMH	48"	10.50'
115	SSMH	60"	14.66'
116	SSMH	48"	10.58'
117	SSMH	48"	8.34'
118	SSMH	48"	7.58'
119	SSMH	48"	10.50'

SANITARY SEWER MANHOLE DEPTH TABLE

MANHOLE NO.	TYPE	DIA. (IN)	DEPTH (FT)
120	SSMH	48"	10.50'
121	SSMH	48"	10.50'
122	SSMH	48"	10.58'
123	SSMH	48"	10.50'
124	SSMH	48"	10.54'
125	SSMH	48"	11.89'
126	SSMH	48"	10.98'
127	SSMH	60"	15.54'
128	SSMH	48"	8.50'

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\C-7.0 DESIGN TABLES.DWG
PLOTTED: 6/10/2025 9:51 AM

REVISIONS

1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/15/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA 36823 ENGINEER ANDREW S. PETTY
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 1.0 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

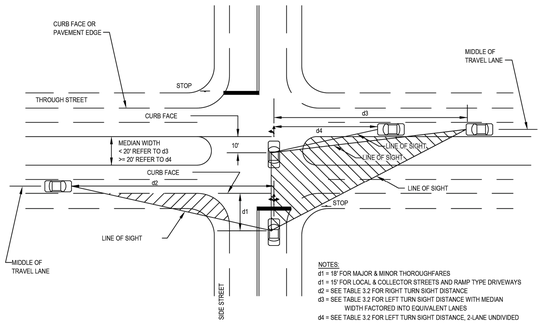
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

DESIGN TABLES

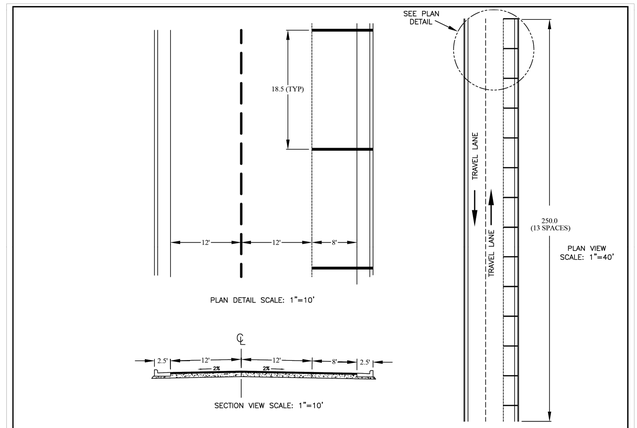
C-7.0



NOTES:
d1 = 18' FOR MAJOR & MINOR THOROUGHFARES
d1 = 15' FOR LOCAL & COLLECTOR STREETS AND RAMP TYPE DRIVEWAYS
d2 = SEE TABLE 3.2 FOR RIGHT TURN SIGHT DISTANCE
d3 = SEE TABLE 3.2 FOR LEFT TURN SIGHT DISTANCE WITH MEDIAN WIDTH FACTORED INTO EQUIVALENT LANES
d4 = SEE TABLE 3.2 FOR LEFT TURN SIGHT DISTANCE, 2-LANE UNDIVIDED

DRAWING NOT TO SCALE

INTERSECTION SIGHT DISTANCE STOP SIGN CONTROL MULTI-LANE ROADWAY	STANDARD DETAIL NUMBER: HS333
TOWN OF HOLLY SPRINGS	DATE / REVISIONS
	10/2016

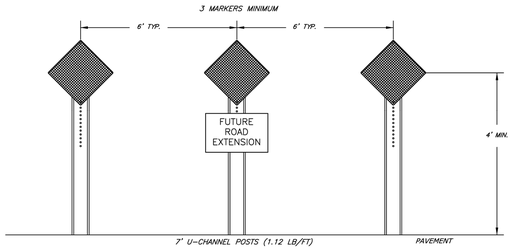


ON STREET STANDARD PARALLEL PARKING ONE SIDE DETAIL	STANDARD DETAIL NUMBER: HS345
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS
	6/12/15

END OF ROAD MARKERS

TYPICAL APPLICATION AT END OF ROADWAY (DEAD END)
REGARDLESS OF WHETHER GUARDRAIL IS INSTALLED

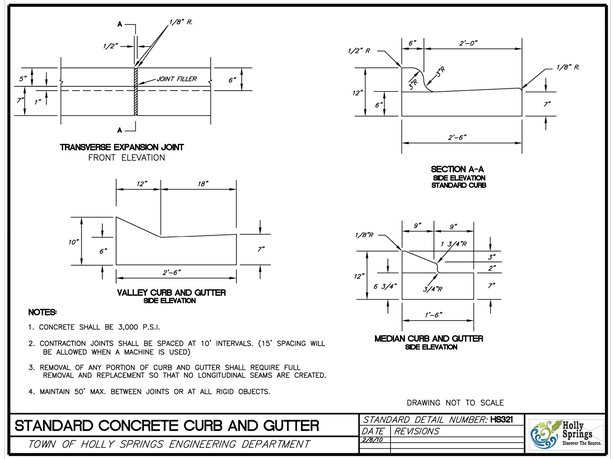
NOTE: TRAFFIC CONTROL POSTS/BOLLARDS SHALL BE PAINTED BLACK OR PAINTED TO MATCH THE PRIMARY HOUSING COLOR SCHEME.



NOTE:
1. ADVANCED WARNING SIGNAGE W14-1(DEAD END) REQUIRED AS PER MUTCD FOR DEAD END JUST AFTER LAST INTERSECTING STREET.
2. MARKERS TO COVER ENTIRE STREET WITH SPACING STARTING AT CURB.

DRAWING NOT TO SCALE

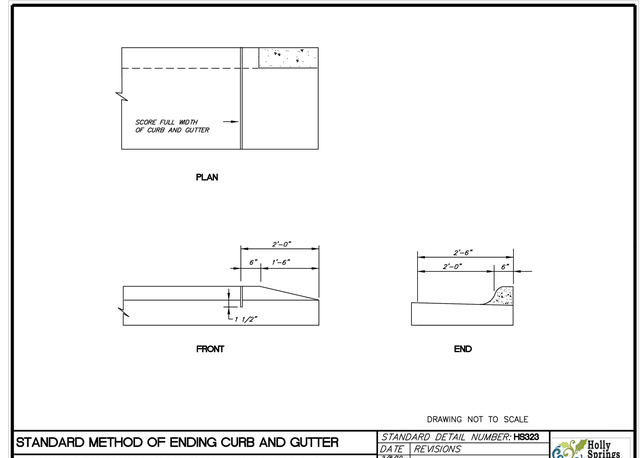
END OF ROAD MARKERS (DEAD END)	STANDARD DETAIL NUMBER: HS353
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS
	2/23/16



NOTES:
1. CONCRETE SHALL BE 3,000 P.S.I.
2. CONTRACTION JOINTS SHALL BE SPACED AT 10' INTERVALS. (15' SPACING WILL BE ALLOWED WHEN A MACHINE IS USED)
3. REMOVAL OF ANY PORTION OF CURB AND GUTTER SHALL REQUIRE FULL REMOVAL AND REPLACEMENT SO THAT NO LONGITUDINAL SEAMS ARE CREATED.
4. MAINTAIN 50' MAX. BETWEEN JOINTS OR AT ALL RIGID OBJECTS.

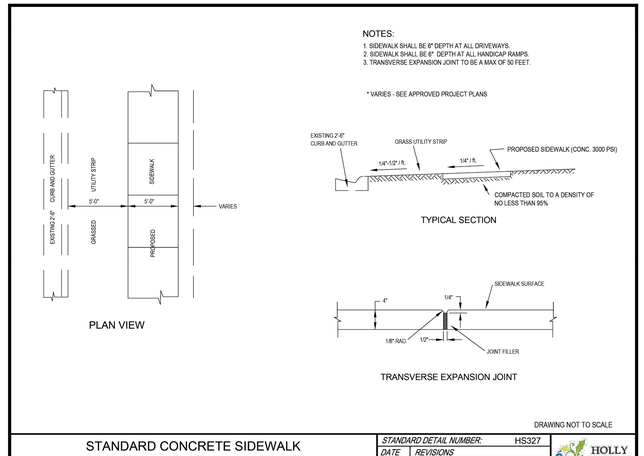
DRAWING NOT TO SCALE

STANDARD CONCRETE CURB AND GUTTER	STANDARD DETAIL NUMBER: HS321
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS
	2/26/16



DRAWING NOT TO SCALE

STANDARD METHOD OF ENDING CURB AND GUTTER	STANDARD DETAIL NUMBER: HS323
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS
	2/26/16



DRAWING NOT TO SCALE

STANDARD CONCRETE SIDEWALK	STANDARD DETAIL NUMBER: HS327
TOWN OF HOLLY SPRINGS	DATE / REVISIONS
	12/19/23

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/16/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

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FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

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CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 1.0 NORTH CAROLINA INC.
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
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DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

SITE DETAILS I

D-1.0

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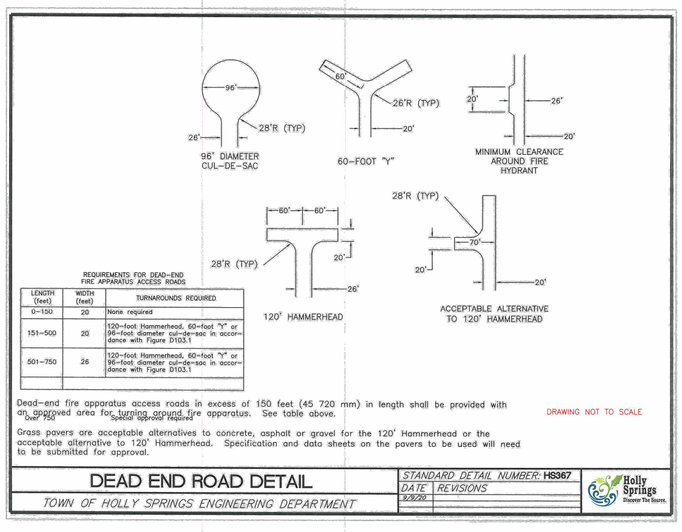


REQUIREMENTS FOR DEAD-END FIRE APPARATUS ACCESS ROADS

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0–150	20	None required
151–500	20	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
501–750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
over 750		Special approval required

Dead-end fire apparatus access roads in excess of 150 feet (45 720 mm) in length shall be provided with an approved area for turning around fire apparatus. See table above.

Grass pavers are acceptable alternatives to concrete, asphalt or gravel for the 120' Hammerhead or the acceptable alternative to 120' Hammerhead. Specification and data sheets on the pavers to be used will need to be submitted for approval.

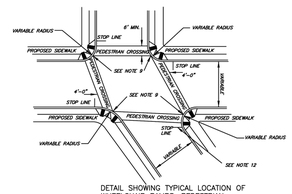
DRAWING NOT TO SCALE

DEAD END ROAD DETAIL

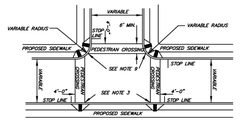
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS367

DATE	REVISIONS
3/3/20	



DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP BARS



DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP BARS FOR TEE INTERSECTION

NOTES:

1. THE WALKING SURFACE SHALL BE SLOPE RESISTANT. DETECTABLE WARNING DOMES SHALL COVER THE FULL WIDTH AND DEPTH OF THE RAMP FLOOR. THE DETECTABLE WARNING SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9". A HEIGHT OF 0.2" AND CENTER-TO-CENTER SPACING OF NOMINAL 2.35". THE RAMP SHALL BE BLACK IN COLOR.
2. CROSSWALK WIDTHS AND CONFIGURATION VARY. MUST CONFORM TO TRAFFIC DESIGN STANDARDS.
3. NORTH CAROLINA GENERAL STATUE 136-44.44 REQUIRES THAT ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED AT INTERSECTIONS AND OTHER PLACES WHERE PEDESTRIANS CUSTOMARILY WALK SHALL BE UTILIZED OR ALTERED FOR ANY REASON AFTER SEPTEMBER 1, 1973 SHALL PROVIDE WHEEL CHAIR RAMPS FOR THE PHYSICALLY HANDICAPPED AT ALL INTERSECTIONS WHERE BOTH CURB AND GUTTER AND SIDEWALKS ARE PROVIDED AND AT OTHER POINTS OF PEDESTRIAN FLOW.
   IN ADDITION SECTION 228 OF THE 1973 FEDERAL AND HIGHWAY SAFETY ACT REQUIRES PROVISION OF CURB RAMPS FOR THE HANDICAPPED FOR CONSTRUCTION AFTER JULY 1, 1976 WHETHER A SIDEWALK IS PROPOSED INITIALLY OR IS PLANNED FOR FUTURE DATE
   THE AMERICANS WITH DISABILITY ACT (ADA) OF 1990 EXTENDS TO INDIVIDUALS WITH DISABILITIES PROTECTIONS SIMILAR TO THOSE PROVIDED ON THE BASIS OF RACE, COLOR, NATIONAL ORIGIN AND RELIGION UNDER THE CIVIL RIGHTS ACT OF 1964. THESE CURB RAMPS HAVE BEEN DESIGNED TO COMPLY WITH TITLE 111 OF THE ADA, BECOMING EFFECTIVE ON JANUARY 26, 1992
4. WHERE SIDEWALKS ARE PROVIDED AT STREET INTERSECTIONS, CURB RAMPS SHALL BE PROVIDED WITHIN THE EXTENSION. WHEELCHAIR RAMPS SHALL BE LOCATED AS INDICATED IN THESE DETAILS. HOWEVER, THE LOCATION MAY BE ADJUSTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS ETC. AFFECT PLACEMENT. AT ALL LOCATIONS, NOT LESS THAN 2 FEET OF FULL HEIGHT CURB SHALL BE PLACED BETWEEN THE RAMPS.
5. NO SLOPE ON THE WHEELCHAIR RAMP SHALL EXCEED 1"/1" (12:1) IN RELATIONSHIP TO THE GRADE OF THE STREET.
6. IN NO CASE SHALL THE WIDTH OF THE WHEELCHAIR RAMP BE LESS THAN 40" (3'-4"). HOWEVER, WIDTH MAY EXCEED 40".
7. USE CLASS "B" CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE.
8. A 1/2" EXPANSION JOINT WILL BE REQUIRED WHERE THE CONCRETE WHEELCHAIR RAMP JOINS THE CURB.
9. THE INSIDE PEDESTRIAN CROSSWALK LINES SHALL BE SET NO CLOSER IN THE INTERSECTION THAN WOULD BE ESTABLISHED BY BISECTING THE INTERSECTION RADII. (SEE NOTE 14)
10. THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SHALL BE COORDINATED SO THAT THE BEGINNING OF THE WHEELCHAIR RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
11. THE MINIMUM WIDTH OF THE PEDESTRIAN CROSSWALK SHALL BE 6 FEET. A CROSSWALK WIDTH OF 10' OR GREATER IS DESIRABLE.
12. STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, SHALL BE USED WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE TO BE PARALLEL TO THE INTERSECTING ROADWAY.
13. PARKING SHALL BE ELIMINATED A MINIMUM OF 20 FEET BACK OF PEDESTRIAN CROSSWALK.
14. ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD.

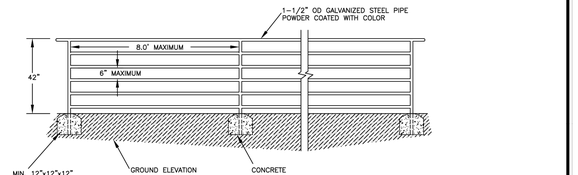
DRAWING NOT TO SCALE

STANDARD WHEELCHAIR RAMP

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS332

DATE	REVISIONS
2/6/09	



NOTE:
THIS DETAIL TO BE USED OUTSIDE OF RIGHT OF WAY ONLY.

DRAWING NOT TO SCALE

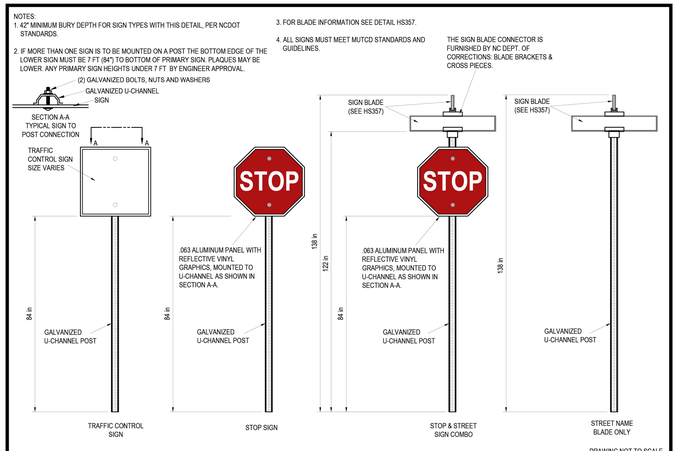
STANDARD EXTERIOR HANDRAIL DETAIL

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS001

DATE	REVISIONS
2/26/08	

NOTES:
1. 42" MINIMUM BURY DEPTH FOR SIGN TYPES WITH THIS DETAIL, PER NCDOT STANDARDS.
2. IF MORE THAN ONE SIGN IS TO BE MOUNTED ON A POST THE BOTTOM EDGE OF THE LOWER SIGN MUST BE 7 FT (84") TO BOTTOM OF PRIMARY SIGN. PLAQUES MAY BE LOWER. ANY PRIMARY SIGN HEIGHTS UNDER 7 FT BY ENGINEER APPROVAL.
3. FOR BLADE INFORMATION SEE DETAIL HS357.
4. ALL SIGNS MUST MEET MUTCD STANDARDS AND GUIDELINES.



DRAWING NOT TO SCALE

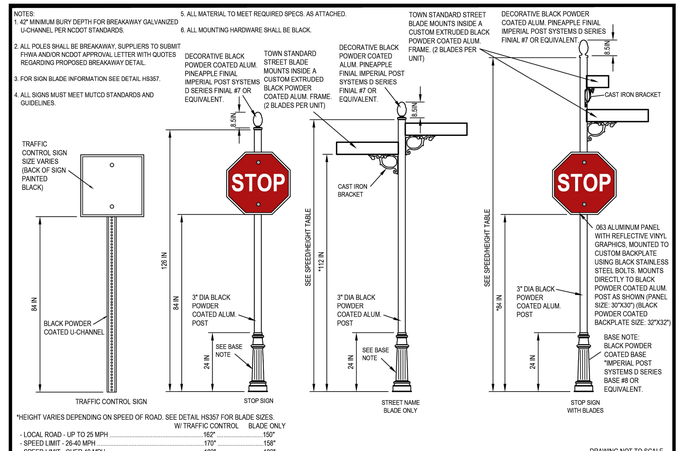
STANDARD TRAFFIC CONTROL AND STREET NAME SIGN AND POSTS

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS359

DATE	REVISIONS
4/2021	
10/2024	

NOTES:
1. 42" MINIMUM BURY DEPTH FOR BREAKAWAY GALVANIZED U-CHANNEL PER NCDOT STANDARDS.
2. ALL POLES SHALL BE BREAKAWAY. SUPPLIERS TO SUBMIT FHWA AND/OR NCDOT APPROVAL LETTER WITH QUOTES REGARDING PROPOSED BREAKAWAY DETAIL.
3. FOR SIGN BLADE INFORMATION SEE DETAIL HS357.
4. ALL SIGNS MUST MEET MUTCD STANDARDS AND GUIDELINES.
5. ALL MATERIAL TO MEET REQUIRED SPECS. AS ATTACHED.
6. ALL MOUNTING HARDWARE SHALL BE BLACK.



*HEIGHT VARIES DEPENDING ON SPEED OF ROAD. SEE DETAIL HS357 FOR BLADE SIZES.

	W/ TRAFFIC CONTROL	BLADE ONLY
- LOCAL ROAD - UP TO 25 MPH	162"	150"
- SPEED LIMIT - 26-40 MPH	170"	158"
- SPEED LIMIT - OVER 40 MPH	182"	182"

DRAWING NOT TO SCALE

STANDARD TRAFFIC CONTROL AND STREET NAME SIGN AND POSTS FOR THOROUGHFARES

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS360

DATE	REVISIONS
4/2021	
10/2024	

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
3	5/16/2025	TOHS COMMENTS #3	
4	6/10/2025	TOHS COMMENTS #4	

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FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

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36823
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CONSULTANT
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CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
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Contact: Paul Burger
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PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

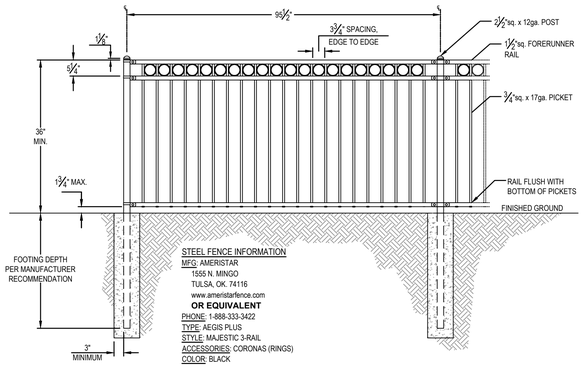
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

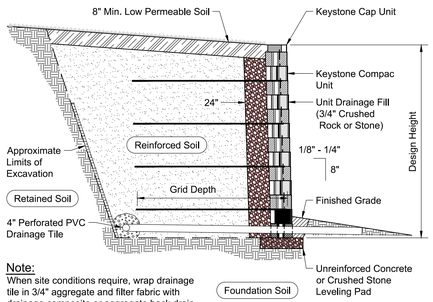
SITE DETAILS II

D-1.1

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\D-1.1 SITE DETAILS II.DWG
PLOTTED: 6/10/2025 9:51 AM

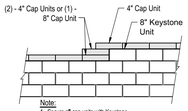


1 / D-1.2 RETAINING WALL FALL PROTECTION FENCE
SCALE: NTS

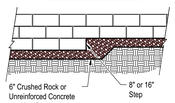


Note:
When site conditions require, wrap drainage tile in 3/4" aggregate and filter fabric with drainage composite or aggregate back drain system, as directed by geotechnical engineer.

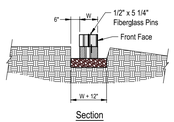
Typical Reinforced Wall Section
Compac Unit - Near Vertical Setback



Top of Wall Steps

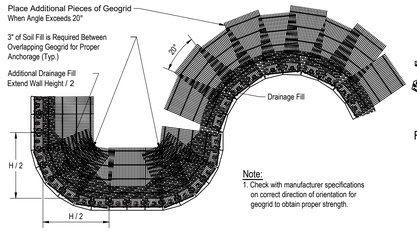


Elevation

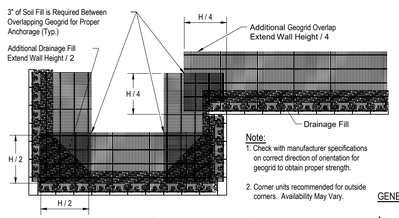


Section

Leveling Pad Detail



Geogrid Installation on Curves



Geogrid Installation at Corners

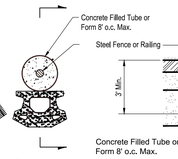
4 / D-1.2 RETAINING WALL DETAILS
SCALE: NTS



2 / D-1.2 MAIL KIOSK CONCEPT
SCALE: NTS

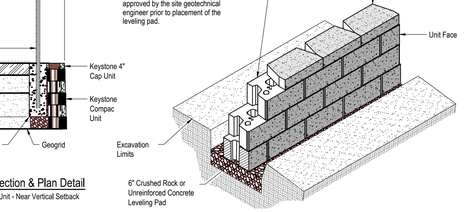
FREE STANDING MAIL KIOSK - PRELIMINARY DESIGN
MAIL KIOSK ARCHITECTURAL PRELIMINARY DESIGN. FINAL LOCATION & DESIGN MAY BE INCORPORATED INTO THE AMENITY CENTER CLUBHOUSE WHICH WILL BE SUBMITTED UNDER SEPARATE COVER.

Note:
Concrete filled tube or form to be set during the wall construction, not drilled through geogrid afterwards, when directly behind units.



Fence Plan Detail

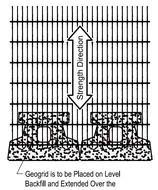
Base Leveling Pad Notes:
1. The leveling pad is to be constructed of crushed stone or 2,000 psisi unreinforced concrete
2. The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.



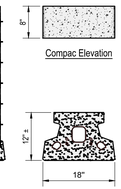
Fence Section & Plan Detail
Compacit Unit - Near Vertical Setback

Compac Unit		Cap Unit	
Width:	18"	Width:	18"
*Depth:	12"	*Depth:	10 1/2"
Height:	8"	Height:	4"
*Weight:	90 lbs	*Weight:	50 lbs

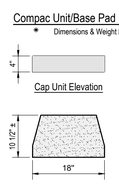
Compac Unit/Base Pad Isometric Section View
* Dimensions & Weight May Vary by Region



Grid & Pin Connection



Compac Unit
* Dimensions May Vary by Region



Straight Split Cap Unit Option
* Dimensions & Availability Will Vary by Region

GENERAL NOTES:

1. RETAINING WALL SHALL BE INTEGRALLY TINTED BROWN, RUST, OR EARTH TONE.
2. DETAILS SHOWN REPRESENT A GENERIC SET OF STANDARDS THAT SHALL BE MET. CONTRACTOR IS REQUIRED TO SUBMIT SHOP DRAWINGS TO THE OWNER FOR APPROVAL PRIOR TO OBTAINING BUILDING PERMIT FROM TOWN OF FUQUAY-VARINA.
3. RETAINING WALL BLOCK SHALL BE KEYSTONE COMPAC HEWNSTONE UNIT OR APPROVED EQUAL.

Saved to Z: Drive



Rustic Pine Birdfeeder w/Planter shown in Gazebo Rectangle style



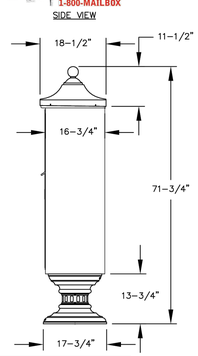
Specifications

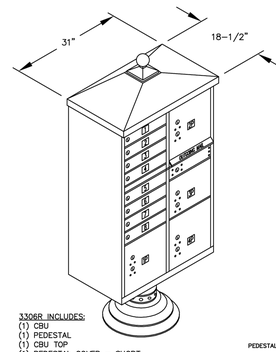
Material:	Rustic Pine
Hardware:	Galvanized
Overall:	21.5"L x 28"W x 77"H
Weight:	40 lbs
Optional:	Stain/Sealer
Features:	Made in the U.S.A.

3 / D-1.2 STANDING BIRD FEEDER DETAIL
SCALE: NTS

mailboxes.com
1-800-MAILBOX
Visit us at: www.mailboxes.com

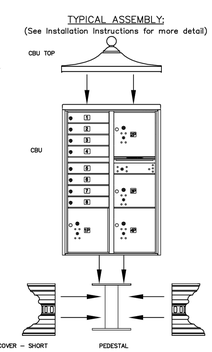
SIDE VIEW





3306R INCLUDES:
(1) CBU
(1) PEDESTAL
(1) CBU TOP
(1) PEDESTAL COVER – SHORT

TYPICAL ASSEMBLY:
(See Installation Instructions for more detail)



MODEL #3306R
REGENCY DECORATIVE CLUSTER BOX UNIT
AVAILABLE COLORS:
SANDSTONE, BRONZE, GREEN, BLACK OR WHITE
USPS ACCESS OR PRIVATE ACCESS
DRAWN: 8/2020

Established in 1936, Salsbury Industries is the industry leader in manufacturing and distributing quality mailboxes.

SALSBURY INDUSTRIES
People Committed to Quality Since 1936
18300 CENTRAL AVENUE
CARSON, CA 90746-4008
PHONE: (800) 624–5269
FAX: (800) 624–5299
email: engineering@mailboxes.com

REVISIONS		
1	3/14/2025	TOHS COMMENTS #1
2	4/17/2025	TOHS COMMENTS #2
3	5/19/2025	TOHS COMMENTS #3
4	6/10/2025	TOHS COMMENTS #4

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025	HORZ. SCALE: 1" = 40'
FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA
PRELIMINARY FOR REVIEW ONLY
56823
ENGINEER
ANDREW S. PETTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

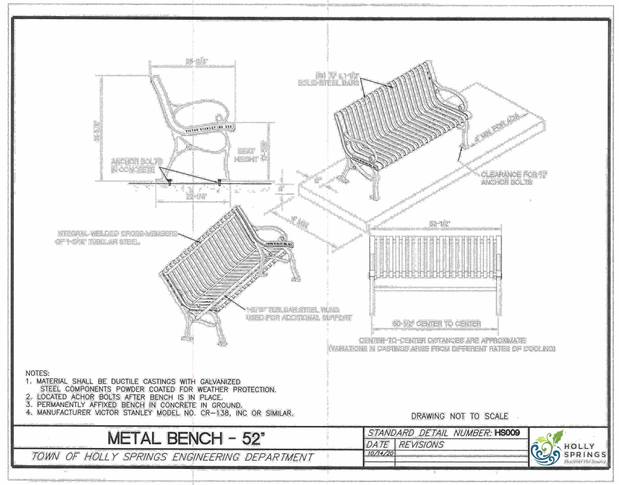
CLIENT
GANDER DEVELOPMENT
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
SITE DETAILS III

D-1.2

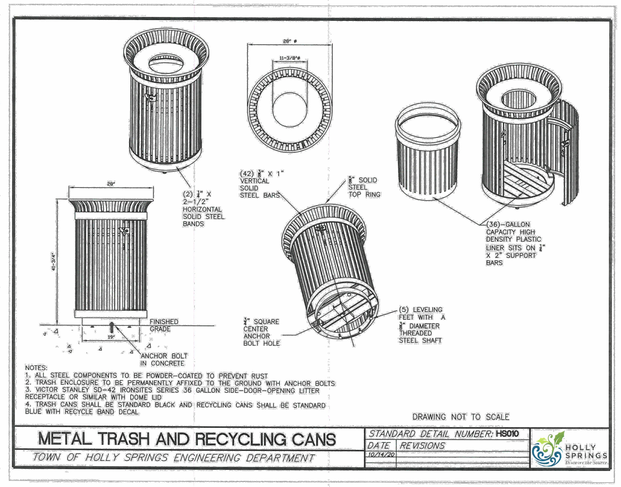
Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\D-1.2 SITE DETAILS III.DWG
PLOTTED: 6/10/2025 9:51 AM



NOTES:
1. MATERIAL SHALL BE DUCTILE CASTINGS WITH GALVANIZED STEEL COMPONENTS POWDER COATED FOR WEATHER PROTECTION.
2. LOCATED ACHOR BOLTS AFTER BENCH IS IN PLACE.
3. PERMANENTLY AFFIXED BENCH IN CONCRETE IN GROUND.
4. MANUFACTURER VICTOR STANLEY MODEL NO. CR-138, INC OR SIMILAR.

DRAWING NOT TO SCALE

METAL BENCH - 52"	STANDARD DETAIL NUMBER: HS009
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS
	06/2/25



NOTES:
1. ALL STEEL COMPONENTS TO BE POWDER-COATED TO PREVENT RUST
2. TRASH ENCLOSURE TO BE PERMANENTLY AFFIXED TO THE GROUND WITH ANCHOR BOLTS
3. VICTOR STANLEY 50-42 IRONSITES SERIES 36 GALLON SIDE-DOOR-OPENING LITTER RECEPTACLE OR SIMILAR WITH DOME LID
4. TRASH CANS SHALL BE STANDARD BLACK AND RECYCLING CANS SHALL BE STANDARD BLUE WITH RECYCLE BAND DECAL.

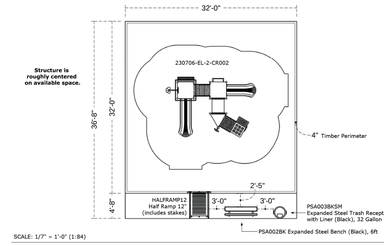
DRAWING NOT TO SCALE

METAL TRASH AND RECYCLING CANS	STANDARD DETAIL NUMBER: HS010
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS
	06/2/25

LENNAR

Playground Equipment.com

Elite: Nancy - Lennar Option II 2D Site Plan





$20k - 35k

Drawing 23-07252

these prices do not include freight, taxes or installation

ELITEPlayEquipment

VINYL PAVILION

Qty: 1

16' x 24'

Style: Traditional

Roof: Asphalt Shingles

Shingle Color: Charcoal Gray

Color: White

Posts: Superior



SHINGLES

CHARCOAL GRAY

wo.392104 v.01.30.25 **Lennar - Raleigh** **Pavilion**

ONSIGHT INDUSTRIES C. WARNER C. NORCROSS

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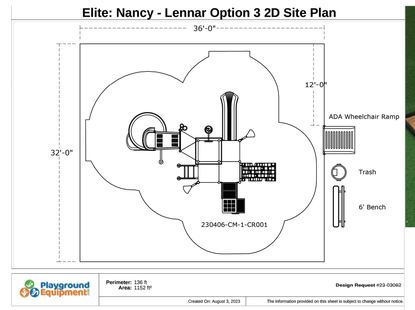
LENNAR

Playground Equipment.com

Elite: Nancy - Lennar Option 3 2D Site Plan





$25k - 45k

Drawing 23-03082

these prices do not include freight, taxes or installation

ELITEPlayEquipment

REVISIONS			
1	3/14/2025	TOHS COMMENTS #1	
2	4/17/2025	TOHS COMMENTS #2	
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4	6/10/2025	TOHS COMMENTS #4	

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PROFESSIONAL'S SEAL
NORTH CAROLINA PRELIMINARY FOR REVIEW ONLY 36823 ENGINEER ANDREW S. PETTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849 F (919) 552-2043
205 S. Fuquay Avenue Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

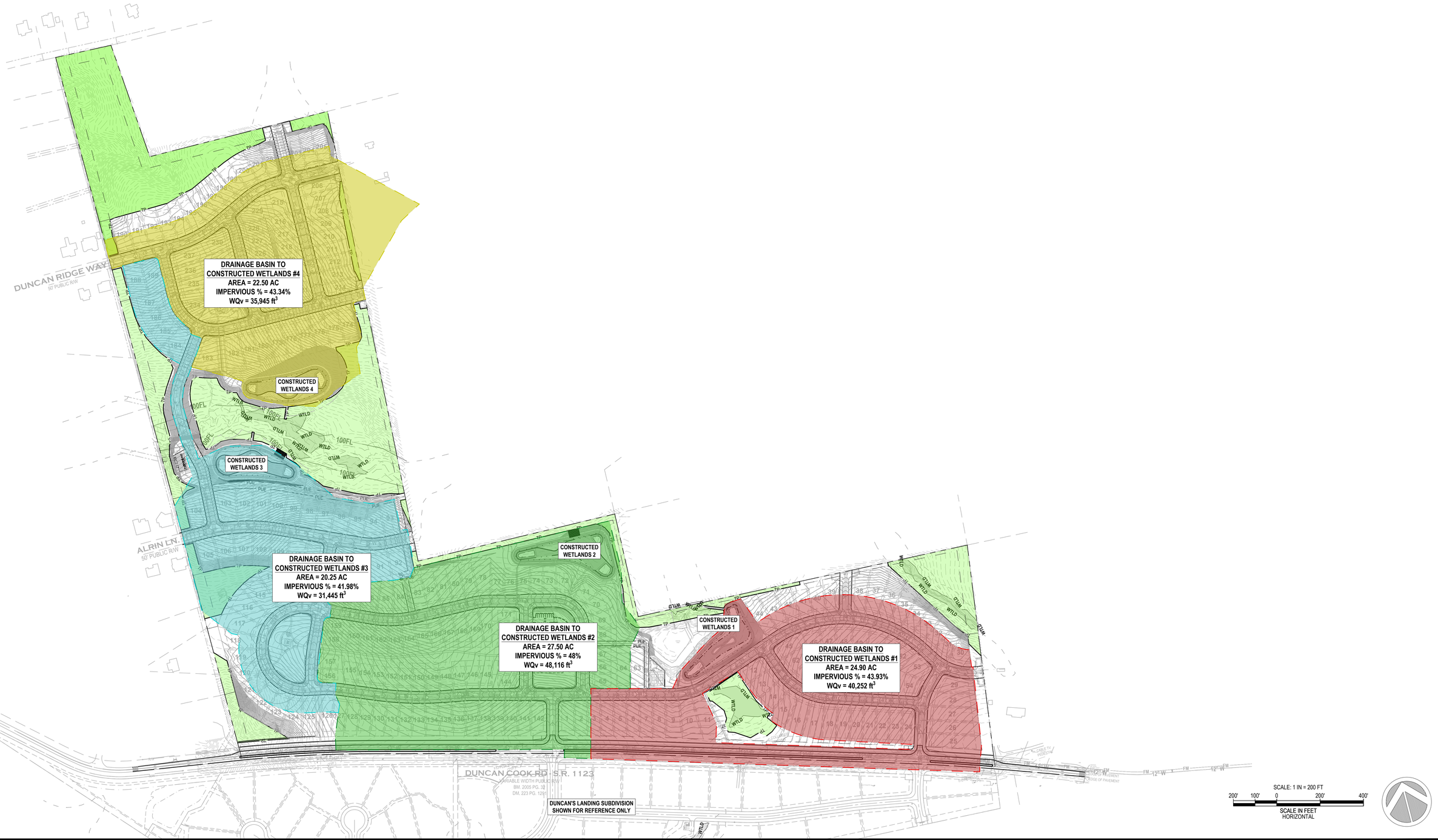
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

SITE DETAILS IV

D-1.3

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\DEVELOPMENT PETITION PLANS\SHEET FILES\D-1.3 SITE DETAILS IV.DWG
PLOTTED: 6/10/2025 9:51 AM



REVISIONS		
1	3/14/2025	TCHS COMMENTS #1
2	4/17/2025	TCHS COMMENTS #2
3	5/15/2025	TCHS COMMENTS #3
4	6/10/2025	TCHS COMMENTS #4

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NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
36823
ENGINEER
ANDREW S. PETTY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING CORP.
S.E.T. 10
NORTH CAROLINA
NC LIC. NO. P-0799

t (919) 552-0849
f (919) 552-2043
205 S. Fuquay Avenue
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2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

SCM DRAINAGE AREA MAP

SW-1.0

Z:\PROJECTS FOLDER-ZEBULON\2023\2023-046 GANDER DUNCAN COOK NORTH - HOLLY SPRINGS\PLANS\3DE\VELOPMENT PETITION PLANS\SHEET FILES\C-8.0 SCM DRAINAGE AREA MAP.DWG
PLOTTED: 6/10/2025 9:52 AM



SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET
HORIZONTAL

LEGEND

- MATURE HARDWOOD MIXED WITH PINES
- MATURE PINES MIXED WITH HARDWOODS
- 20' RADIUS TREE SAMPLE AREA
- SPECIMEN TREE

REVISIONS		
A	3/14/2025	TOHS COMMENTS #1
B	4/17/2025	TOHS COMMENTS #2
C	5/16/2025	TOHS COMMENTS #3

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CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 10 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

TREE INVENTORY

L-1.0

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CADL-1.0 TREE INVENTORY.DWG
PLOTTED: 5/15/2025 5:07 PM



SCALE: 1 IN = 200 FT

200' 100' 0 200' 400'

SCALE IN FEET HORIZONTAL

LEGEND

TREE PRESERVATION AREA

TREE PRESERVATION CALCULATIONS

TREE PRESERVATION AREA REQUIRED: 24.20 ACRES (CONDITIONAL DISTRICT)
TREE PRESERVATION AREA PROVIDED: 24.26 ACRES

REVISIONS		
A	3/14/2025	TOHS COMMENTS #1
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C	5/16/2025	TOHS COMMENTS #3

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PROFESSIONAL'S SEAL

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NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT ADAM SOUTHWELL

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING P.S.T. P.A. NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

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paul@ganderdev.com

PROPERTY INFORMATION
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PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

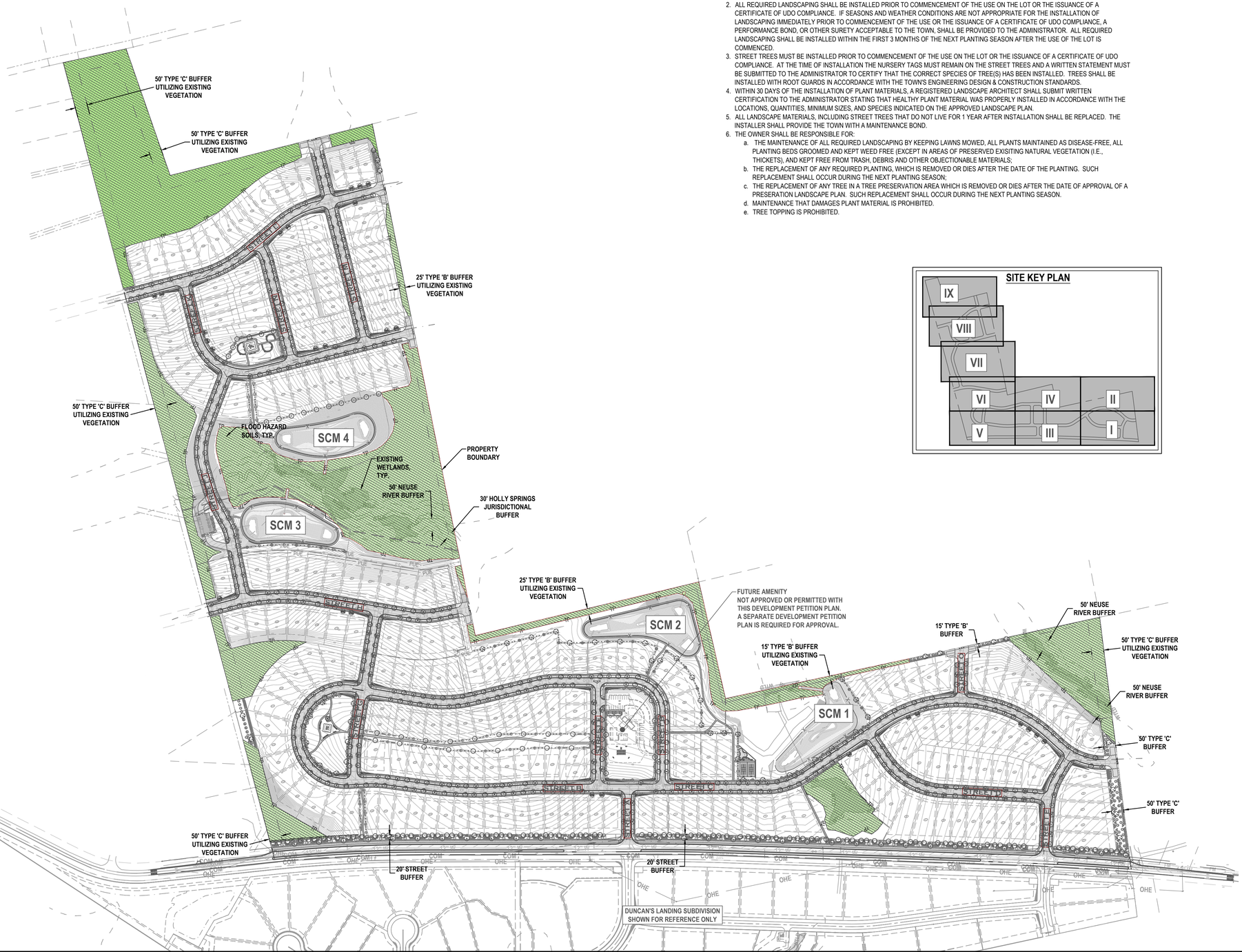
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

TREE PRESERVATION PLAN

L-2.0

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CAD\L-2.0 TREE PRESERVATION PLAN.DWG
PLOTTED: 5/15/2025 5:18 PM



TOWN OF HOLLY SPRINGS LANDSCAPE NOTES

1. ALL LANDSCAPING IS TO BE INSTALLED IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS UNIFIED DEVELOPMENT ORDINANCE AND ANY APPLICABLE STANDARDS.
2. ALL REQUIRED LANDSCAPING SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF THE USE ON THE LOT OR THE ISSUANCE OF A CERTIFICATE OF UDO COMPLIANCE. IF SEASONS AND WEATHER CONDITIONS ARE NOT APPROPRIATE FOR THE INSTALLATION OF LANDSCAPING IMMEDIATELY PRIOR TO COMMENCEMENT OF THE USE OR THE ISSUANCE OF A CERTIFICATE OF UDO COMPLIANCE, A PERFORMANCE BOND, OR OTHER SURETY ACCEPTABLE TO THE TOWN, SHALL BE PROVIDED TO THE ADMINISTRATOR. ALL REQUIRED LANDSCAPING SHALL BE INSTALLED WITHIN THE FIRST 3 MONTHS OF THE NEXT PLANTING SEASON AFTER THE USE OF THE LOT IS COMMENCED.
3. STREET TREES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF THE USE ON THE LOT OR THE ISSUANCE OF A CERTIFICATE OF UDO COMPLIANCE. AT THE TIME OF INSTALLATION THE NURSERY TAGS MUST REMAIN ON THE STREET TREES AND A WRITTEN STATEMENT MUST BE SUBMITTED TO THE ADMINISTRATOR TO CERTIFY THAT THE CORRECT SPECIES OF TREE(S) HAS BEEN INSTALLED. TREES SHALL BE INSTALLED WITH ROOT GUARDS IN ACCORDANCE WITH THE TOWN'S ENGINEERING DESIGN & CONSTRUCTION STANDARDS.
4. WITHIN 30 DAYS OF THE INSTALLATION OF PLANT MATERIALS, A REGISTERED LANDSCAPE ARCHITECT SHALL SUBMIT WRITTEN CERTIFICATION TO THE ADMINISTRATOR STATING THAT HEALTHY PLANT MATERIAL WAS PROPERLY INSTALLED IN ACCORDANCE WITH THE LOCATIONS, QUANTITIES, MINIMUM SIZES, AND SPECIES INDICATED ON THE APPROVED LANDSCAPE PLAN.
5. ALL LANDSCAPE MATERIALS, INCLUDING STREET TREES THAT DO NOT LIVE FOR 1 YEAR AFTER INSTALLATION SHALL BE REPLACED. THE INSTALLER SHALL PROVIDE THE TOWN WITH A MAINTENANCE BOND.
6. THE OWNER SHALL BE RESPONSIBLE FOR:
   a. THE MAINTENANCE OF ALL REQUIRED LANDSCAPING BY KEEPING LAWNS MOWED, ALL PLANTS MAINTAINED AS DISEASE-FREE, ALL PLANTING BEDS GROOMED AND KEPT WEED FREE (EXCEPT IN AREAS OF PRESERVED EXISITING NATURAL VEGETATION (I.E., THICKETS), AND KEPT FREE FROM TRASH, DEBRIS AND OTHER OBJECTIONABLE MATERIALS;
   b. THE REPLACEMENT OF ANY REQUIRED PLANTING, WHICH IS REMOVED OR DIES AFTER THE DATE OF THE PLANTING. SUCH REPLACEMENT SHALL OCCUR DURING THE NEXT PLANTING SEASON;
   c. THE REPLACEMENT OF ANY TREE IN A TREE PRESERVATION AREA WHICH IS REMOVED OR DIES AFTER THE DATE OF APPROVAL OF A PRESERATION LANDSCAPE PLAN. SUCH REPLACEMENT SHALL OCCUR DURING THE NEXT PLANTING SEASON.
   d. MAINTENANCE THAT DAMAGES PLANT MATERIAL IS PROHIBITED.
   e. TREE TOPPING IS PROHIBITED.

SITE KEY PLAN

LANDSCAPE CALCULATIONS

FOUNDATION LANDSCAPING:
REQUIREMENTS: 2 UNDERSTORY TREES PER 75 LF
3 SMALL SHRUBS PER 5 LF

MAIL KIOSKS 34.7 LF EACH x 2 = 69.4 LF TOTAL
REQUIRED: 2 UNDERSTORY TREES & 42 SMALL SHRUBS
PROVIDED: 2 UNDERSTORY TREES & 42 SMALL SHRUBS

STREET TREES:
THOROUGHFARES
REQUIREMENTS: STREET TREES 40-60' O.C. PLACED WITHIN 5' OF THE R/W ON THE PRIVATE PROPERTY SIDE

DUNCAN COOK RD
REQUIRED: 64 STREET TREES
PROVIDED: 64 STREET TREES

COLLECTOR, LOCAL, & CUL-DE-SAC STREETS
REQUIREMENTS: STREET TREES 30-45' O.C. PLACED IN THE R/W OR LANDSCAPE EASEMENT

STREET A
REQUIRED: 8 STREET TREES
PROVIDED: 8 STREET TREES

STREET B
REQUIRED: 144 STREET TREES
PROVIDED: 144 STREET TREES

STREET C
REQUIRED: 83 STREET TREES
PROVIDED: 83 STREET TREES

STREET D
REQUIRED: 37 STREET TREES
PROVIDED: 37 STREET TREES

STREET E
REQUIRED: 14 STREET TREES
PROVIDED: 14 STREET TREES

STREET F
REQUIRED: 15 STREET TREES
PROVIDED: 15 STREET TREES

STREET G
REQUIRED: 26 STREET TREES
PROVIDED: 26 STREET TREES

STREET H
REQUIRED: 44 STREET TREES
PROVIDED: 44 STREET TREES

STREET J
REQUIRED: 42 STREET TREES
PROVIDED: 42 STREET TREES

STREET K
REQUIRED: 38 STREET TREES
PROVIDED: 38 STREET TREES

STREET L
REQUIRED: 39 STREET TREES
PROVIDED: 39 STREET TREES

STREET M
REQUIRED: 34 STREET TREES
PROVIDED: 34 STREET TREES

STREET N
REQUIRED: 21 STREET TREES
PROVIDED: 21 STREET TREES

STREET O
REQUIRED: 6 STREET TREES
PROVIDED: 6 STREET TREES

RESIDENTIAL LOTS:
REQUIREMENTS: 1 TREE PER 5,000 SF OF LOT AREA
FOUNDATION PLANTING FOR BUILDING FACADES FACING A STREET & 25% OF ADJACENT FACADES
-LARGE SHRUBS: 1 PER 5 LF OF BUILDING FOUNDATION
-MEDIUM SHRUBS: 1.5 PER 5 LF OF BUILDING FOUNDATION
-SMALL SHRUBS: 3 PER 5 LF OF BUILDING FOUNDATION
ALL UTILITY EQUIPMENT ASSOCIATED WITH ON-SITE ELECTRIC, CABLE, TELEPHONE, GAS OR OTHER SIMILAR UTILITY, INCLUDING GROUND-BASED ELECTRICAL TRANSFORMERS AND POWER METERS, SHALL BE SCREENED, TO THE EXTENT POSSIBLE, WITH EVERGREEN LANDSCAPE MATERIAL.

LEGEND

TREE PRESERVATION AREA

SCALE: 1 IN = 200 FT
200' 100' 0 200' 400'
SCALE IN FEET
HORIZONTAL

REVISIONS		
A	3/14/2025	TOHS COMMENTS #1
B	4/17/2025	TOHS COMMENTS #2
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ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
OVERALL LANDSCAPE PLAN

L-3.0

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PLOTTED: 5/15/2025 8:33 PM

LEGEND

- TREE PRESERVATION AREA
- STREET LIGHT & 25' SEPARATION RADIUS

CANOPY TREES:

- ABU - ACER BUERGERIANUM
- GBI - GINKGO BILOBA
- QNU - QUERCUS NUTTALLII
- ZSE - ZELKOVA SERRATA
- AFL - ACER FLORIDANUM
- UPB - ULMUS PARVIFOLIA 'BOSQUE'
- AFR - ACER x FREEMANII
- QPH - QUERCUS PHELLOS
- NSY - NYSSA SYLVATICA
- QPA - QUERCUS PALUSTRIS
- IOP - ILEX OPACA
- JVI - JUNIPERUS VIRGINIANA

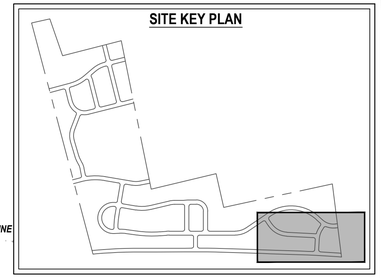
UNDERSTORY / ORNAMENTAL TREES:

- LIN - LAGERSTROEMIA INDICA
- POK - PRUNUS x 'OKAME'
- CKO - CORNUS KOUSA
- CCF - CERCIS CANADENSIS 'FOREST PANSY'
- MST - MAGNOLIA STELLATA
- ACA - AMELANCHIER CANADENSIS
- MVI - MAGNOLIA VIRGINIANA
- IMN - ILEX x 'MARY NELL'

SHRUBS:

- AGR - ABELIA x GRANDIFLORA
- IGS - ILEX GLABRA
- ICN - ILEX CRENATA 'NEEDLEPOINT'
- MCE - MYRICA CERIFERA
- OFO - OSMANTHUS x FORTUNEI
- VAC - VIBURNUM AWABUKI 'CHINDO'
- CSA - CAMELLIA SASANQUA
- ICR - ILEX CRENATA 'COMPACTA'
- DCG - DISTYLIUM 'CINNAMON GIRL'

SITE KEY PLAN





REVISIONS			
A	3/14/2025	TOHS COMMENTS #1	
B	4/17/2025	TOHS COMMENTS #2	
C	5/16/2025	TOHS COMMENTS #3	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
PRELIMINARY FOR REVIEW ONLY
ADAM SOUTHWELL

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 1.0 NORTH CAROLINA
NC LIC. NO. P-0799
t (919) 552-0849
f (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

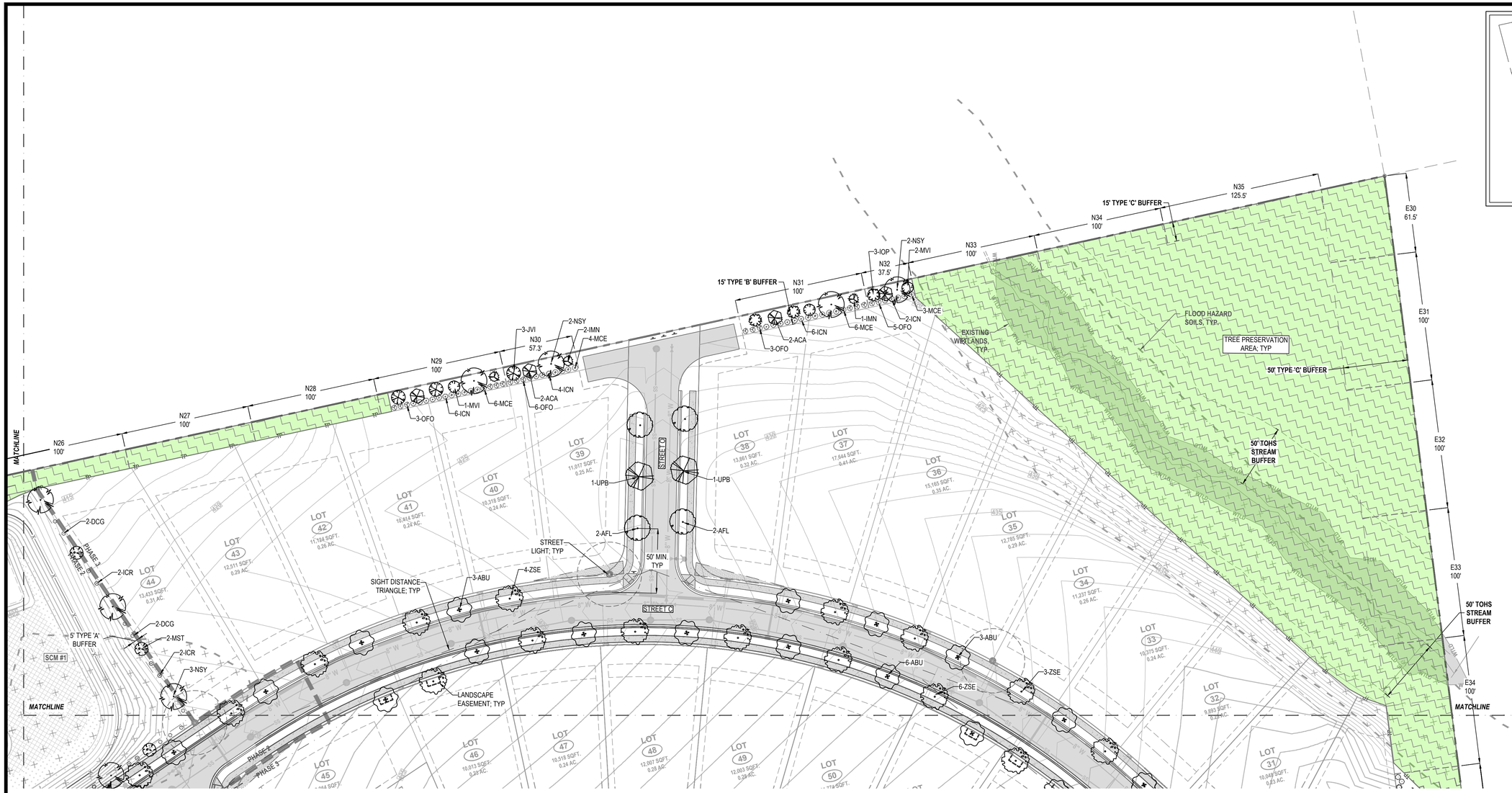
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

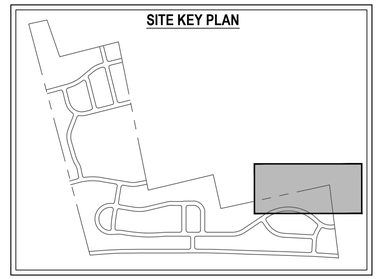
PARTIAL LANDSCAPE PLAN I

L-3.1

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*\CAD\L-3.1 PARTIAL LANDSCAPE PLAN I.DWG
PLOTTED: 5/19/2025 8:58 PM



SITE KEY PLAN



LEGEND

- TREE PRESERVATION AREA
- STREET LIGHT & 25' SEPARATION RADIUS

CANOPY TREES:

- ABU - ACER BUERGERIANUM
- GBI - GINKGO BILOBA
- QNU - QUERCUS NUTTALLII
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- CSA - CAMELLIA SASANQUA
- ICR - ILEX CRENATA 'COMPACTA'
- DCG - DISTYLIUM 'CINNAMON GIRL'

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

REVISIONS		
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PROFESSIONAL'S SEAL

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING COMPANY EST. 1978 NORTH CAROLINA

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-0043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
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919.308.2123 (M)
Contact: Paul Burger
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PROPERTY INFORMATION

DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL LANDSCAPE PLAN II

L-3.2

D:\DROPBOX\SOUTHWELL DESIGN, PLLC\PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION\CAD\L-3.2 PARTIAL LANDSCAPE PLAN II.DWG
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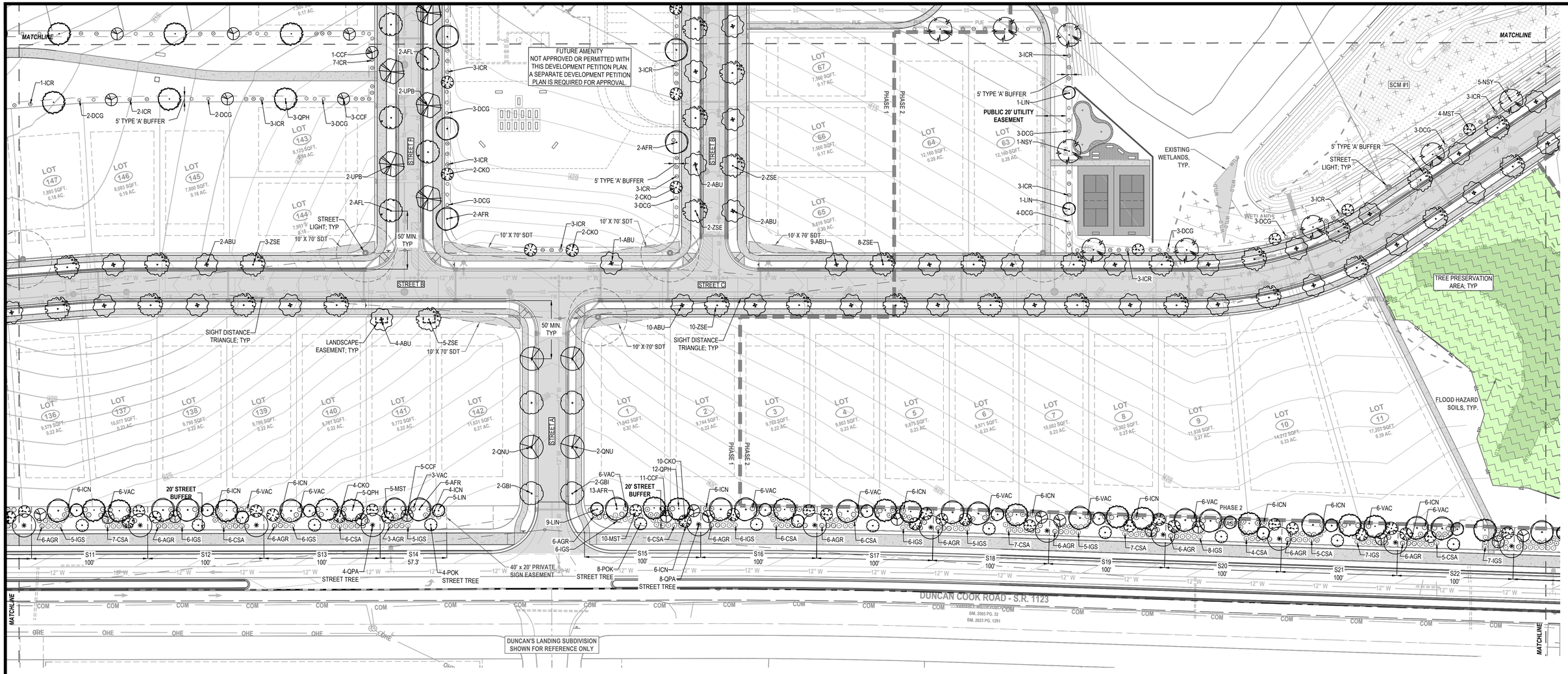
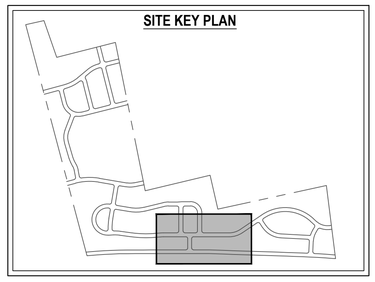


SITE KEY PLAN



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SCALE: 1 IN = 40 FT

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SCALE IN FEET HORIZONTAL

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PROFESSIONAL'S SEAL
NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT ADAM SOUTHWELL
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
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CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

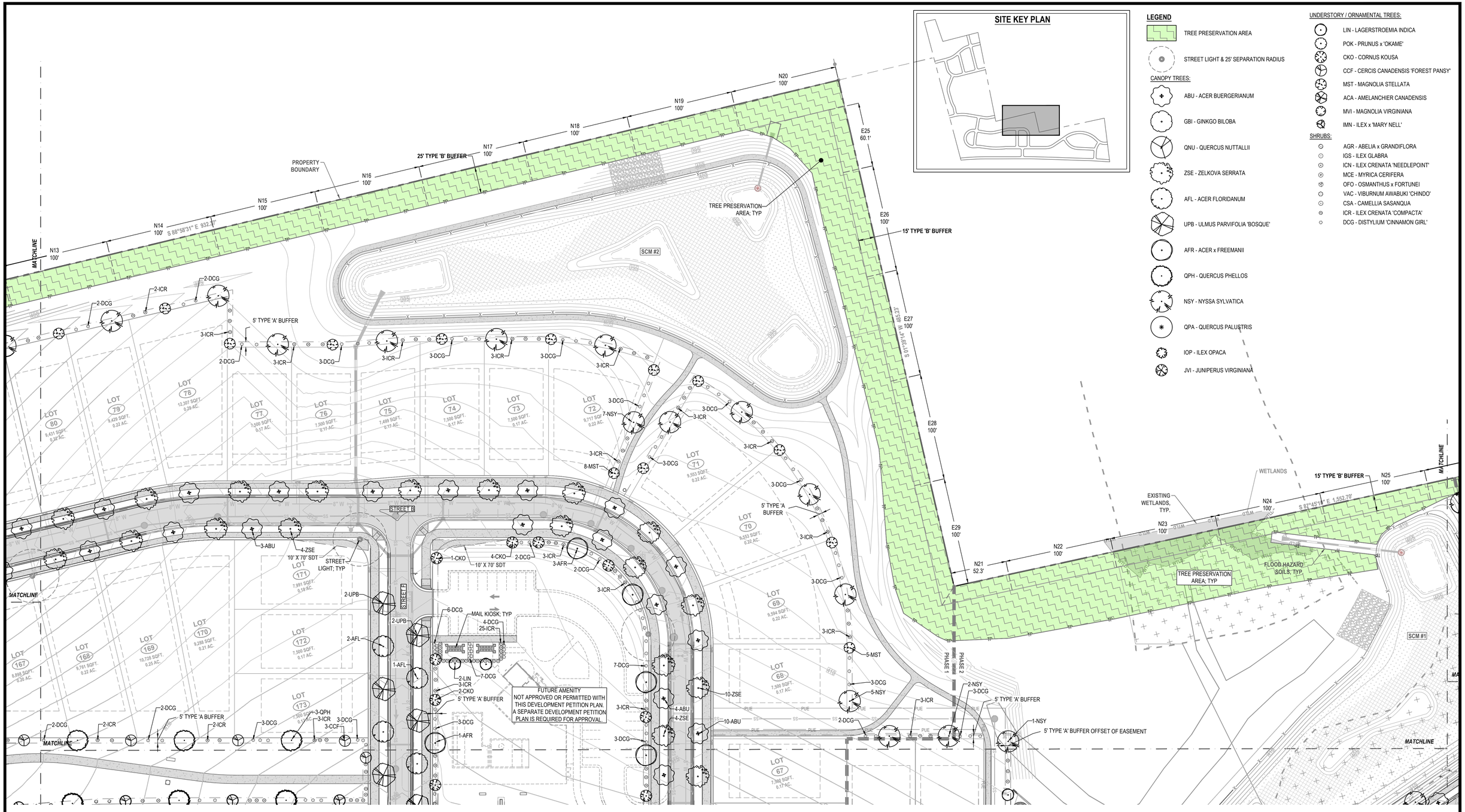
DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL LANDSCAPE PLAN III

L-3.3

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CAD\L-3.3 PARTIAL LANDSCAPE PLAN III.DWG
PLOTTED: 5/19/2025 9:13 PM



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NC LIC. NO. P-0799
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Gander Development
2310 S. Miami Bldv., Ste. 238
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PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

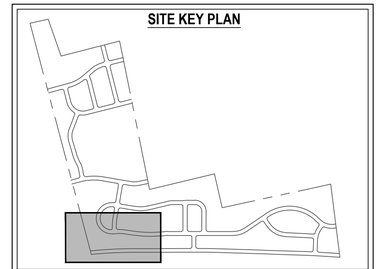
DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
PARTIAL LANDSCAPE PLAN IV

L-3.4

D:\DROPBOX\SOUTHWELL DESIGN, PLLC\PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION\CAD\L-3.4 PARTIAL LANDSCAPE PLAN IV.DWG
PLOTTED: 5/15/2025 9:15 PM



SITE KEY PLAN



LEGEND

- TREE PRESERVATION AREA
- STREET LIGHT & 25' SEPARATION RADIUS

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- DCG - DISTYLIUM 'CINNAMON GIRL'

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

D:\DROPBOX\SOUTHWELL DESIGN, PLLC\PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CAD\L-3.5 PARTIAL LANDSCAPE PLAN V.DWG
PLOTTED: 5/15/2025 9:18 PM

REVISIONS		
A	3/14/2025	TOHS COMMENTS #1
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C	5/16/2025	TOHS COMMENTS #3

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FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT ADAM SOUTHWELL
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERS P.S.T. 1.0 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT — A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL LANDSCAPE PLAN V

L-3.5

LEGEND

- TREE PRESERVATION AREA
- STREET LIGHT & 25' SEPARATION RADIUS

CANOPY TREES:

- ABU - ACER BUERGERIANUM
- GBI - GINKGO BILOBA
- QNU - QUERCUS NUTTALLII
- ZSE - ZELKOVA SERRATA
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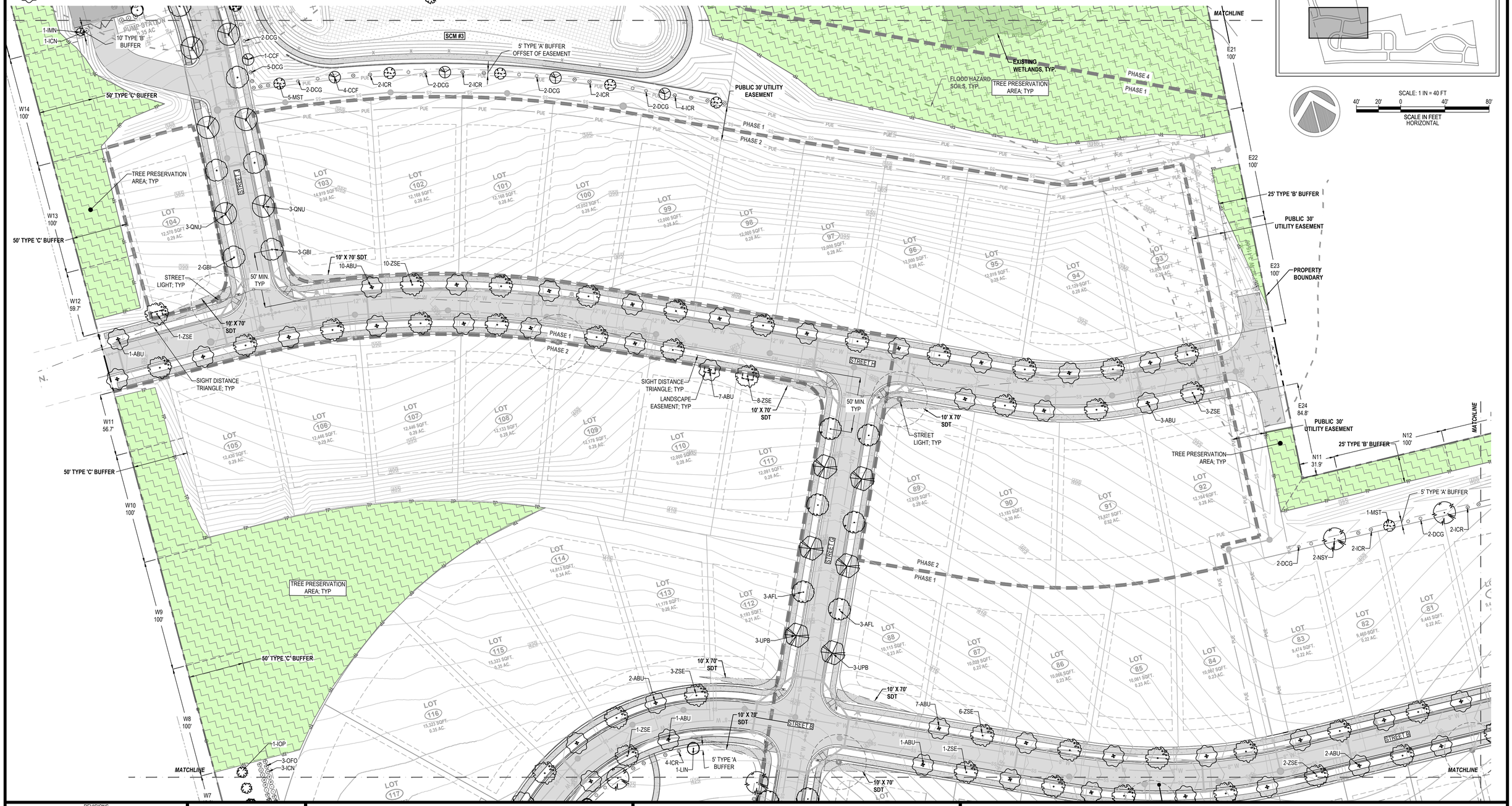
SITE KEY PLAN

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL



REVISIONS		
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PROFESSIONAL'S SEAL

PRELIMINARY FOR REVIEW ONLY

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT ADAM SOUTHWELL

CONSULTANT

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CURRY ENGINEERING EST. 1.0 NORTH CAROLINA

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PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL LANDSCAPE PLAN VI

L-3.6

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CADL-3.6 PARTIAL LANDSCAPE PLAN VI.DWG
PLOTTED: 5/15/2025 9:20 PM

LEGEND

TREE PRESERVATION AREA

STREET LIGHT & 25' SEPARATION RADIUS

CANOPY TREES:

ABU - ACER BUERGERIANUM

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SITE KEY PLAN

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET HORIZONTAL

MATCHLINE

MATCHLINE

W21 100'

W20 100'

W19 100'

W18 100'

PROPERTY BOUNDARY

W17 100'

W16 100'

20' PUBLIC UTILITY EASEMENT FOR FUTURE USE

W15 100'

MATCHLINE

E15 100'

E16 100'

E17 100'

E18 100'

E19 100'

E20 100'

MATCHLINE

LOT 184 13,983 SQFT. 0.32 AC.

LOT 183 18,215 SQFT. 0.42 AC.

LOT 182 14,387 SQFT. 0.33 AC.

LOT 181 12,066 SQFT. 0.28 AC.

LOT 180 12,060 SQFT. 0.28 AC.

LOT 179 12,060 SQFT. 0.28 AC.

LOT 178 12,060 SQFT. 0.28 AC.

6-QNU

6-GBI

8-QNU

8-GBI

4-LIN

4-DCG

5' TYPE 'A' BUFFER

4-ICR

4-DCG

4-ICR

4-DCG

3-ICR

10-AFR

2-DCG

2-ICR

2-DCG

2-ICR

2-DCG

2-ICR

2-DCG

2-ICR

2-DCG

5' TYPE 'A' BUFFER

TREE PRESERVATION AREA; TYP

50' TYPE 'C' BUFFER

STREET 4

FLOOD HAZARD SOILS, TYP.

SCM #4

50' TOHS STREAM BUFFER

TREE PRESERVATION AREA; TYP

WETLANDS

TREE PRESERVATION AREA; TYP

25' TYPE 'B' BUFFER

STREET LIGHT; TYP

PHASE 4

PHASE 1

EXISTING WETLANDS, TYP.

50' TOHS STREAM BUFFER

30' PUBLIC UTILITY 10' TYPE 'B' BUFFER OFFSET OF ESMT

5-ICN

5' TYPE 'A' BUFFER

2-GBI

3-DCG

1-ICN

1-LIN

1-CCF

1-QNU

10' TYPE 'B' BUFFER

3-ICR

2-MST

3-IMN

1-LIN

11-ICN

PUMP STATION

SCM #3

PHASE 4

PHASE 1

WETLANDS

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PROPERTY INFORMATION

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ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

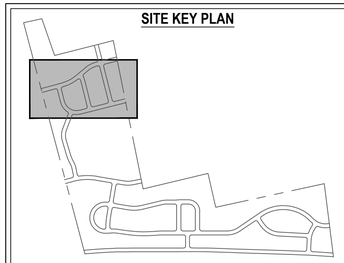
HAZEL RIDGE SUBDIVISION

PARTIAL LANDSCAPE PLAN VII

L-3.7

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*\CAD\L-3.7 PARTIAL LANDSCAPE PLAN VII.DWG
PLOTTED: 5/19/2025 9:22 PM

SITE KEY PLAN



LEGEND

TREE PRESERVATION AREA

STREET LIGHT & 25' SEPARATION RADIUS

CANOPY TREES:

ABU - ACER BUERGERIANUM

GBI - GINKGO BILOBA

QNU - QUERCUS NUTTALLII

ZSE - ZELKOVA SERRATA

AFL - ACER FLORIDANUM

UPB - ULMUS PARVIFOLIA 'BOSQUE'

AFR - ACER x FREEMANII

QPH - QUERCUS PHELLOS

NSY - NYSSA SYLVATICA

QPA - QUERCUS PALUSTRIS

IOP - ILEX OPACA

JVI - JUNIPERUS VIRGINIANA

UNDERSTORY / ORNAMENTAL TREES:

LIN - LAGERSTROEMIA INDICA

POK - PRUNUS x 'OKAME'

CKO - CORNUS KOUSA

CCF - CERCIS CANADENSIS 'FOREST PANSY'

MST - MAGNOLIA STELLATA

ACA - AMELANCHIER CANADENSIS

MVI - MAGNOLIA VIRGINIANA

IMN - ILEX x 'MARY NELL'

SHRUBS:

AGR - ABELIA x GRANDIFLORA

IGS - ILEX GLABRA

ICN - ILEX CRENATA 'NEEDLEPOINT'

MCE - MYRICA CERIFERA

OFO - OSMANTHUS x FORTUNEI

VAC - VIBURNUM AWABUKI 'CHINDO'

CSA - CAMELLIA SASANQUA

ICR - ILEX CRENATA 'COMPACTA'

DCG - DISTYLIUM 'CINNAMON GIRL'

SCALE: 1 IN = 40 FT

40' 20' 0 40' 80'

SCALE IN FEET
HORIZONTAL

MATCHLINE

MATCHLINE

STREET I

STREET J

STREET K

STREET L

STREET N

GE WAY

W26 100'

W25 52.5'

W24 100'

W23 100'

W22 100'

20' DRAINAGE EASEMENT BM. 2007 PG. 512

50' TYPE 'C' BUFFER

50' TYPE 'C' BUFFER

50' TYPE 'C' BUFFER

5' TYPE 'A' BUFFER

25' TYPE 'B' BUFFER

PROPERTY BOUNDARY

TREE PRESERVATION AREA; TYP

TREE PRESERVATION AREA; TYP

TREE PRESERVATION AREA; TYP

LANDSCAPE EASEMENT; TYP

SIGHT DISTANCE TRIANGLE; TYP

STREET LIGHT; TYP

50' MIN. TYP

10' X 70' SDT

E8 102.8'

E9 100'

E10 100'

E11 100'

E12 62.8'

E13 51.6'

E14 100'

LOT 190 12,836 SQFT. 0.29 AC.

LOT 191 12,831 SQFT. 0.28 AC.

LOT 192 12,836 SQFT. 0.28 AC.

LOT 193 10,147 SQFT. 0.23 AC.

LOT 194 10,466 SQFT. 0.24 AC.

LOT 195 10,469 SQFT. 0.24 AC.

LOT 196 10,248 SQFT. 0.24 AC.

LOT 189 12,899 SQFT. 0.30 AC.

LOT 188 13,823 SQFT. 0.31 AC.

LOT 187 12,501 SQFT. 0.29 AC.

LOT 186 12,839 SQFT. 0.29 AC.

LOT 185 12,431 SQFT. 0.29 AC.

LOT 234 12,001 SQFT. 0.28 AC.

LOT 235 9,322 SQFT. 0.21 AC.

LOT 236 10,898 SQFT. 0.23 AC.

LOT 237 11,910 SQFT. 0.27 AC.

LOT 230 11,719 SQFT. 0.27 AC.

LOT 231 10,023 SQFT. 0.23 AC.

LOT 232 9,468 SQFT. 0.22 AC.

LOT 233 10,947 SQFT. 0.23 AC.

LOT 228 7,532 SQFT. 0.17 AC.

LOT 229 12,437 SQFT. 0.29 AC.

LOT 215 12,225 SQFT. 0.28 AC.

LOT 216 7,500 SQFT. 0.17 AC.

LOT 217 7,500 SQFT. 0.17 AC.

LOT 218 7,500 SQFT. 0.17 AC.

LOT 219 7,500 SQFT. 0.17 AC.

LOT 220 7,500 SQFT. 0.17 AC.

LOT 221 8,920 SQFT. 0.23 AC.

LOT 222 10,018 SQFT. 0.23 AC.

LOT 223 9,930 SQFT. 0.22 AC.

LOT 224 7,500 SQFT. 0.17 AC.

LOT 225 7,500 SQFT. 0.17 AC.

LOT 226 7,500 SQFT. 0.17 AC.

LOT 227 7,500 SQFT. 0.17 AC.

LOT 206 10,498 SQFT. 0.24 AC.

LOT 207 10,461 SQFT. 0.24 AC.

LOT 208 10,289 SQFT. 0.24 AC.

LOT 209 10,118 SQFT. 0.23 AC.

LOT 210 9,946 SQFT. 0.23 AC.

LOT 211 9,775 SQFT. 0.22 AC.

LOT 212 9,603 SQFT. 0.22 AC.

LOT 213 9,432 SQFT. 0.22 AC.

LOT 214 9,126 SQFT. 0.21 AC.

LOT 174 12,060 SQFT. 0.28 AC.

LOT 175 12,060 SQFT. 0.28 AC.

LOT 176 12,060 SQFT. 0.28 AC.

LOT 177 12,060 SQFT. 0.28 AC.

REVISIONS		
A	3/14/2025	TOHS COMMENTS #1
B	4/17/2025	TOHS COMMENTS #2
C	5/16/2025	TOHS COMMENTS #3

STATUS
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NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 40'

FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING

NC LIC. NO. P-0799

t (919) 552-0849
f (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

PARTIAL LANDSCAPE PLAN VIII

L-3.8

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CADD\L-3.8 PARTIAL LANDSCAPE PLAN VIII.DWG
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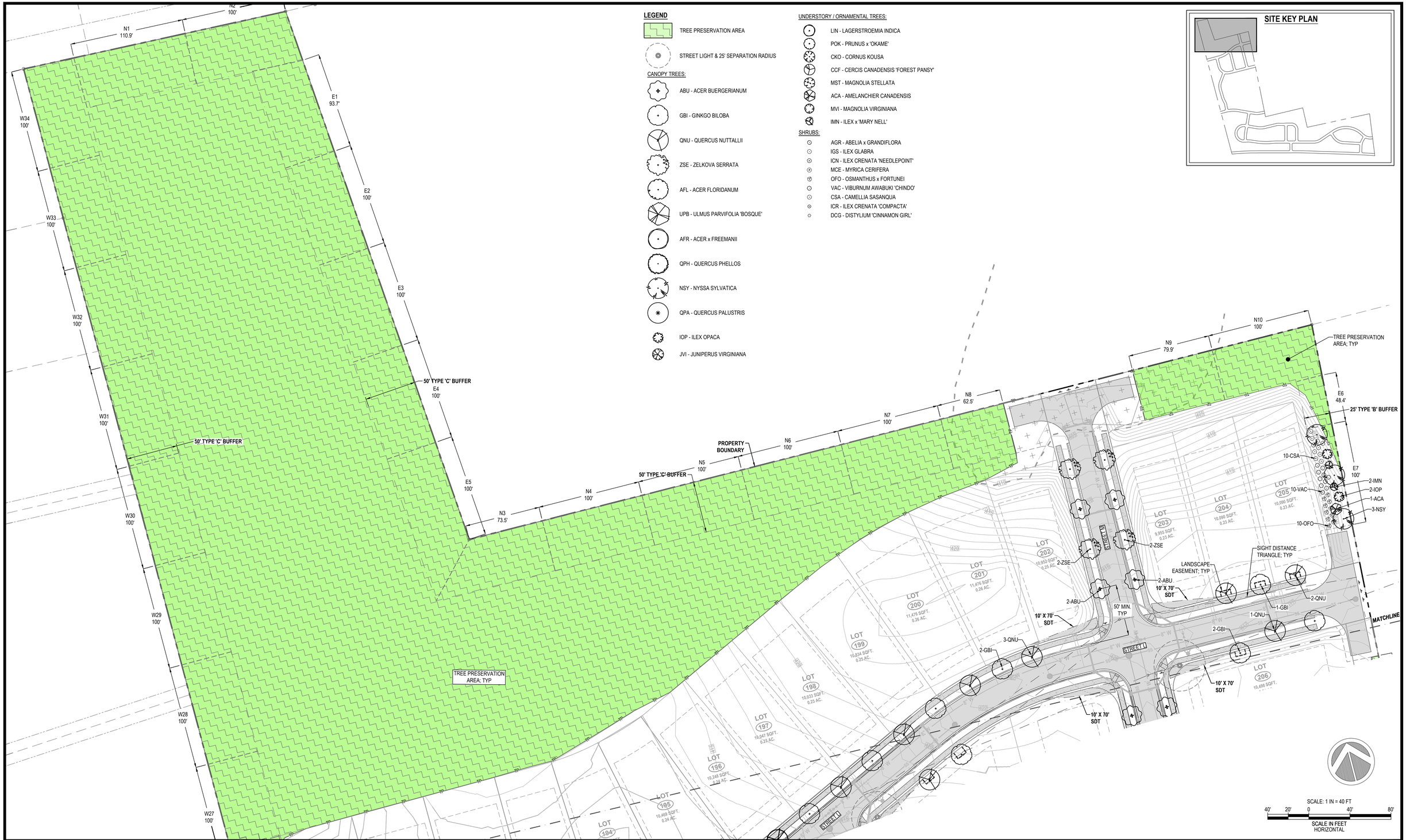

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CAD\L-3.9 PARTIAL LANDSCAPE PLAN IX.DWG
PLOTTED: 5/15/2025 9:25 PM

REVISIONS		
A	3/14/2025	TOHS COMMENTS #1
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FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
PRELIMINARY FOR REVIEW ONLY
1100 ... 1-23-2025 ... 1-23-2026
ADAM SOUTHWELL

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERS EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

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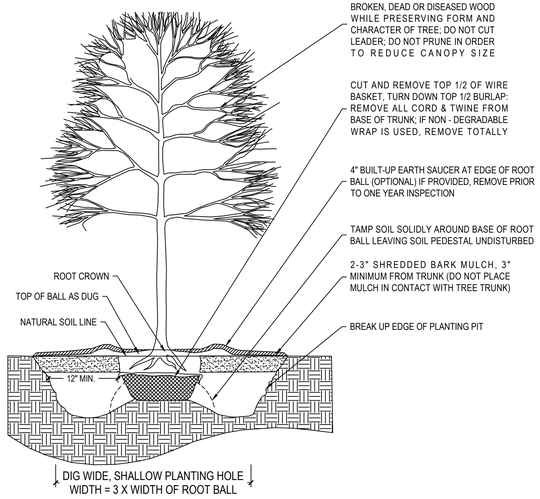
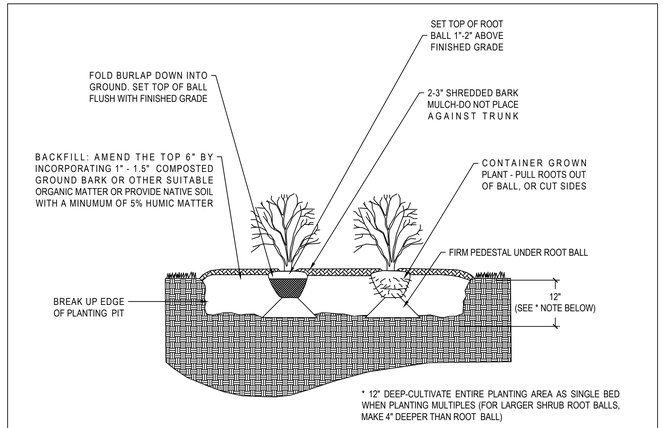
DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
PARTIAL LANDSCAPE PLAN IX
L-3.9



NOTES

1. CONTRACTOR TO VERITY THAT ADEQUATE DRAINAGE EXISTS PRIOR TO PLANTING.
2. DO NOT WRAP TRUNK OF TREE.
3. STAKING OF TREES IS NOT RECOMMENDED, EXCEPT ON WINDY SITES OR FOR LARGE EVERGREEN TREES. IF STAKING IS DONE, FLEXIBLE STRAPS - NOT HOSE AND WIRE - SHOULD BE USED AND MUST BE REMOVED AT APPROPRIATE TIME. PROPERTY OWNER IS RESPONSIBLE FOR REPLACEMENT OF DESTROYED OR DAMAGED TREES.
4. ALL TREES SHALL CONFORM TO THE STANDARDS SET FORTH IN THE MOST RECENT AMERICAN STANDARDS FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN (A.A.N.).
5. TREES WITH ROOT FLARE COVERED BY MORE THAN 1.5" OF SOIL WILL BE REJECTED PRIOR TO INSTALLATION.

TREE PLANTING DETAIL (LAN-37)
NTS



NOTES

1. ALL SHRUBS SHALL CONFORM TO THE STANDARDS SET FORTH IN THE MOST RECENT *AMERICAN STANDARDS FOR NURSERY STOCK* PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN (A.A.N.).
2. SOIL ANALYSIS SHALL BE OBTAINED PRIOR TO PLANTING. SOIL SHALL BE AMENDED AS RECOMMENDED.
3. SHEET PREPARATION OF BEDS IS HIGHLY PREFERRED TO INDIVIDUAL DUG HOLE.S.

SHRUB/GROUNDCOVER PLANTING DETAIL (LAN-38)
NTS

PLANT SCHEDULE

KEY	QTY	SPECIES % (25% MAXIUM)	BOTANICAL NAME	COMMON NAME	ROOT	CALIPER (MINIMUM)	HEIGHT (MINIMUM)	CONTAINER	TYPE	USE	NOTES
CANOPY TREES											
ABU	165	20.05%	Acer buergerianum	Trident Maple	B&B	2.5"			D	STREET TREE	MATCHED
AFL	63	7.65%	Acer floridanum	Southern Sugar Maple	B&B	2.5"			D	STREET TREE	MATCHED
AFR	75	9.11%	Acer x freemanii	Freeman Maple	B&B	2.5"			D	BUFFER	MATCHED
GBI	53	6.44%	Ginkgo biloba	Ginkgo	B&B	2.5"			D	STREET TREE	MATCHED / MALE CULTIVARS ONLY
IOP	24	2.92%	Ilex opaca	American Holly	B&B		6'		E	BUFFER	MATCHED
JVI	27	3.28%	Juniperus virginiana	Eastern Red Cedar	B&B		6'		E	BUFFER	MATCHED
NSY	49	5.95%	Nyssa sylvatica	Black Gum	B&B	2.5"			D	BUFFER	MATCHED
QNU	50	6.08%	Quercus nuttallii	Nuttall Oak	B&B	2.5"			D	STREET TREE	MATCHED
QPA	31	3.77%	Quercus palustris	Pin Oak	B&B	2.5"			D	STREET TREE	MATCHED
QPH	66	8.02%	Quercus phellos	Willow Oak	B&B	2.5"			D	BUFFER	MATCHED
UPB	59	7.17%	Ulmus parvifolia 'Bosque'	Chinese Elm	B&B	2.5"			D	STREET TREE	MATCHED
ZSE	161	19.56%	Zelkova serrata	Japanese Zelkova	B&B	2.5"			D	STREET TREE	MATCHED
UNDERSTORY / ORNAMENTAL TREES											
ACA	13	3.78%	Amelanchier canadensis	Serviceberry	B&B	1.5"			D	BUFFER / OPEN SPACE	MATCHED
CCF	77	22.38%	Cercis canadensis 'Forest Pansy'	Forest Pansy Redbud	B&B	1.5"			D	BUFFER	MATCHED
CKO	66	19.19%	Cornus kousa	Kousa Dogwood	B&B	1.5"			D	BUFFER / OPEN SPACE	MATCHED
IMN	9	2.62%	Ilex x 'Mary Nell'	Mary Nell Holly	B&B		4'		E	BUFFER	MATCHED
LIN	68	19.77%	Lagerstroemia indica	Crape Myrtle	B&B	1.5"			D	BUFFER / MAIL KIOSK FOUNDATION	MATCHED
MST	70	20.35%	Magnolia stellata	Star Magnolia	B&B	1.5"			D	BUFFER	MATCHED
MVI	8	2.33%	Magnolia virginiana	Sweetbay Magnolia	B&B		4'		E	BUFFER / OPEN SPACE	MATCHED
POK	33	9.59%	Prunus x 'Okame'	Okame Cherry	B&B	2.5"			D	STREET TREE	MATCHED
SHRUBS											
AGR	215	10.49%	Abelia x grandiflora	Glossy Abelia	CONT.		18"		E	BUFFER / OPEN SPACE	MATCHED
CAM	7	0.34%	Callicarpa americana	American Beautyberry	CONT.		18"		D	OPEN SPACE	MATCHED
CFL	4	0.20%	Calycanthus floridus	Sweet Shrub	CONT.		18"		D	OPEN SPACE	MATCHED
CSA	252	12.29%	Camellia sasanqua	Camellia	CONT.		18"		E	BUFFER	MATCHED
CAL	20	0.98%	Clethra alnifolia	Summersweet	CONT.		18"		D	OPEN SPACE	MATCHED
DCG	273	13.32%	Distylium 'PIIDIST-V'	Cinnamon Girl® Distylium	CONT.		18"		E	BUFFER / MAIL KIOSK FOUNDATION / OPEN SPACE	MATCHED
ICN	301	14.68%	Ilex cornuta 'Needlepoint'	Needlepoint Holly	CONT.		18"		E	BUFFER	MATCHED
IGS	284	13.85%	Ilex glabra 'Shamrock'	Shamrock Inkberry Holly	CONT.		18"		E	BUFFER / OPEN SPACE	MATCHED
ICR	264	12.88%	Ilex crenata 'Compacta'	Japanese Holly	CONT.		18"		E	BUFFER / MAIL KIOSK FOUNDATION	MATCHED
MCE	88	4.29%	Myrica cerifera	Southern Wax Myrtle	CONT.		18"		E	BUFFER	MATCHED
OFO	90	4.39%	Osmanthus x fortunei	Fortune's Tea Olive	CONT.		18"		E	BUFFER	MATCHED
VAC	252	12.29%	Viburnum awabuki 'Chindo'	Chindo Viburnum	CONT.		18"		E	BUFFER	MATCHED
ORNAMENTAL GRASSES / PERENNIALS											
PVI	25	19.53%	Panicum virgatum	Switch Grass	CONT.			1 GAL	H	OPEN SPACE	MATCHED / 36" O.C. TRI
BAU	25	19.53%	Baptisia australis	Blue False Indigo	CONT.			1 GAL	H	OPEN SPACE	MATCHED / 30" O.C. TRI
LCA	25	19.53%	Lobelia cardinalis	Cardinal Flower	CONT.			1 GAL	H	OPEN SPACE	MATCHED / 30" O.C. TRI
RFU	25	19.53%	Rudbeckia fulgida	Black Eyed Susan	CONT.			1 GAL	H	OPEN SPACE	MATCHED / 30" O.C. TRI
SSC	28	21.88%	Schizachyrium scoparium	Little Bluestem	CONT.			1 GAL	H	OPEN SPACE	MATCHED / 36" O.C. TRI

TYPE / USE LEGEND

PLANT TYPE: E = EVERGREEN / D = DECIDUOUS / SE = SEMI-EVERGREEN / H = HERBACEOUS

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CAD\L-4.0 LANDSCAPE DETAILS.DWG
PLOTTED: 5/15/2025 9:27 PM

REVISIONS

A	3/14/2025	TOHS COMMENTS #1
B	4/17/2025	TOHS COMMENTS #2
C	5/16/2025	TOHS COMMENTS #3

STATUS
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DATE: JANUARY 3, 2025 | HORZ. SCALE: AS SHOWN
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-9124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
LANDSCAPE DETAILS I
L-4.0

LANDSCAPE CALCULATIONS

BUFFERS:

20' STREET BUFFER
REQUIREMENTS: 3 CANOPY TREES, 5 ORNAMENTAL TREES & 30 SHRUBS (3 SPECIES MIN.) PER 100 LF

5' TYPE 'A' - OPEN
REQUIREMENTS: 2 DECIDUOUS TREES & 5 SHRUBS PER 100 LF

10' TYPE 'B' - SEMI
REQUIREMENTS: 3 TREES (40% EVERGREEN) & 10 SHRUBS (40% EVERGREEN) PER 100 LF

15' TYPE 'B' ENHANCED
REQUIREMENTS: 3 CANOPY TREES, 3 ORNAMENTAL TREES (40% EVERGREEN MIN.) & 18 SHRUBS (40% EVERGREEN & 2 SPECIES MIN.) PER 100 LF

25' TYPE 'B' ENHANCED
REQUIREMENTS: 5 CANOPY TREES, 3 ORNAMENTAL TREES (40% EVERGREEN MIN.) & 30 SHRUBS (40% EVERGREEN & 3 SPECIES MIN.) PER 100 LF

50' TYPE 'C' ENHANCED ALT 1
REQUIREMENTS: 25' EXISTING VEGETATION, 6 CANOPY TREES (80% EVERGREEN MIN.) & 40 SHRUBS (80% EVERGREEN & 3 SPECIES MIN.) PER 100 LF

50' TYPE 'C' ENHANCED ALT 2
REQUIREMENTS: 8 CANOPY TREES (80% EVERGREEN MIN.) & 60 SHRUBS (80% EVERGREEN & 5 SPECIES MIN.) PER 100 LF

NORTH PROPERTY BOUNDARY

SEGMENT N1 110.9 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 7 CANOPY TREES (6 EVERGREEN MIN.) & 45 SHRUBS (36 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT N2 100 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT N3 73.5 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 5 CANOPY TREES (4 EVERGREEN MIN.) & 30 SHRUBS (24 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS N4-N7 100 LF SEGMENTS - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.) PER 100 LF
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT N8 62.5 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 4 CANOPY TREES (4 EVERGREEN MIN.) & 25 SHRUBS (20 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT N9 79.9 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 5 CANOPY TREES (4 EVERGREEN MIN.) & 32 SHRUBS (26 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT N10 100 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT N11 31.9 LF SEGMENT - 25' TYPE 'B' ENHANCED
REQUIRED: 2 CANOPY TREES (1 EVERGREEN MIN.), 1 EVERGREEN ORNAMENTAL TREE & 10 SHRUBS (4 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS N12-N20 100 LF SEGMENTS - 25' TYPE 'B' ENHANCED
REQUIRED: 5 CANOPY TREES (2 EVERGREEN MIN.), 3 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 30 SHRUBS (12 EVERGREEN & 3 SPECIES MIN.) PER 100 LF
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT N21 52.3 LF SEGMENT - 15' TYPE 'B' ENHANCED
REQUIRED: 2 CANOPY TREES (1 EVERGREEN MIN.), 2 ORNAMENTAL TREES (1 EVERGREEN MIN.) & 10 SHRUBS (4 EVERGREEN & 2 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS N22-N28 100 LF SEGMENTS - 15' TYPE 'B' ENHANCED
REQUIRED: 3 CANOPY TREES (2 EVERGREEN MIN.), 3 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 18 SHRUBS (8 EVERGREEN & 2 SPECIES MIN.) PER 100 LF
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT N29 100 LF SEGMENT - 15' TYPE 'B' ENHANCED
REQUIRED: 3 CANOPY TREES (2 EVERGREEN MIN.), 3 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 18 SHRUBS (8 EVERGREEN & 2 SPECIES MIN.)
PROVIDED: 3 CANOPY TREES (1 DECIDUOUS & 2 EVERGREEN), 3 ORNAMENTAL TREES (1 DECIDUOUS & 2 EVERGREEN) & 18 EVERGREEN SHRUBS (3 SPECIES)
SEGMENT N30 57.3 LF SEGMENT - 15' TYPE 'B' ENHANCED
REQUIRED: 2 CANOPY TREES (1 EVERGREEN MIN.), 2 ORNAMENTAL TREES (1 EVERGREEN MIN.) & 11 SHRUBS (5 EVERGREEN & 2 SPECIES MIN.)
PROVIDED: 2 CANOPY TREES (1 DECIDUOUS & 2 EVERGREEN), 2 ORNAMENTAL TREES (1 DECIDUOUS & 2 EVERGREEN) & 11 EVERGREEN SHRUBS (3 SPECIES)
SEGMENT N31 100 LF SEGMENT - 15' TYPE 'B' ENHANCED
REQUIRED: 3 CANOPY TREES (2 EVERGREEN MIN.), 3 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 18 SHRUBS (8 EVERGREEN & 2 SPECIES MIN.)
PROVIDED: 3 CANOPY TREES (1 DECIDUOUS & 2 EVERGREEN), 3 ORNAMENTAL TREES (1 DECIDUOUS & 2 EVERGREEN) & 18 EVERGREEN SHRUBS (3 SPECIES)
SEGMENT N32 37.5 LF SEGMENT - 15' TYPE 'B' ENHANCED
REQUIRED: 2 CANOPY TREES (1 EVERGREEN MIN.), 2 ORNAMENTAL TREES (1 EVERGREEN MIN.) & 7 SHRUBS (3 EVERGREEN & 2 SPECIES MIN.)
PROVIDED: 2 CANOPY TREES (1 DECIDUOUS & 1 EVERGREEN), 2 ORNAMENTAL TREES (1 DECIDUOUS & 1 EVERGREEN) & 7 EVERGREEN SHRUBS (3 SPECIES)
SEGMENTS N33-N34 100 LF SEGMENTS - 15' TYPE 'B' ENHANCED
REQUIRED: 3 CANOPY TREES (2 EVERGREEN MIN.), 3 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 18 SHRUBS (8 EVERGREEN & 2 SPECIES MIN.) PER 100 LF
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT N35 125.5 LF SEGMENT - 15' TYPE 'B' ENHANCED
REQUIRED: 4 CANOPY TREES (2 EVERGREEN MIN.), 4 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 23 SHRUBS (10 EVERGREEN & 2 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)

EAST PROPERTY BOUNDARY

SEGMENT E1 93.7 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 38 SHRUBS (31 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS E2-E5 100 LF SEGMENTS - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.) PER 100 LF
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT E6 48.4 LF SEGMENT - 25' TYPE 'B' ENHANCED
REQUIRED: 3 CANOPY TREES (2 EVERGREEN MIN.), 2 ORNAMENTAL TREES (1 EVERGREEN MIN.) & 15 SHRUBS (6 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT E7 100 LF SEGMENT - 25' TYPE 'B' ENHANCED
REQUIRED: 5 CANOPY TREES (2 EVERGREEN MIN.), 3 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 30 SHRUBS (12 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 5 CANOPY TREES (3 DECIDUOUS & 2 EVERGREEN), 3 ORNAMENTAL TREES (1 DECIDUOUS & 2 EVERGREEN) & 30 EVERGREEN SHRUBS (3 SPECIES)
SEGMENT E8 102.8 LF SEGMENT - 25' TYPE 'B' ENHANCED
REQUIRED: 6 CANOPY TREES (3 EVERGREEN MIN.), 4 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 31 SHRUBS (13 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS E9-E11 100 LF SEGMENTS - 25' TYPE 'B' ENHANCED
REQUIRED: 5 CANOPY TREES (2 EVERGREEN MIN.), 3 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 30 SHRUBS (12 EVERGREEN & 3 SPECIES MIN.) PER 100 LF
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT E12 62.8 LF SEGMENT - 25' TYPE 'B' ENHANCED
REQUIRED: 4 CANOPY TREES (2 EVERGREEN MIN.), 2 ORNAMENTAL TREES (1 EVERGREEN MIN.) & 19 SHRUBS (8 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT E13 51.6 LF SEGMENT - 25' TYPE 'B' ENHANCED
REQUIRED: 3 CANOPY TREES (2 EVERGREEN MIN.), 2 ORNAMENTAL TREES (1 EVERGREEN MIN.) & 16 SHRUBS (7 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS E14-E23 100 LF SEGMENTS - 25' TYPE 'B' ENHANCED
REQUIRED: 5 CANOPY TREES (2 EVERGREEN MIN.), 3 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 30 SHRUBS (12 EVERGREEN & 3 SPECIES MIN.) PER 100 LF
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT E24 84.8 LF SEGMENT - 25' TYPE 'B' ENHANCED
REQUIRED: 5 CANOPY TREES (2 EVERGREEN MIN.), 3 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 26 SHRUBS (11 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT E25 60.1 LF SEGMENT - 15' TYPE 'B' ENHANCED
REQUIRED: 2 CANOPY TREES (1 EVERGREEN MIN.), 2 ORNAMENTAL TREES (1 EVERGREEN MIN.) & 11 SHRUBS (5 EVERGREEN & 2 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS E26-E29 100 LF SEGMENTS - 15' TYPE 'B' ENHANCED
REQUIRED: 3 CANOPY TREES (2 EVERGREEN MIN.), 3 ORNAMENTAL TREES (2 EVERGREEN MIN.) & 18 SHRUBS (8 EVERGREEN & 2 SPECIES MIN.) PER 100 LF
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT E30 61.5 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 4 CANOPY TREES (4 EVERGREEN MIN.) & 25 SHRUBS (20 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS E31-E34 100 LF SEGMENTS - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.) PER 100 LF
PROVIDED: 50' EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT E35 100 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 25' EXISTING VEGETATION, 6 CANOPY TREES (1 DECIDUOUS & 5 EVERGREEN) & 40 EVERGREEN SHRUBS (4 SPECIES)
SEGMENT E36 40.6 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 2
REQUIRED: 4 CANOPY TREES (4 EVERGREEN MIN.) & 25 SHRUBS (20 EVERGREEN & 5 SPECIES MIN.)
PROVIDED: 4 EVERGREEN CANOPY TREES & 25 EVERGREEN SHRUBS (5 SPECIES)
SEGMENTS E37-E39 100 LF SEGMENTS - 50' TYPE 'C' ENHANCED ALT 2
REQUIRED: 8 CANOPY TREES (7 EVERGREEN MIN.) & 60 SHRUBS (48 EVERGREEN & 5 SPECIES MIN.) PER 100 LF
PROVIDED: 8 CANOPY TREES (1 DECIDUOUS & 7 EVERGREEN) & 60 EVERGREEN SHRUBS (6 SPECIES) PER 100 LF

SOUTH PROPERTY BOUNDARY

SEGMENTS S1-S13 100 LF SEGMENTS - 20' STREET BUFFER
REQUIRED: 3 CANOPY TREES, 5 ORNAMENTAL TREES & 30 SHRUBS (3 SPECIES MIN.) PER 100 LF
PROVIDED: 3 CANOPY TREES, 5 ORNAMENTAL TREES & 30 SHRUBS (5 SPECIES) PER 100 LF
SEGMENT S14 57.3 LF SEGMENT - 20' STREET BUFFER
REQUIRED: 2 CANOPY TREES, 3 ORNAMENTAL TREES & 18 SHRUBS (3 SPECIES MIN.)
PROVIDED: 2 CANOPY TREES, 3 ORNAMENTAL TREES & 18 SHRUBS (5 SPECIES)
SEGMENTS S15-S29 100 LF SEGMENTS - 20' STREET BUFFER
REQUIRED: 3 CANOPY TREES, 5 ORNAMENTAL TREES & 30 SHRUBS (3 SPECIES MIN.) PER 100LF
PROVIDED: 3 CANOPY TREES, 5 ORNAMENTAL TREES & 30 SHRUBS (5 SPECIES) PER 100LF
SEGMENT S30 92.6 LF SEGMENT - 20' STREET BUFFER
REQUIRED: 3 CANOPY TREES, 5 ORNAMENTAL TREES & 28 SHRUBS (3 SPECIES MIN.)
PROVIDED: 3 CANOPY TREES, 5 ORNAMENTAL TREES & 28 SHRUBS (5 SPECIES)
SEGMENTS S31-S32 100 LF SEGMENTS - 20' STREET BUFFER
REQUIRED: 3 CANOPY TREES, 5 ORNAMENTAL TREES & 30 SHRUBS (3 SPECIES MIN.) PER 100 LF
PROVIDED: 3 CANOPY TREES, 5 ORNAMENTAL TREES & 30 SHRUBS (5 SPECIES) PER 100 LF
SEGMENT S33 113.8 LF SEGMENT - 20' STREET BUFFER
REQUIRED: 4 CANOPY TREES, 6 ORNAMENTAL TREES & 35 SHRUBS (3 SPECIES MIN.)
PROVIDED: 4 CANOPY TREES, 6 ORNAMENTAL TREES & 35 SHRUBS (5 SPECIES)

WEST PROPERTY BOUNDARY

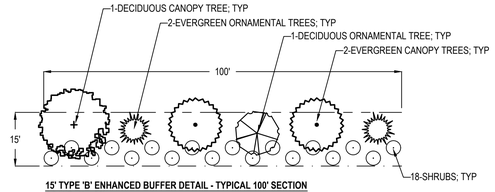
SEGMENT W1 48.9 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 3 CANOPY TREES (3 EVERGREEN MIN.) & 20 SHRUBS (16 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS W2-W4 100 LF SEGMENTS - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.) PER 100 LF
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS W5-W6 100 LF SEGMENTS - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.) PER 100 LF
PROVIDED: 6 CANOPY TREES (1 DECIDUOUS & 5 EVERGREEN) & 40 EVERGREEN SHRUBS (4 SPECIES) PER 100 LF
SEGMENT W7 43.3 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 3 CANOPY TREES (3 EVERGREEN MIN.) & 18 SHRUBS (15 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: 3 CANOPY TREES (3 EVERGREEN) & 18 EVERGREEN SHRUBS (4 SPECIES)
SEGMENTS W8-W10 100 LF SEGMENTS - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.) PER 100 LF
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT W11 56.7 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 4 CANOPY TREES (4 EVERGREEN MIN.) & 23 SHRUBS (19 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT W12 59.7 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 4 CANOPY TREES (4 EVERGREEN MIN.) & 24 SHRUBS (20 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENTS W13-E24 100 LF SEGMENTS - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.) PER 100 LF
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT W25 52.5 LF SEGMENT - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 4 CANOPY TREES (4 EVERGREEN MIN.) & 21 SHRUBS (17 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)
SEGMENT W26-W34 100 LF SEGMENTS - 50' TYPE 'C' ENHANCED ALT 1
REQUIRED: 25' EXISTING VEGETATION, 6 CANOPY TREES (5 EVERGREEN MIN.) & 40 SHRUBS (32 EVERGREEN & 3 SPECIES MIN.)
PROVIDED: EXISTING VEGETATION TO REMAIN UNDISTURBED (TREE PRESERVATION AREA)

PUMP STATION

PERIMETER 180 LF - 10' TYPE 'B' BUFFER
(NOTE - WESTERN PERIMETER IS BUFFERED BY 50' TYPE 'C' PERIMETER BUFFER)
REQUIRED: 6 TREES (3 EVERGREEN MIN.) & 18 SHRUBS (8 EVERGREEN MIN.)
PROVIDED: 6 TREES (2 DECIDUOUS & 4 EVERGREEN) & 18 EVERGREEN SHRUBS

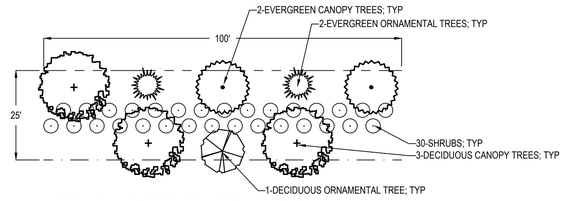
OPEN SPACE

ACTIVE OPEN SPACE #1 847.2 LF - 5' TYPE 'A' BUFFER
REQUIRED: 17 DECIDUOUS TREES & 43 SHRUBS
PROVIDED: 17 DECIDUOUS TREES & 43 SHRUBS
ACTIVE OPEN SPACE #2 1,040.2 LF - 5' TYPE 'A' BUFFER
REQUIRED: 21 DECIDUOUS TREES & 53 SHRUBS
PROVIDED: 21 DECIDUOUS TREES & 53 SHRUBS
ACTIVE OPEN SPACE #3,
FLEX OPEN SPACE #3,
FLEX OPEN SPACE #8 2,544 LF - 5' TYPE 'A' BUFFER
REQUIRED: 51 DECIDUOUS TREES & 128 SHRUBS
PROVIDED: 51 DECIDUOUS TREES & 128 SHRUBS
ACTIVE OPEN SPACE #4 608.5 LF - 5' TYPE 'A' BUFFER
REQUIRED: 13 DECIDUOUS TREES & 31 SHRUBS
PROVIDED: 13 DECIDUOUS TREES & 31 SHRUBS
FLEX OPEN SPACE #1 900 LF - 5' TYPE 'A' BUFFER
REQUIRED: 18 DECIDUOUS TREES & 45 SHRUBS
PROVIDED: 18 DECIDUOUS TREES & 45 SHRUBS
FLEX OPEN SPACE #2 607.4 LF - 5' TYPE 'A' BUFFER
REQUIRED: 13 DECIDUOUS TREES & 31 SHRUBS
PROVIDED: 13 DECIDUOUS TREES & 31 SHRUBS
FLEX OPEN SPACE #4 1,935.1 LF - 5' TYPE 'A' BUFFER
REQUIRED: 39 DECIDUOUS TREES & 97 SHRUBS
PROVIDED: 39 DECIDUOUS TREES & 97 SHRUBS
CONSERVATION OPEN SPACE 408.9 LF - 5' TYPE 'A' BUFFER
REQUIRED: 9 DECIDUOUS TREES & 21 SHRUBS
PROVIDED: 9 DECIDUOUS TREES & 21 SHRUBS



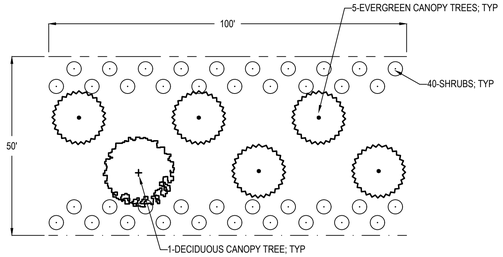
15' TYPE 'B' ENHANCED BUFFER DETAIL - TYPICAL 100' SECTION
SCALE: 1" = 20'
REQUIREMENTS: 3 CANOPY TREES (40% EVERGREEN) PER 100 LF
3 ORNAMENTAL TREES (40% EVERGREEN) PER 100 LF
18 SHRUBS (40% EVERGREEN & 2 SPECIES) PER 100 LF

NOTE: IF THE EXISTING VEGETATION DOES NOT MEET THE INTENT OF THE REQUIRED BUFFER UPON SITE INSPECTION, THE BUFFER WILL BE PLANTED TO MATCH THIS DETAIL.



25' TYPE 'B' ENHANCED BUFFER DETAIL - TYPICAL 100' SECTION
SCALE: 1" = 20'
REQUIREMENTS: 5 CANOPY TREES (40% EVERGREEN) PER 100 LF
3 ORNAMENTAL TREES (40% EVERGREEN) PER 100 LF
30 SHRUBS (40% EVERGREEN & 3 SPECIES) PER 100 LF

NOTE: IF THE EXISTING VEGETATION DOES NOT MEET THE INTENT OF THE REQUIRED BUFFER UPON SITE INSPECTION, THE BUFFER WILL BE PLANTED TO MATCH THIS DETAIL.



50' TYPE 'C' ENHANCED BUFFER DETAIL - TYPICAL 100' SECTION
SCALE: 1" = 20'
REQUIREMENTS: 6 CANOPY TREES (80% EVERGREEN) PER 100 LF
40 SHRUBS (80% EVERGREEN & 3 SPECIES) PER 100 LF

NOTE: IF THE EXISTING VEGETATION DOES NOT MEET THE INTENT OF THE REQUIRED BUFFER UPON SITE INSPECTION, THE BUFFER WILL BE PLANTED TO MATCH THIS DETAIL.

RECOMMENDED BUFFER PLANT SELECTION

KEY	BOTANICAL NAME	COMMON NAME	ROOT	CALIPER (MINIMUM)	HEIGHT (MINIMUM)	TYPE	NOTES
CANOPY TREES							
AFR	Acer x freemanii	Freeman Maple	B&B	2.5"		D	MATCHED
IOP	Ilex opaca	American Holly	B&B		6'	E	MATCHED
JVI	Juniperus virginiana	Eastern Red Cedar	B&B		6'	E	MATCHED
NSY	Nyssa sylvatica	Black Gum	B&B	2.5"		D	MATCHED
QPH	Quercus phellos	Willow Oak	B&B	2.5"		D	MATCHED
UNDERSTORY / ORNAMENTAL TREES							
ACA	Amelanchier canadensis	Serviceberry	B&B	1.5"		D	MATCHED
CCF	Cercis canadensis 'Forest Pansy'	Forest Pansy Redbud	B&B	1.5"		D	MATCHED
CKO	Cornus kousa	Kousa Dogwood	B&B	1.5"		D	MATCHED
IMN	Ilex x 'Mary Nell'	Mary Nell Holly	B&B		4'	E	MATCHED
LIN	Lagerstroemia indica	Crape Myrtle	B&B	1.5"		D	MATCHED
MST	Magnolia stellata	Star Magnolia	B&B	1.5"		D	MATCHED
MVI	Magnolia virginiana	Sweetbay Magnolia	B&B		4'	E	MATCHED
SHRUBS							
AGR	Abelia x grandiflora	Glossy Abelia	CONT.		18"	E	MATCHED
CSA	Camellia sasanqua	Camellia	CONT.		18"	E	MATCHED
ICN	Ilex cornuta 'Needlepoint'	Needlepoint Holly	CONT.		18"	E	MATCHED
IGS	Ilex glabra 'Shamrock'	Shamrock Inkberry Holly	CONT.		18"	E	MATCHED
MCE	Myrica cerifera	Southern Wax Myrtle	CONT.		18"	E	MATCHED
OFO	Osmanthus x fortunei	Fortune's Tea Olive	CONT.		18"	E	MATCHED
VAC	Viburnum awabuki 'Chindo'	Chindo Viburnum	CONT.		18"	E	MATCHED

TYPE / USE LEGEND
PLANT TYPE: E = EVERGREEN / D = DECIDUOUS / SE = SEMI-EVERGREEN / H = HERBACEOUS

NOTE
THESE RECOMMENDED PLANTS ARE TO BE USED IN CONJUNCTION WITH THE TYPICAL BUFFER SECTIONS IF EXISTING VEGETATION DOES NOT MEET THE INTENT OF THE REQUIRED BUFFER AND SUPPLEMENTAL PLANTING IS REQUIRED

D:\DROPBOX\SOUTHWELL DESIGN , PLLC\PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CAD\L-4.0 LANDSCAPE DETAILS.DWG
PLOTTED: 9/5/2025 9:27 PM

REVISIONS:

A	3/14/2025	TOHS COMMENTS #1	
B	4/17/2025	TOHS COMMENTS #2	
C	5/16/2025	TOHS COMMENTS #3	

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: AS SHOWN
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
PRELIMINARY FOR REVIEW ONLY

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING, P.A. EST. 2015 NORTH CAROLINA
NC LIC. NO: P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

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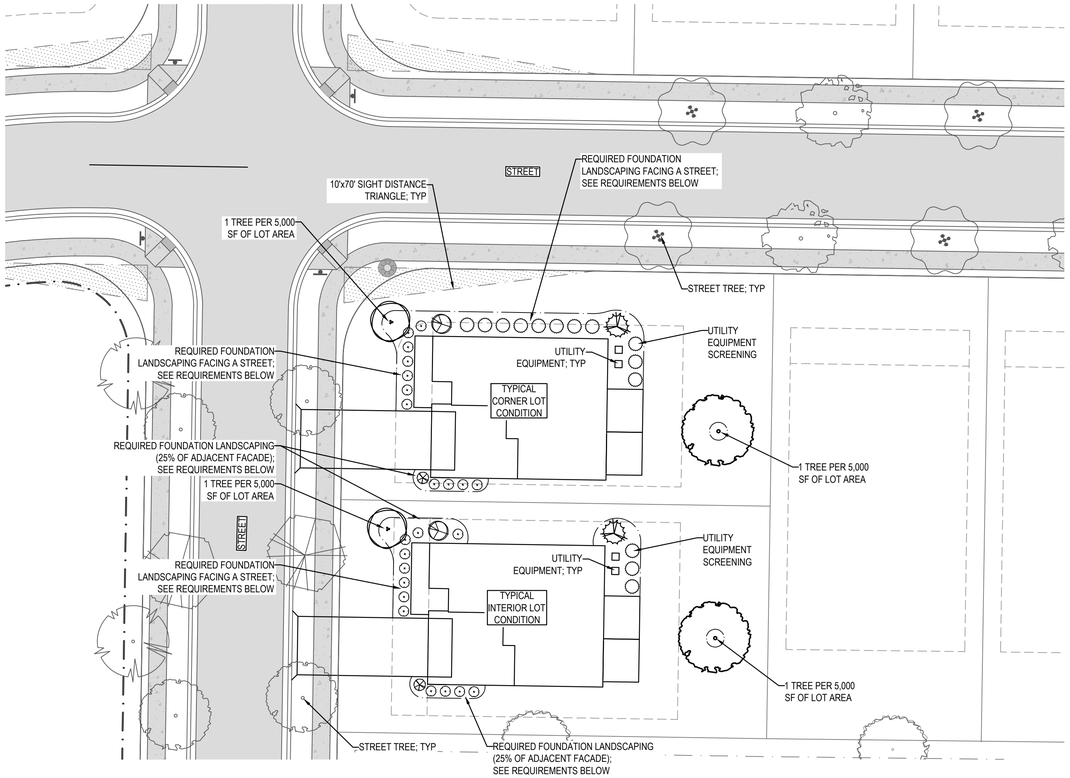
A MARK OF EXCELLENCE IN HOME BUILDING
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS
HAZEL RIDGE SUBDIVISION
LANDSCAPE DETAILS II

L-4.1

RECOMMENDED RESIDENTIAL LOT PLANT SELECTION						
BOTANICAL NAME	**COMMON NAME**	**ROOT**	**CALIPER (MINIMUM)**	**HEIGHT (MINIMUM)**	**TYPE**	**NOTES**
CANOPY TREES						
Acer buergerianum	Trident Maple	B&B	2.5"		D	MATCHED
Acer rubrum 'October Glory'	October Glory® Red Maple	B&B	2.5"		D	MATCHED
Carpinus betulus 'Fastigiata'	European Hornbeam	B&B	2.5"		D	MATCHED
Carpinus caroliniana	American Hornbeam	B&B	2.5"		D	MATCHED
Cryptomeria japonica 'Yoshino'	Japanese Cedar	B&B		6'	E	MATCHED
Ginkgo biloba	Ginkgo	B&B	2.5"		D	MATCHED / MALE CULTIVARS ONLY
Juniperus virginiana	Eastern Red Cedar	B&B		6'	E	MATCHED
Magnolia grandiflora	Southern Magnolia	B&B		6'	E	MATCHED
Nyssa sylvatica	Black Gum	B&B	2.5"		D	MATCHED
Pistacia chinensis	Chinese Pistache	B&B	2.5"		D	MATCHED
Quercus lyrata	Overcup Oak	B&B	2.5"		D	MATCHED
Quercus nuttallii	Nuttall Oak	B&B	2.5"		D	MATCHED
Quercus phellos	Willow Oak	B&B	2.5"		D	MATCHED
Thuja 'Green Giant'	Green Giant Arborviate	B&B		6'	E	MATCHED
Ulmus americana 'Princeton'	American Elm	B&B	2.5"		D	MATCHED
Ulmus parvifolia 'Bosque'	Chinese Elm	B&B	2.5"		D	MATCHED
Zelkova serrata	Japanese Zelkova	B&B	2.5"		D	MATCHED
UNDERSTORY / ORNAMENTAL TREES						
Acer palmatum 'Bloodgood'	Bloodgood Japanese Maple	CONT.	1.5"		D	MATCHED
Amelanchier canadensis	Serviceberry	B&B	1.5"		D	MATCHED
Cercis canadensis	Eastern Redbud	B&B	1.5"		D	MATCHED
Chionanthus virginicus	White Fringe Tree	B&B	1.5"		D	MATCHED
Chionanthus retusus	Chinese Fringe Tree	B&B	1.5"		D	MATCHED
Cornus florida	Flowering Dogwood	B&B	1.5"		D	MATCHED
Cornus kousa	Kousa Dogwood	B&B	1.5"		D	MATCHED
Cryptomeria japonica 'Radicans'	Japanese Cedar	B&B		4'	E	MATCHED
Ilex x attenuata 'Fosteri'	Foster Holly	B&B		4'	E	MATCHED
Ilex x 'Emily Bruner'	Emily Bruner Holly	B&B		4'	E	MATCHED
Ilex x 'Mary Nell'	Mary Nell Holly	B&B		4'	E	MATCHED
Ilex x 'Nellie R. Stevens'	Nellie Steven's Holly	B&B		4'	E	MATCHED
Ilex x 'Oakleaf'	Oakleaf Holly	B&B		4'	E	MATCHED
Ilex x 'Robin'	Robin Holly	B&B		4'	E	MATCHED
Juniperus chinensis 'Spartan'	Spartan Juniper	B&B		4'	E	MATCHED
Lagerstroemia indica	Crape Myrtle	B&B	1.5"		D	MATCHED
Magnolia grandiflora 'Little Gem'	Little Gem Magnolia	B&B		4'	E	MATCHED
Magnolia stellata	Star Magnolia	CONT.	1.5"		D	MATCHED
Magnolia virginiana	Sweetbay Magnolia	B&B		4'	E	MATCHED
Magnolia x soulangiana	Saucer Magnolia	CONT.	1.5"		D	MATCHED
Prunus serrulata 'Kwanzan'	Kwanzan Cherry	B&B	1.5"		D	MATCHED
Prunus subhirtella 'Autumnalis'	Higan Cherry	B&B	1.5"		D	MATCHED
Prunus x yedoensis	Yoshino Cherry	B&B	1.5"		D	MATCHED
LARGE SHRUBS						
Ilex crenata 'Steeds'	Steeds Holly	CONT.		36"	E	MATCHED
Ilex x 'Emerald Colonnade'	Emerald Colonnade Holly	CONT.		36"	E	MATCHED
Ilex x Liberty 'Conty'	Liberty Holly	CONT.		36"	E	MATCHED
Myrica cerifera	Southern Wax Myrtle	CONT.		36"	E	MATCHED
Osmanthus fragrans	Fragrant Tea Olive	CONT.		36"	E	MATCHED
Osmanthus heterophyllus 'Goshiki'	Goshiki False Holly	CONT.		36"	E	MATCHED
Osmanthus x fortunei	Fortune's Tea Olive	CONT.		36"	E	MATCHED
Prunus laurocerasus 'Schipkaensis'	Schip Laurel	CONT.		36"	E	MATCHED
Thuja occidentalis 'DeGroot's Spire'	DeGroot's Spire Arborvitae	CONT.		36"	E	MATCHED
Thuja occidentalis 'Emerald'	Emerald Arborvitae	CONT.		36"	E	MATCHED
Viburnum awabuki 'Chindo'	Chindo Viburnum	CONT.		36"	E	MATCHED
Viburnum macrocephalum	Snowball Viburnum	CONT.		36"	D	MATCHED
Viburnum tinus 'Spring Bouquet'	Spring Bouquet Viburnum	CONT.		36"	E	MATCHED
MEDIUM SHRUBS						
Abelia x grandiflora	Glossy Abelia	CONT.		24"	E	MATCHED
Aucuba japonica 'Variegata'	Gold Dust Aucuba	CONT.		24"	E	MATCHED
Callicarpa americana	American Beautyberry	CONT.		24"	D	MATCHED
Camellia japonica	Japanese Camellia	CONT.		24"	E	MATCHED
Camellia sasanqua	Sasanqua Camellia	CONT.		24"	E	MATCHED
Cephalotaxus harringtonia 'Duke Gardens'	Duke Gardens Japanese Plum Yew	CONT.		24"	E	MATCHED
Hydrangea spp.	Hydrangea	CONT.		24"	D	MATCHED
Ilex cornuta 'Burfordii Nana'	Dwarf Burford Holly	CONT.		24"	E	MATCHED
Ilex cornuta 'Needlepoint'	Needlepoint Holly	CONT.		24"	E	MATCHED
Ilex crenata 'Sky Pencil'	Sky Pencil Holly	CONT.		24"	E	MATCHED
Ilex glabra	Inkberry Holly	CONT.		24"	E	MATCHED
Loropetalum chinensis	Loropetalum	CONT.		24"	E	MATCHED
Prunus laurocerasus 'Otto Luyken'	Otto Luyken Laurel	CONT.		24"	E	MATCHED
SMALL SHRUBS						
Abelia x grandiflora 'Kaleidoscope'	Kaleidoscope Abelia	CONT.		18"	E	MATCHED
Abelia x grandiflora 'Little Richard'	Little Richard Abelia	CONT.		18"	E	MATCHED
Abelia x 'Mardi Gras'	Mardi Gras Abelia	CONT.		18"	E	MATCHED
Abelia x 'Rose Creek'	Rose Creek Abelia	CONT.		18"	E	MATCHED
Azalea 'Gumpo Pink' (Satsuki hybrid)	Pink Gumpo Azalea	CONT.		18"	E	MATCHED
Azalea 'Gumpo White' (Satsuki hybrid)	White Gumpo Azalea	CONT.		18"	E	MATCHED
Chamaecyparis pisifera 'Golden Mops'	Goldmop Cypress	CONT.		18"	E	MATCHED
Cryptomeria japonica 'Globosa Nana'	Dwarf Cryptomeria	CONT.		18"	E	MATCHED
Daphne odora	Winter Daphne	CONT.		18"	E	MATCHED
Distylium 'PIIDIST-V'	Cinnamon Girl® Distylium	CONT.		18"	E	MATCHED
Fothergilla major 'Mount Airy'	Fothergilla	CONT.		18"	D	MATCHED
Gardenia jasminoides	Gardenia	CONT.		18"	E	MATCHED
Ilex cornuta 'Carissa'	Carissa Holly	CONT.		18"	E	MATCHED
Ilex crenata 'Compacta'	Compacta Holly	CONT.		18"	E	MATCHED
Ilex crenata 'Helleri'	Helleri Holly	CONT.		18"	E	MATCHED
Ilex vomitoria 'Nana'	Dwarf Yaupon Holly	CONT.		18"	E	MATCHED
Itea virginica	Virginia Sweetspire	CONT.		18"	D	MATCHED
Rhododendron 'Encore'	Encore Azalea	CONT.		18"	E	MATCHED
Thuja occidentalis 'Hetz Midget'	Hetz Midget Arborvitae	CONT.		18"	E	MATCHED
Viburnum davidii	David Viburnum	CONT.		18"	E	MATCHED
TYPE / USE LEGEND						
PLANT TYPE: E = EVERGREEN / D = DECIDUOUS / SE = SEMI-EVERGREEN / H = HERBACEOUS						



TYPICAL LOT LANDSCAPE LAYOUT
SCALE: 1" = 20'

REQUIREMENTS: ALL NEW DETACHED RESIDENTIAL LOTS SHALL BE REQUIRED TO PLANT 1 TREE PER 5,000 SQUARE FEET OF LOT AREA. SEE MINIMUM ALLOWED PLANT SIZES PER PLANT TYPE BELOW.

FOUNDATION LANDSCAPING IS REQUIRED ALONG ANY BUILDING FACADE FACING A STREET, AS WELL AS ALONG 25% OF THE ADJACENT FACADE. SEE MINIMUM ALLOWED PLANT SIZES PER PLANT TYPE BELOW.
FOUNDATION LANDSCAPING MINIMUM REQUIREMENTS:
- 1 LARGE SHRUB PER 5 LINEAR FEET OF BUILDING FOUNDATION, OR
- 1.5 MEDIUM SHRUBS PER 5 LINEAR FEET OF BUILDING FOUNDATION, OR
- 3 SMALL SHRUBS PER 5 LINEAR FEET OF BUILDING FOUNDATION

MINIMUM ALLOWED PLANT SIZES AT THE TIME OF INSTALLATION:

OVERSTORY DECIDUOUS TREES	2.5" CALIPER
ORNAMENTAL DECIDUOUS TREES	1.5" CALIPER
OVERSTORY EVERGREEN TREES	6' HEIGHT
SMALL EVERGREEN TREES	4' HEIGHT
LARGE SHRUBS	36" HEIGHT
MEDIUM SHRUBS	24" HEIGHT
SMALL SHRUBS	18" HEIGHT

D:\DROPBOX\SOUTHWELL DESIGN, P\LLC\PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*\CADL-4.0 LANDSCAPE DETAILS.DWG
PLOTTED: 5/15/2025 9:28 PM

REVISIONS

A	3/14/2025	TOHS COMMENTS #1
B	4/17/2025	TOHS COMMENTS #2
C	5/16/2025	TOHS COMMENTS #3

STATUS
FOR REGULATORY REVIEW ONLY
NOT FOR CONSTRUCTION

DATE: JANUARY 3, 2025 | HORZ. SCALE: AS SHOWN
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
PRELIMINARY FOR REVIEW ONLY
ADAM SOUTHWELL — NORTH CAROLINA — 17007

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING — EST. 1.0 — NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

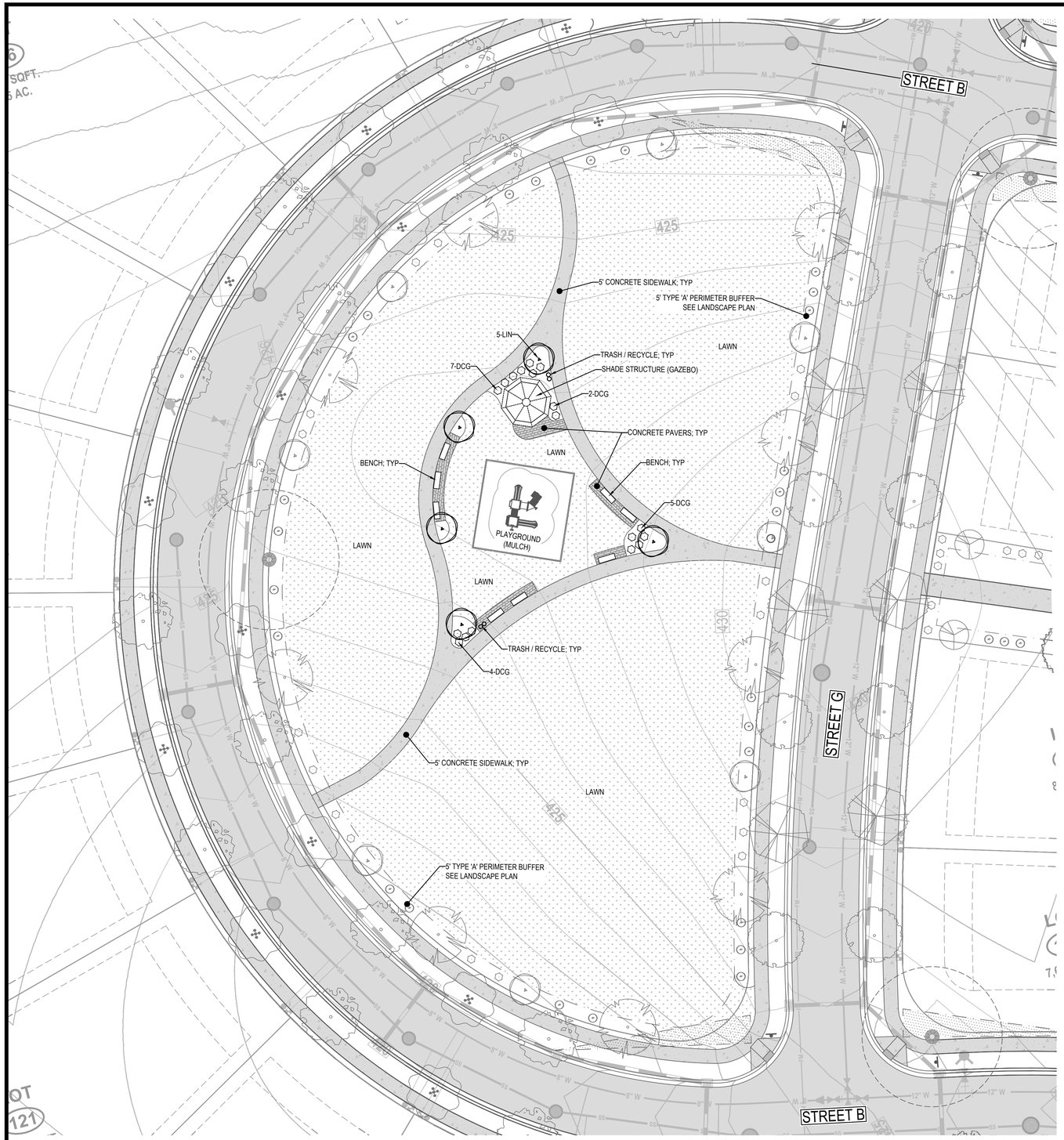
PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

LANDSCAPE DETAILS III

L-4.2



LEGEND

- GAZEBO
- BENCH
- TRASH / RECYCLE
- CONCRETE SIDEWALK
- CONCRETE PAVERS
- CRUSHED AGGREGATE

UNDERSTORY / ORNAMENTAL TREES:

- ACA - AMELANCHIER CANADENSIS
- MVI - MAGNOLIA VIRGINIANA
- CKO - CORNUS KOUSA
- LIN - LAGERSTROEMIA INDICA

SHRUBS:

- CAM - CALLICARPA AMERICANA
- CAL - CLETHRA ALNIFOLIA
- CFL - CALYCANTHUS FLORIDUS
- IGS - ILEX GLABRA 'SHAMROCK'
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- LCA - LOBELIA CARDINALIS
- RFU - RUDBECKIA FULGIDA
- SSC - SCHIZACHYRIUM SCOPARIUM

GROUNDCOVER:

- LAWN

SCALE: 1 IN = 20 FT

20' 10' 0 20' 40'

SCALE IN FEET
HORIZONTAL

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CAD\L-5.X AMENITY LAYOUT.DWG
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REVISIONS		
A	3/14/2025	TOHS COMMENTS #1
B	4/17/2025	TOHS COMMENTS #2
C	5/16/2025	TOHS COMMENTS #3

STATUS
FOR REGULATORY REVIEW ONLY
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DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 20'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

PRELIMINARY FOR REVIEW ONLY

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING NORTH CAROLINA EST. 2010

NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043

205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

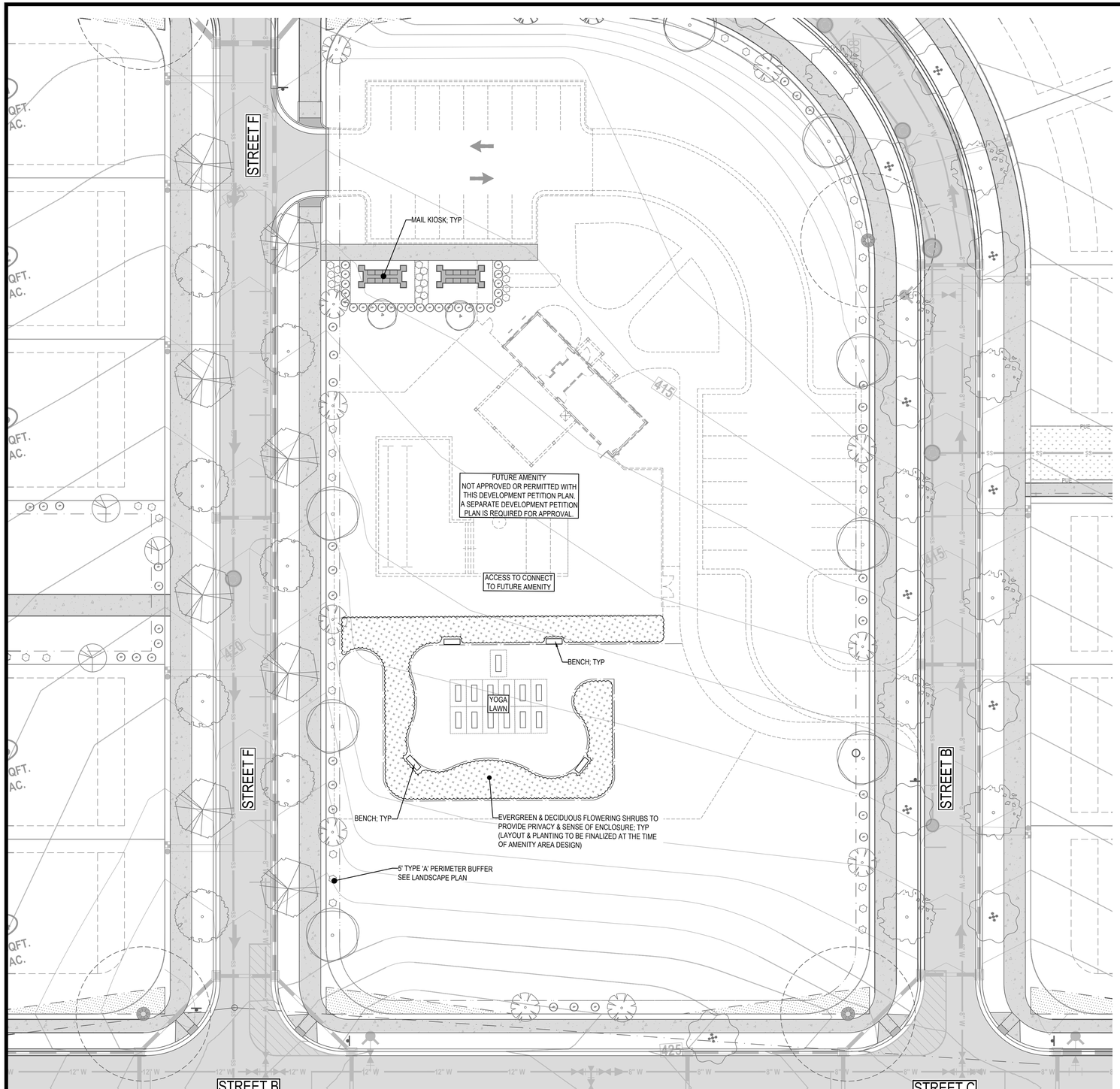
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

ACTIVE OPEN SPACE #1 LAYOUT

L-5.0



LEGEND

- GAZEBO
- BENCH
- TRASH / RECYCLE
- CONCRETE SIDEWALK
- CONCRETE PAVERS
- CRUSHED AGGREGATE

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- LCA - LOBELIA CARDINALIS
- RFU - RUDBECKIA FULGIDA
- SSC - SCHIZACHYRIUM SCOPARIUM

GROUNDCOVER:

- LAWN

SCALE: 1 IN = 20 FT

20' 10' 0 20' 40'

SCALE IN FEET
HORIZONTAL

D:\DROPBOX\SOUTHWELL DESIGN, PLLC*PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CAD\L-5.X AMENITY LAYOUT.DWG
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REVISIONS

A	3/14/2025	TOHS COMMENTS #1
B	4/17/2025	TOHS COMMENTS #2
C	5/16/2025	TOHS COMMENTS #3

STATUS
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DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 20'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
PRELIMINARY FOR REVIEW ONLY
ADAM SOUTHWELL

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 10 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

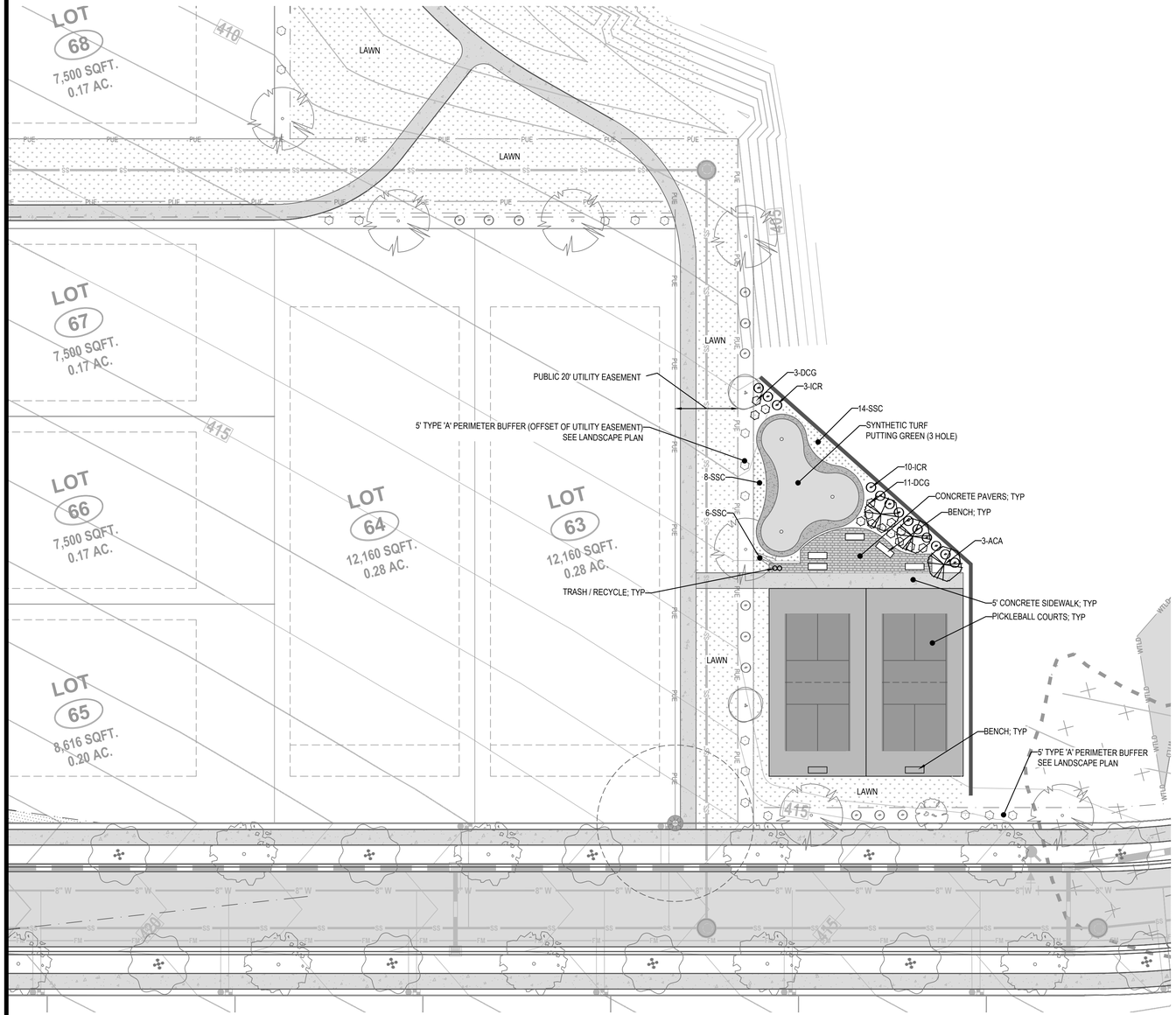
PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

ACTIVE OPEN SPACE #2 LAYOUT

L-5.1



LEGEND

GAZEBO

BENCH

TRASH / RECYCLE

CONCRETE SIDEWALK

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CRUSHED AGGREGATE

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CAL - CLETHRA ALNIFOLIA

CFL - CALYCANTHUS FLORIDUS

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DCG - DISTYLIUM 'CINNAMON GIRL'

ICR - ILEX CRENATA 'COMPACTA'

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BAU - BAPTISIA AUSTRALIS

LCA - LOBELIA CARDINALIS

RFU - RUDBECKIA FULGIDA

SSC - SCHIZACHYRIUM SCOPARIUM

GROUNDCOVER:

LAWN

SCALE: 1 IN = 20 FT

20' 10' 0 20' 40'

SCALE IN FEET
HORIZONTAL

REVISIONS

A	3/14/2025	TOHS COMMENTS #1
B	4/17/2025	TOHS COMMENTS #2
C	5/16/2025	TOHS COMMENTS #3

STATUS
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DATE: JANUARY 3, 2025 | HORZ. SCALE: 1" = 20'
FILE NO. 2023-046 | ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL

CARY, NORTH CAROLINA
PRELIMINARY
FOR REVIEW ONLY
ADAM SOUTHWELL

CONSULTANT

Curry ENGINEERING

CURRY ENGINEERING EST. 1.0 NORTH CAROLINA
NC LIC. NO. P-0799

T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT

GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING

Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

DEVELOPMENT PETITION PLANS

HAZEL RIDGE SUBDIVISION

ACTIVE OPEN SPACE #3 LAYOUT

L-5.2

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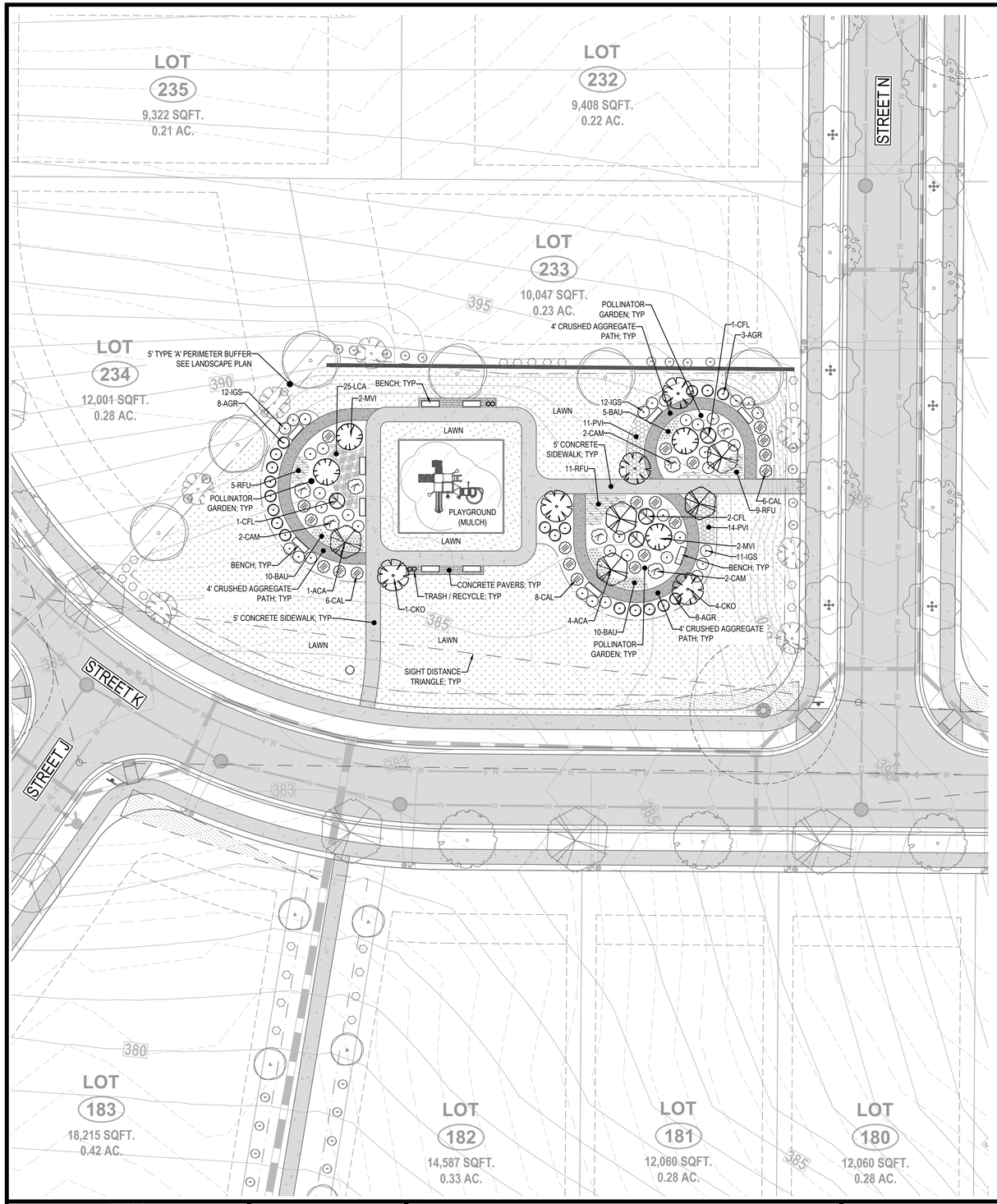

LEGEND

- GAZEBO
- BENCH
- TRASH / RECYCLE
- CONCRETE SIDEWALK
- CONCRETE PAVERS
- CRUSHED AGGREGATE

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- LCA - LOBELIA CARDINALIS
- RFU - RUDBECKIA FULGIDA
- SSC - SCHIZACHYRIUM SCOPARIUM

GROUNDCOVER:

- LAWN

SCALE: 1 IN = 20 FT
20' 10' 0 20' 40'
SCALE IN FEET HORIZONTAL

D:\DROPBOX\SOUTHWELL DESIGN, PLLC\PROJECTS\CURRY ENGINEERING\HAZEL RIDGE SUBDIVISION*CAD\L-5.X AMENITY LAYOUT.DWG
PLOTTED: 5/15/2025 9:33 PM

REVISIONS			
A	3/14/2025	TOHS COMMENTS #1	
B	4/17/2025	TOHS COMMENTS #2	
C	5/16/2025	TOHS COMMENTS #3	

STATUS
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FILE NO. 2023-046	ORIG. SHEET SIZE: 24 x 36

PROFESSIONAL'S SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
PRELIMINARY FOR REVIEW ONLY
1760
ROBERT ADAM SOUTHWELL

CONSULTANT
Curry ENGINEERING
CURRY ENGINEERING EST. 1910 NORTH CAROLINA
NC LIC. NO. P-0799
T (919) 552-0849
F (919) 552-2043
205 S. Fuquay Avenue
Fuquay-Varina, NC 27526

CLIENT
GANDER DEVELOPMENT
A PARTNER IN COMMUNITY BUILDING
PROPERTY INFORMATION
DUNCAN COOK HOLDINGS LLC
PIN: 0646-39-8124 REID: 0062443
ZONING: SR-CD
DK: 19083 PG: 2299

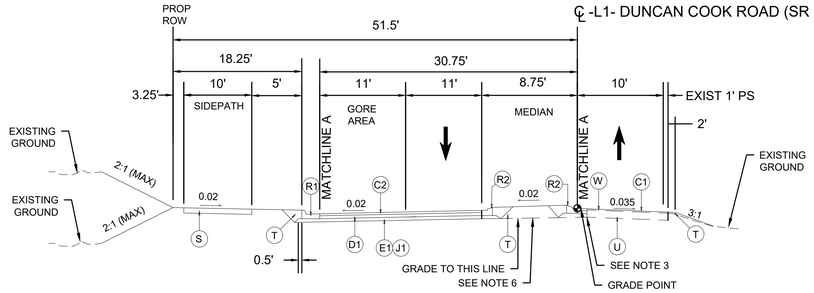
Gander Development
2310 S. Miami Bldv., Ste. 238
Durham, NC 27703
919.308.2123 (M)
Contact: Paul Burger
paul@ganderdev.com

DEVELOPMENT PETITION PLANS

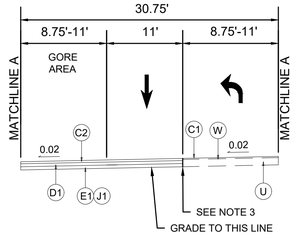
HAZEL RIDGE SUBDIVISION

ACTIVE OPEN SPACE #4 LAYOUT

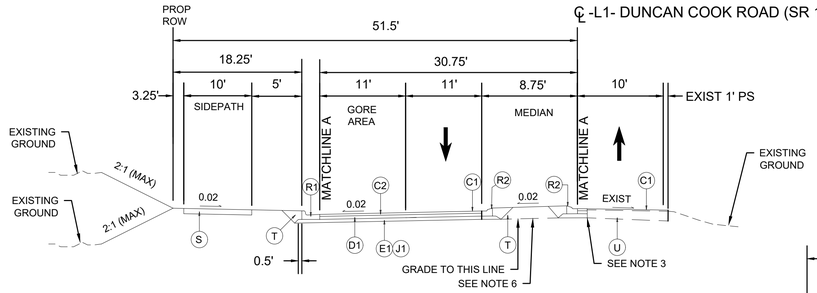
L-5.3



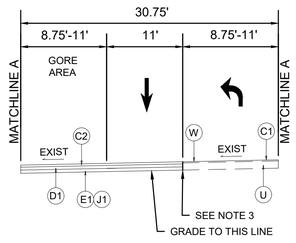
TYPICAL SECTION NO. 3
-L1- STA 41+00.00 TO STA 47+50.00



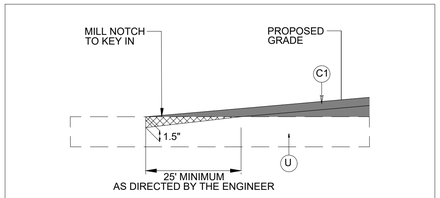
TYPICAL SECTION NO. 3A
-L1- STA 41+45.00 TO STA 44+60.00



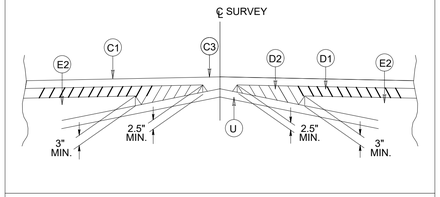
TYPICAL SECTION NO. 2
-L1- STA 12+80.00 TO STA 41+00.00



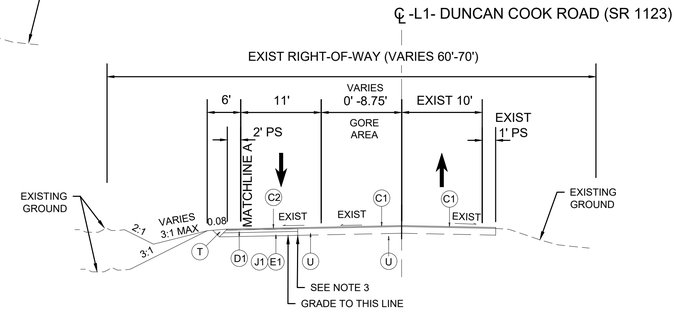
TYPICAL SECTION NO. 2A
-L1- STA 24+55.00 TO STA 27+70.00



INCIDENTAL MILLING DETAIL



METHOD OF WEDGING



TYPICAL SECTION NO. 1
-L1- STA 7+80.00 TO STA 12+80.00
-L1- STA 47+50.00 TO STA 51+75.00

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1-1/2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2-1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5-1/2" IN DEPTH.
J1	PROP. 10" AGGREGATE BASE COURSE (MAY BE SUBSTITUTED FOR E1 IN AREAS WIDER THAN 6')
R1	PROP. 2'-6" CONCRETE CURB & GUTTER
R2	PROP. 1'-6" CONCRETE CURB & GUTTER
S	PROP. 4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	VARIABLE DEPTH MILLING (0"-1.5")
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL THIS SHEET)

NOTES:
1. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
2. REFER TO PLAN SHEETS FOR VARIABLE WIDTHS.
3. SAWCUT AND REMOVE EXISTING ASPHALT PAVEMENT TO PROVIDE 2' MINIMUM FULL DEPTH ASPHALT PAVEMENT.
4. CONTRACTOR IS REQUIRED TO PROVIDE ASPHALT PATCH TO REPAIR PAVEMENT AS NEEDED WITHIN PROJECT LIMITS PRIOR TO OVERLAY.
5. UTILIZE VARIABLE DEPTH MILLING TO MATCH EXISTING ELEVATION AT EXISTING EDGE OF PAVEMENT.
6. REMOVE EXISTING PAVEMENT AND AGGREGATE SUBGRADE (IF APPLICABLE) UNDER PROPOSED MEDIAN.

EXULT® ENGINEERING
301 S. Main Street
Kannapolis, NC 28081
980.495.2250
www.exultengineering.com
NC License #C-4445

HAZEL RIDGE ROADWAY AND SIGNAL IMPROVEMENTS

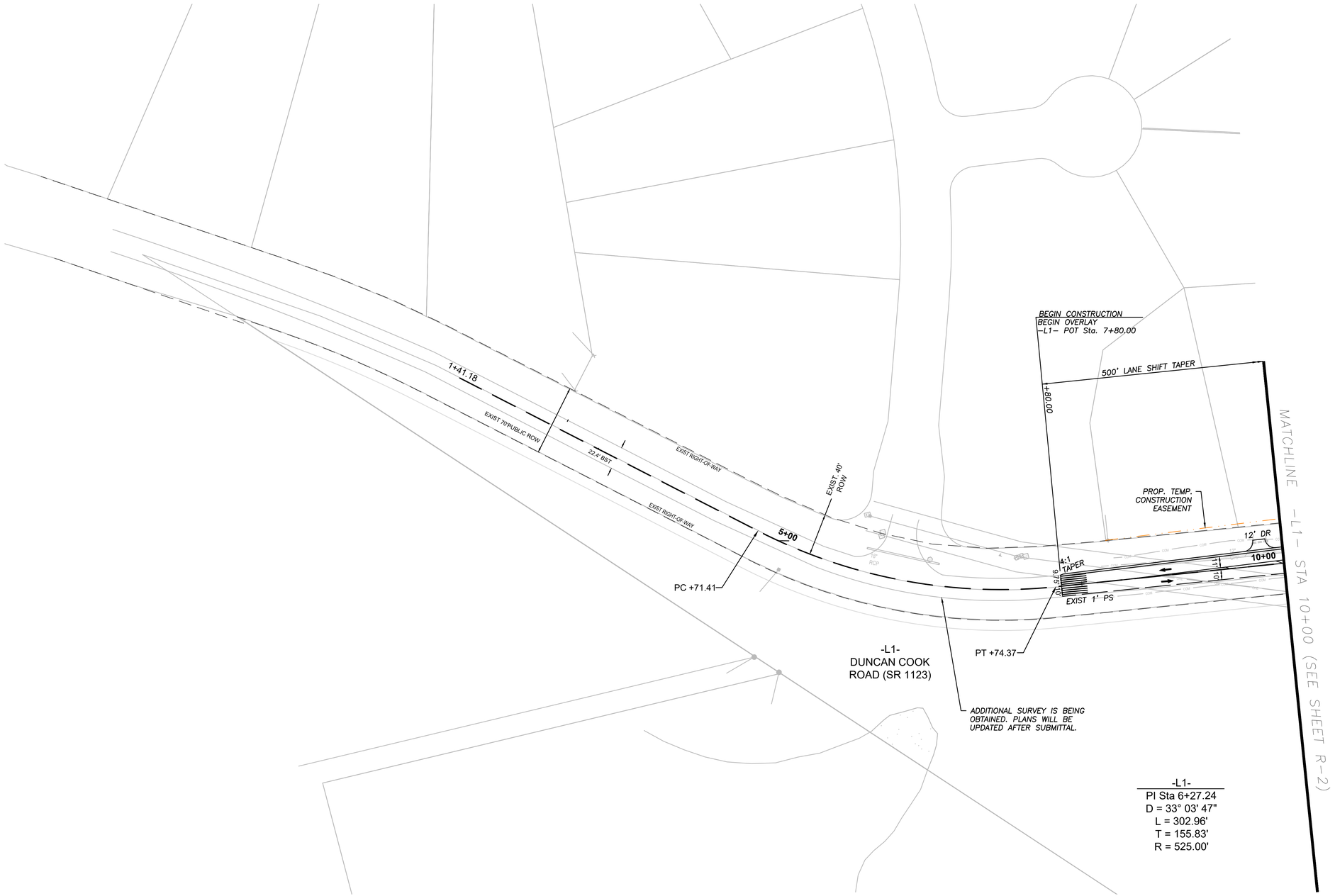
TYPICAL SECTIONS

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 051970 ENGINEER GARRETT BOYLE
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
SIGNATURE DATE

DESIGNED BY: RLM
REVIEWED BY: GCB
JOB NO: 000105004
DATE: 5/5/2025

DESCRIPTION	INIT.	DATE

SHEET NO.
4A



0 50 100 150 200

SCALE: 1" = 50'

Notes:

1. RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS).
2. CROSS SLOPES VARY ALONG -L1-. MATCH EXISTING CROSS SLOPES.REFER TO CROSS SECTIONS.
3. UNLESS OTHERWISE NOTED DRIVEWAY MATERIAL WILL BE ASPHALT WITH 10' TURNING RADII.
4. RELOCATE EXISTING COMMUNICATION AND FIBER OPTIC UTILITY LINES OUTSIDE THE LIMITS OF THE PROPOSED WIDENING.

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HAZEL RIDGE ROADWAY AND SIGNAL IMPROVEMENTS

PLAN SHEET

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 051970 ENGINEER GARRETT BOYLE

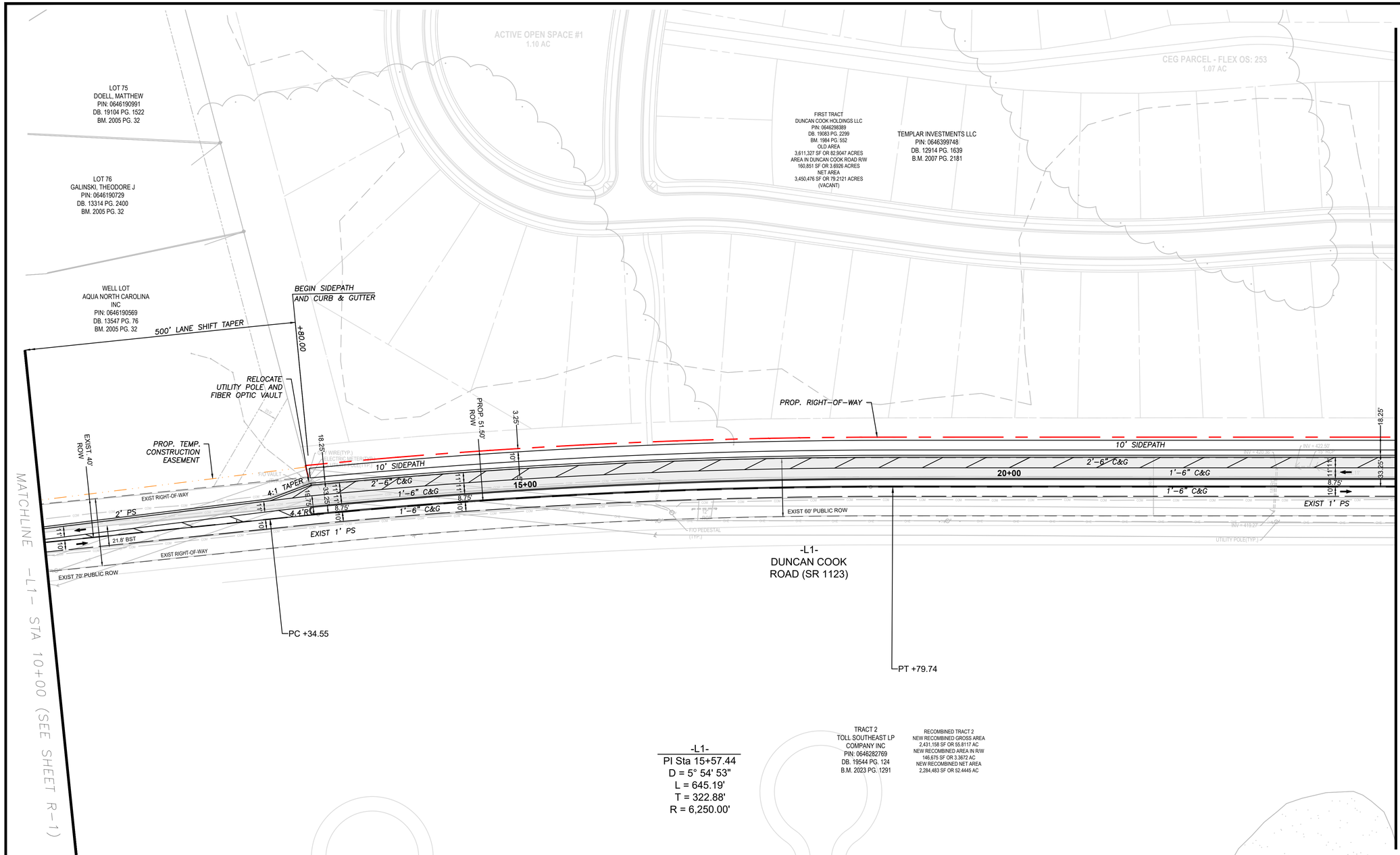
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

SIGNATURE DATE

DESIGNED BY: RLM
REVIEWED BY: GCB
JOB NO: 000105004
DATE: 5/15/2025

DESCRIPTION	INIT.	DATE

SHEET NO.
R-1



INCIDENTAL MILLING

ROADWAY WIDENING/ FULL-DEPTH PAVEMENT

Notes:

1. RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS).
2. RT CROSS SLOPES VARY ALONG -L1-. TIE TO EXISTING EDGE OF PAVEMENT.REFER TO CROSS SECTIONS.
3. UNLESS OTHERWISE NOTED DRIVEWAY MATERIAL WILL BE ASPHALT WITH 10' TURNING RADII.
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GARRETT BOYLE
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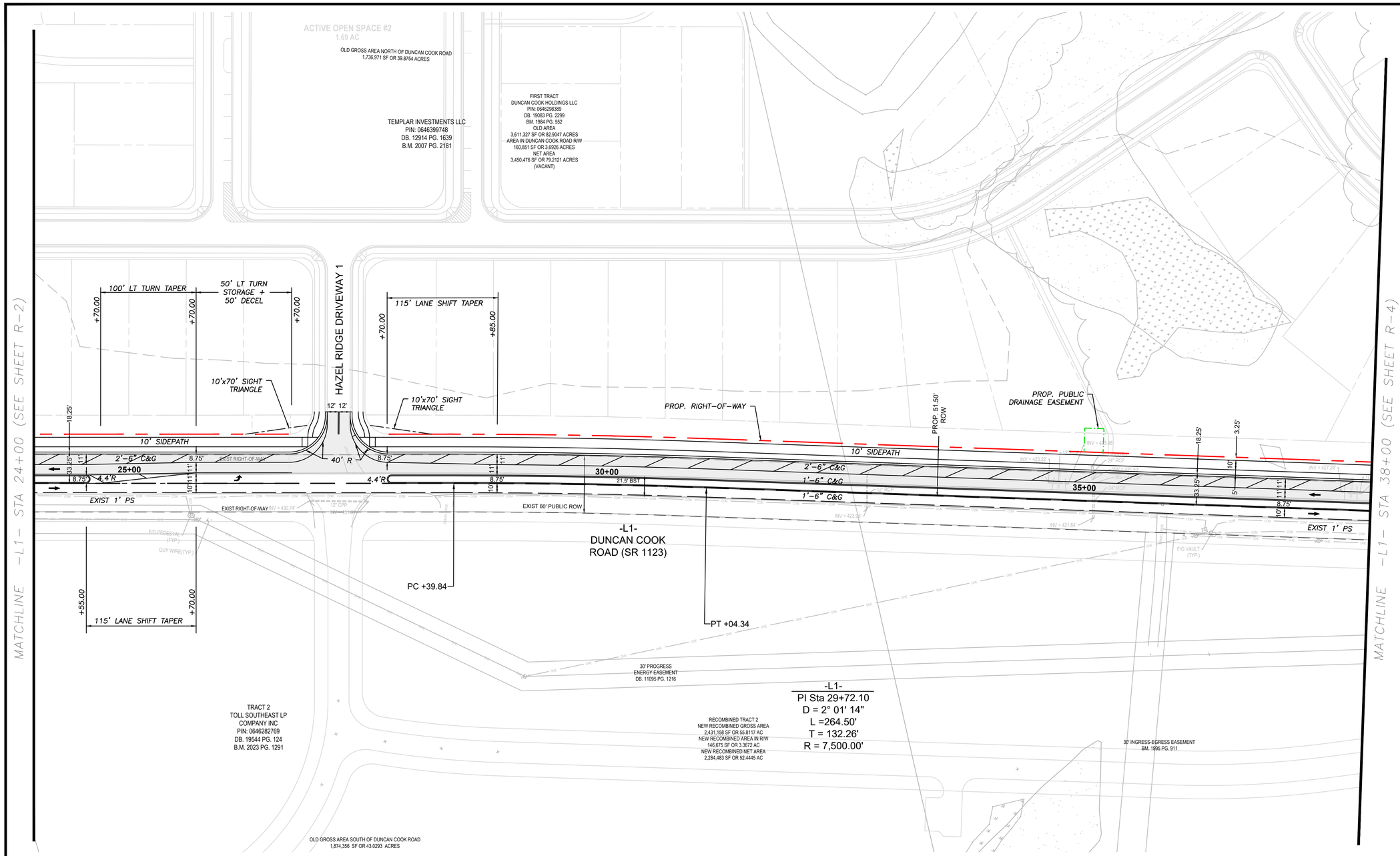
DESCRIPTION	INIT.	DATE

JOB NO: 000105004
DATE: 5/15/2025
REVIEWED BY: GCB
DESIGNED BY: RLM

SHEET NO.
R-2



0 50 100 150 200

SCALE: 1" = 50'

INCIDENTAL MILLING

ROADWAY WIDENING/ FULL-DEPTH PAVEMENT

Notes:

1. RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS).
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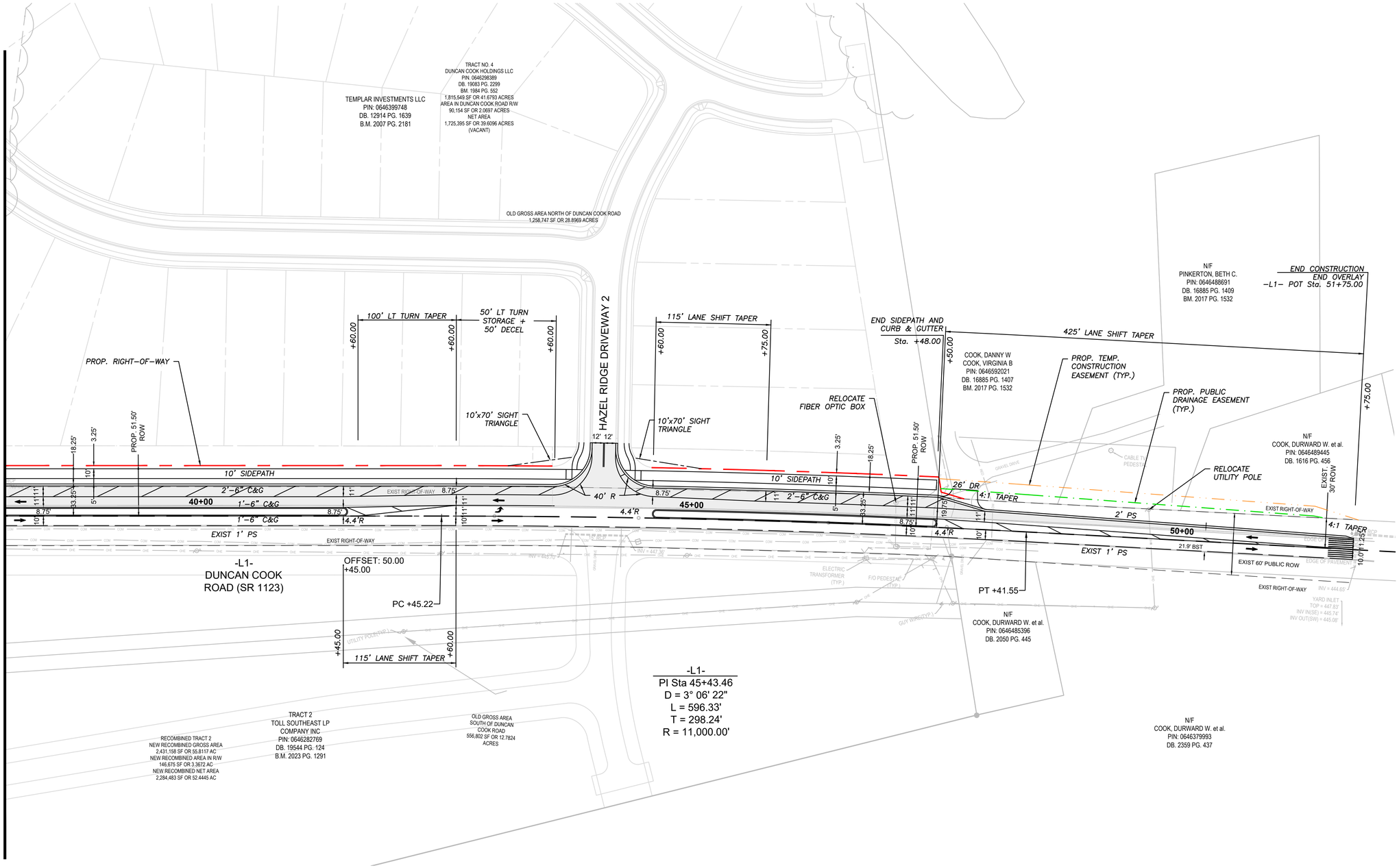
SIGNATURE DATE

DESIGNED BY: RLM
REVIEWED BY: GCB
JOB NO: 000105004
DATE: 5/15/2025

DESCRIPTION	INIT.	DATE

SHEET NO.

R-3



INCIDENTAL MILLING

ROADWAY WIDENING/ FULL-DEPTH PAVEMENT

Notes:

1. *RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS).*
2. *RT CROSS SLOPES VARY ALONG -L1-. TIE TO EXISTING EDGE OF PAVEMENT. LT CROSS SLOPES VARY ALONG -L1- FROM STA 47+50 TO 51+75. MATCH EXISTING CROSS SLOPES. REFER TO CROSS SECTIONS.*
3. *UNLESS OTHERWISE NOTED DRIVEWAY MATERIAL WILL BE ASPHALT WITH 10' TURNING RADII.*
4. *RELOCATE EXISTING COMMUNICATION AND FIBER OPTIC UTILITY LINES OUTSIDE THE LIMITS OF THE PROPOSED WIDENING.*

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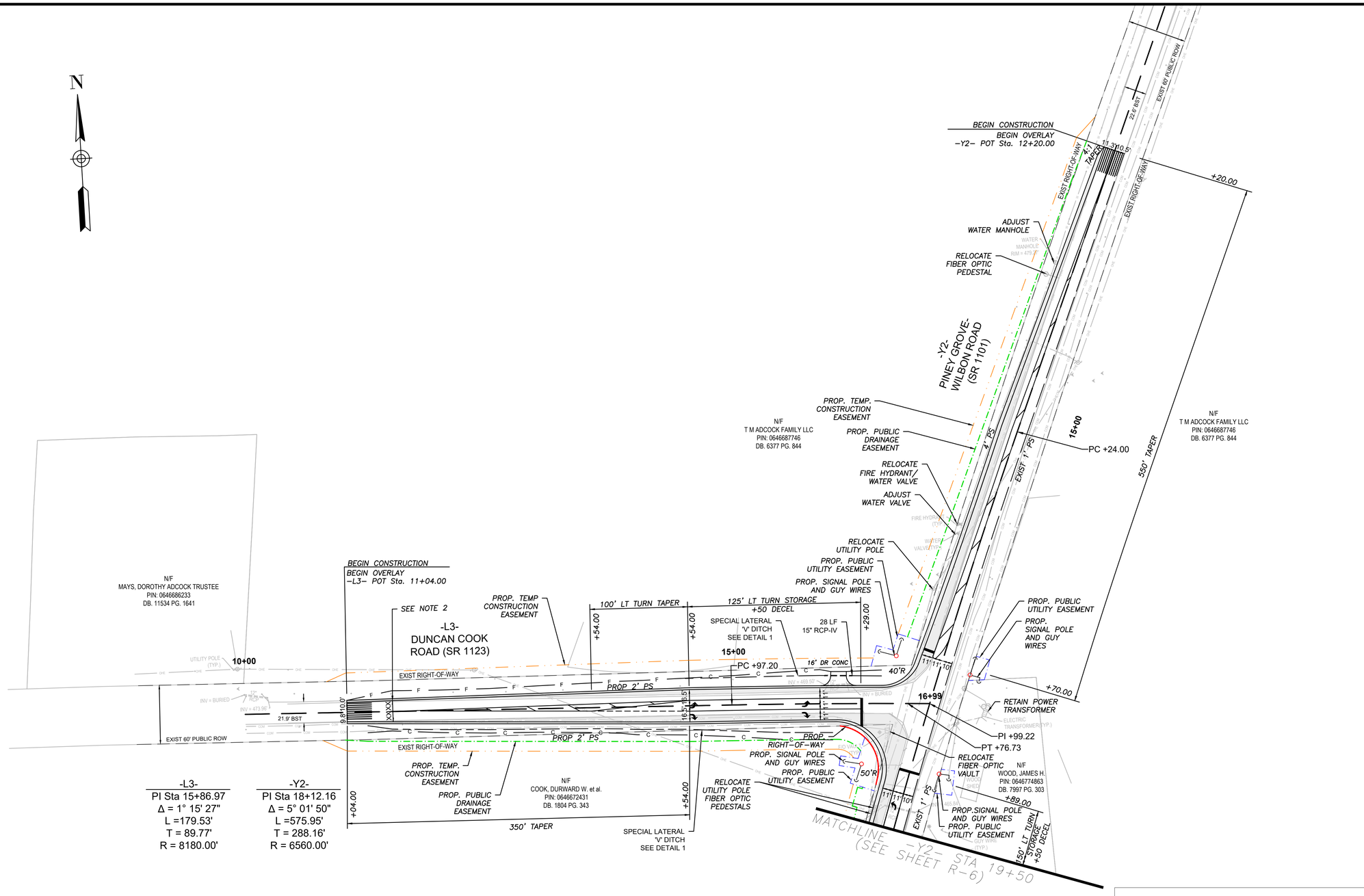
JOB NO: 000105004	DESIGNED BY: RLM
DATE: 5/15/2025	REVIEWED BY: GCB

DESCRIPTION	INT.	DATE

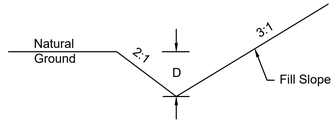
SHEET NO.
R-4



DETAIL 1

SPECIAL LATERAL 'V' DITCH

(Not to Scale)



FROM -L3- STA. 11+25 TO STA. 16+00 RT
FROM -L3- STA. 14+50 TO STA. 16+50 LT

INCIDENTAL MILLING

ROADWAY WIDENING/ FULL–DEPTH PAVEMENT

Notes:

1. RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS).
2. CROSS SLOPES VARY ALONG –L3– MATCH EXISTING CROSS SLOPES. REFER TO CROSS SECTIONS.
3. UNLESS OTHERWISE NOTED DRIVEWAY MATERIAL WILL BE ASPHALT WITH 10' TURNING RADII. (2" S9.5B AND 8" ABC). CONCRETE DRIVEWAYS WILL BE 6" DEPTH.
4. RELOCATE EXISTING COMMUNICATION AND FIBER OPTIC UTILITY LINES OUTSIDE THE LIMITS OF THE PROPOSED WIDENING.

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NORTH CAROLINA PROFESSIONAL SEAL 051970 ENGINEER GARRETT BOYLE

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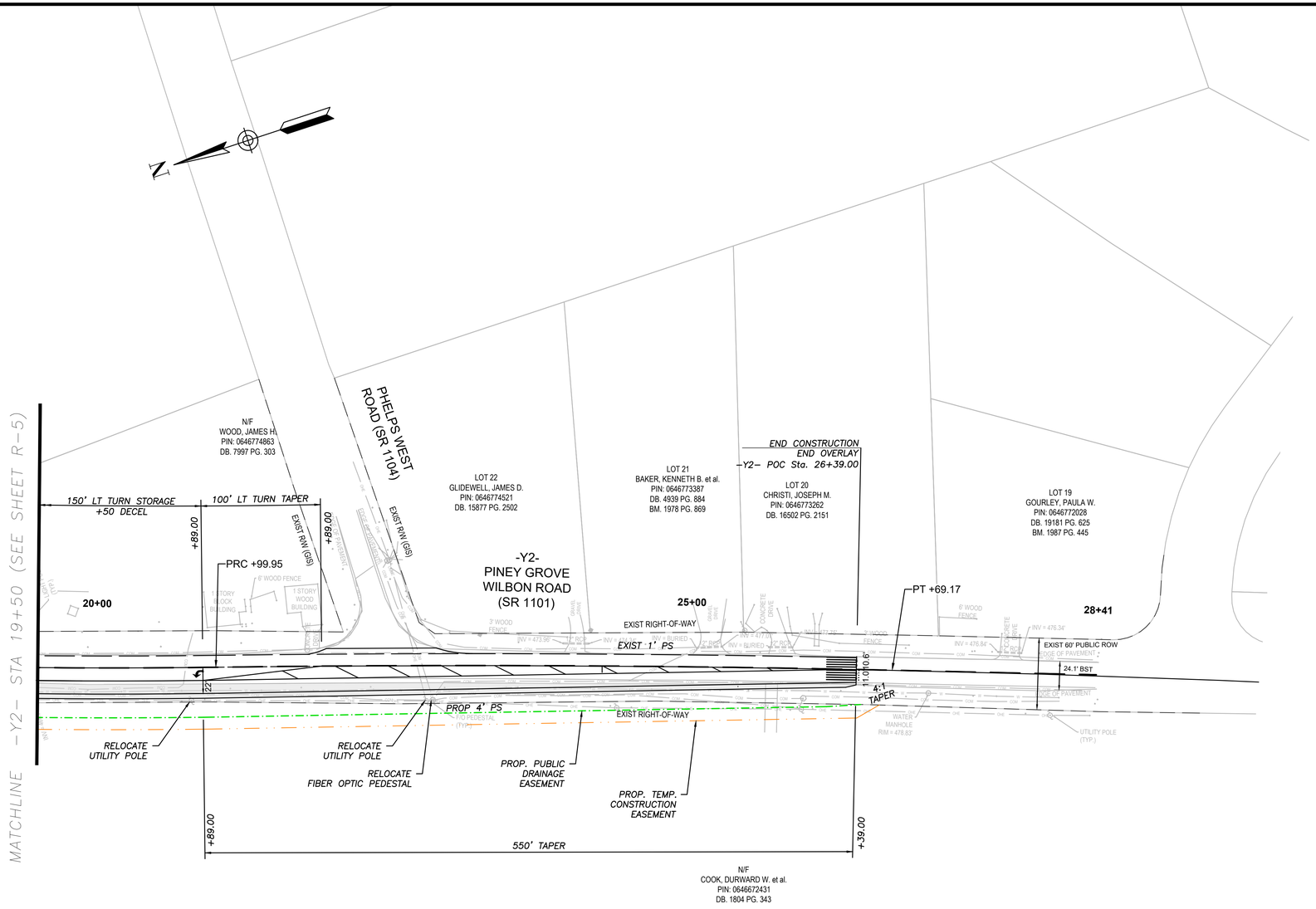
SIGNATURE DATE

DESIGNED BY: RLM	REVIEWED BY: GCB		
JOB NO: 000105004	DATE: 5/15/2025		

DESCRIPTION	INT.	DATE

SHEET NO.

R-5



-Y2-
PI Sta 23+84.59
Δ = 2° 02' 41"
L =569.22'
T = 284.64'
R = 15950.00'

0 50 100 150 200
SCALE: 1" = 50'

INCIDENTAL MILLING

ROADWAY WIDENING/ FULL-DEPTH PAVEMENT

Notes:
1. RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS).
2. CROSS SLOPES VARY ALONG -Y2-. MATCH EXISTING CROSS SLOPES. REFER TO CROSS SECTIONS.
3. UNLESS OTHERWISE NOTED DRIVEWAY MATERIAL WILL BE ASPHALT WITH 10' TURNING RADII.
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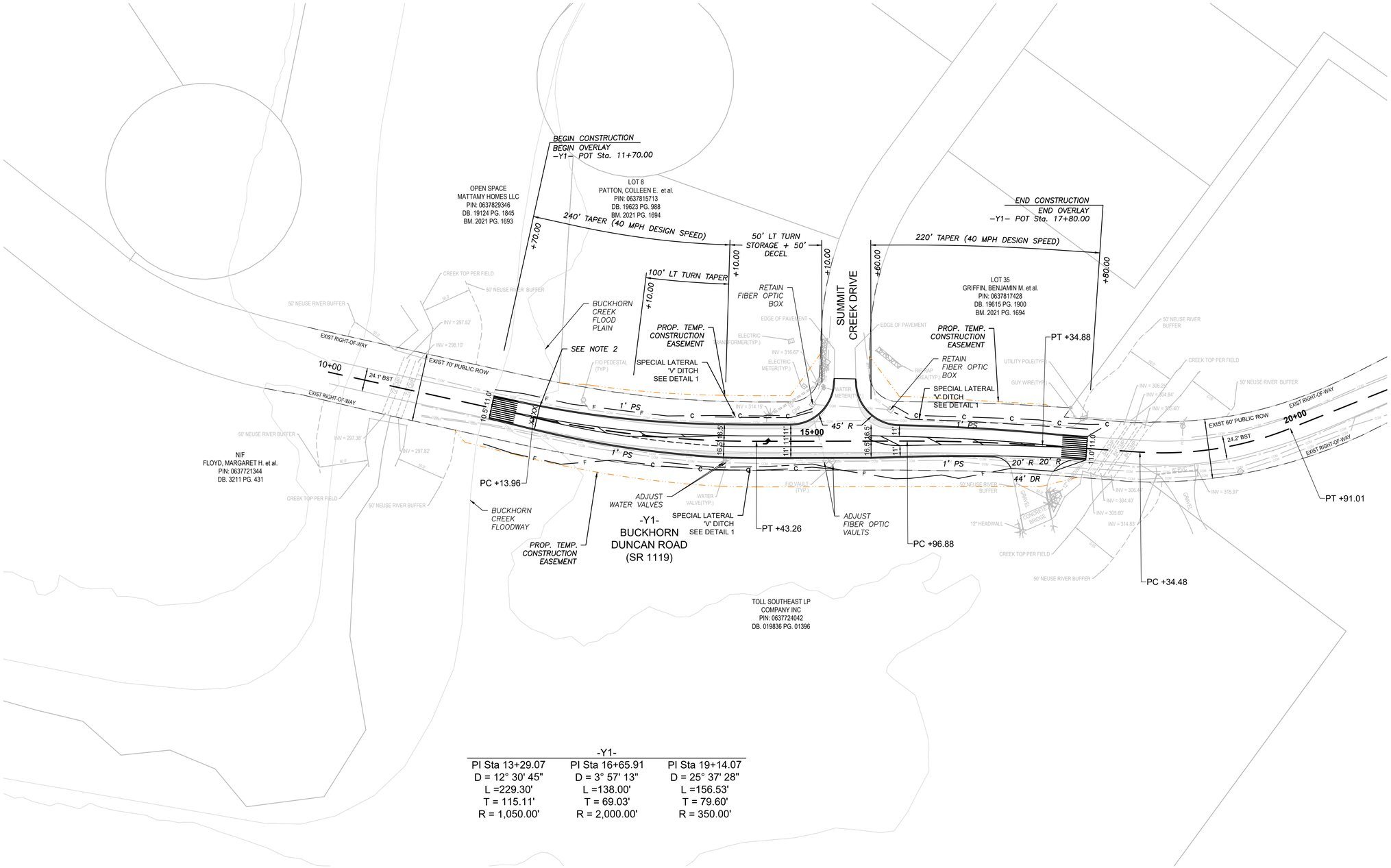
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SIGNATURE DATE

DESIGNED BY: RLM
REVIEWED BY: GCB
JOB NO: 00105004
DATE: 5/15/2025

DESCRIPTION	INIT.	DATE

SHEET NO.
R-6



-Y1-		
PI Sta 13+29.07	PI Sta 16+65.91	PI Sta 19+14.07
D = 12° 30' 45"	D = 3° 57' 13"	D = 25° 37' 28"
L =229.30'	L =138.00'	L =156.53'
T = 115.11'	T = 69.03'	T = 79.60'
R = 1,050.00'	R = 2,000.00'	R = 350.00'

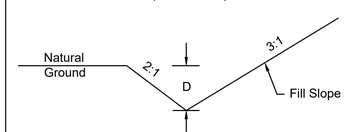
0 50 100 150 200

SCALE: 1" = 50'

DETAIL 1

SPECIAL LATERAL 'V' DITCH

(Not to Scale)



FROM -Y1- STA. 13+50 TO STA. 15+00 RT
FROM -Y1- STA. 15+84 TO STA. 18+00 RT
FROM -Y1- STA. 13+00 TO STA. 15+25 LT

INCIDENTAL MILLING

ROADWAY WIDENING/ FULL–DEPTH PAVEMENT

Notes:

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2. CROSS SLOPES VARY ALONG –Y1– MATCH EXISTING CROSS SLOPES. REFER TO CROSS SECTIONS.
3. UNLESS OTHERWISE NOTED DRIVEWAY MATERIAL WILL BE ASPHALT WITH 10' TURNING RADII. (2" S9.5B AND 8" ABC). CONCRETE DRIVEWAYS WILL BE 6" DEPTH.
4. RELOCATE EXISTING COMMUNICATION AND FIBER OPTIC UTILITY LINES OUTSIDE THE LIMITS OF THE PROPOSED WIDENING.

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HAZEL RIDGE ROADWAY AND SIGNAL IMPROVEMENTS

PLAN SHEET

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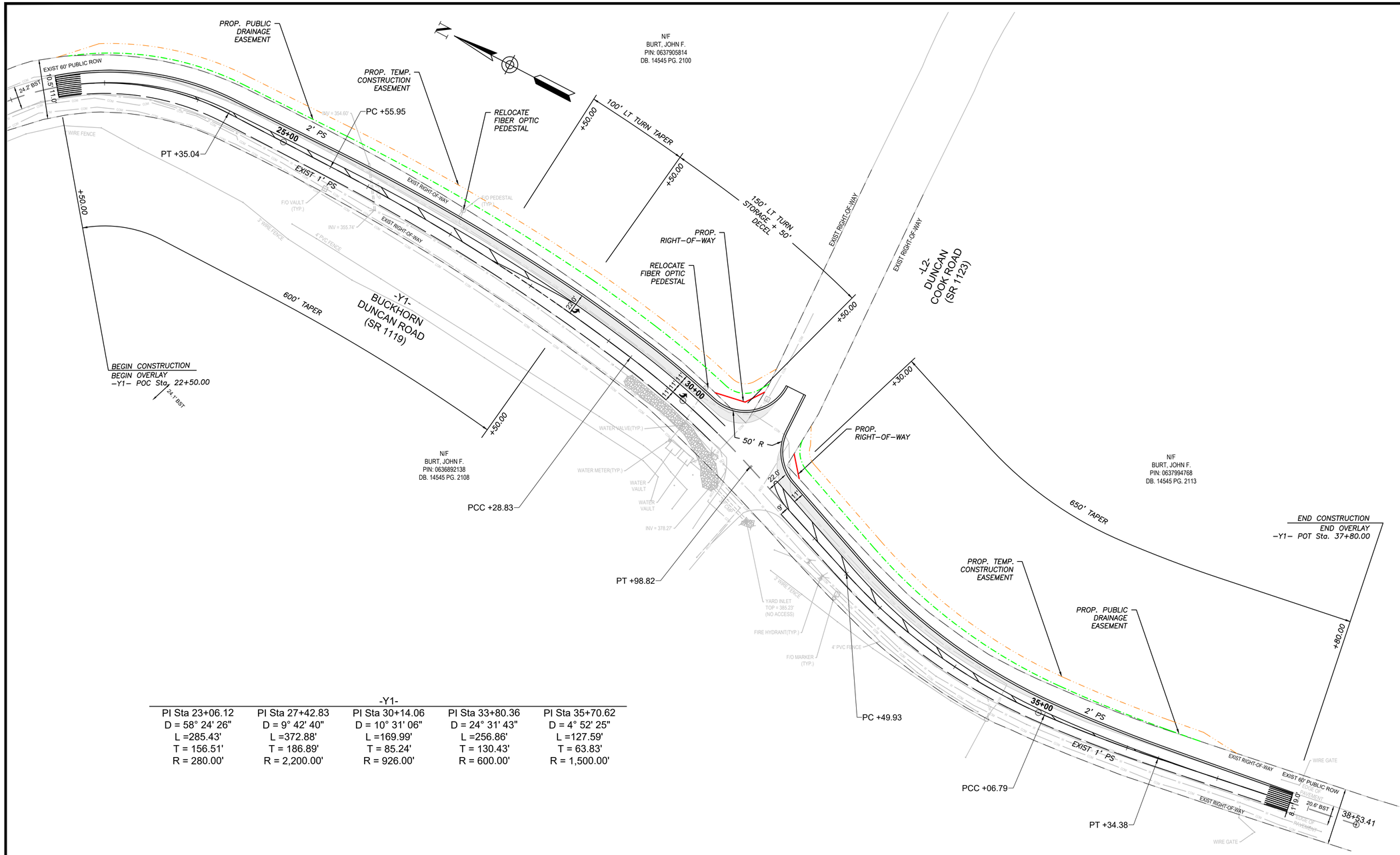
SIGNATURE DATE

DESIGNED BY: RLM
REVIEWED BY: GCB
JOB NO: 000105004
DATE: 5/15/2025

DESCRIPTION	INIT.	DATE

SHEET NO.

R-7



-Y1-

PI Sta 23+06.12	PI Sta 27+42.83	PI Sta 30+14.06	PI Sta 33+80.36	PI Sta 35+70.62
D = 58° 24' 26"	D = 9° 42' 40"	D = 10° 31' 06"	D = 24° 31' 43"	D = 4° 52' 25"
L =285.43'	L =372.88'	L =169.99'	L =256.86'	L =127.59'
T = 156.51'	T = 186.89'	T = 85.24'	T = 130.43'	T = 63.83'
R = 280.00'	R = 2,200.00'	R = 926.00'	R = 600.00'	R = 1,500.00'

0 50 100 150 200

SCALE: 1" = 50'

INCIDENTAL MILLING

ROADWAY WIDENING/ FULL-DEPTH PAVEMENT

Notes:
1.RADII DIMENSIONS ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED (APPLIES TO ALL SHEETS).
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PLAN SHEET

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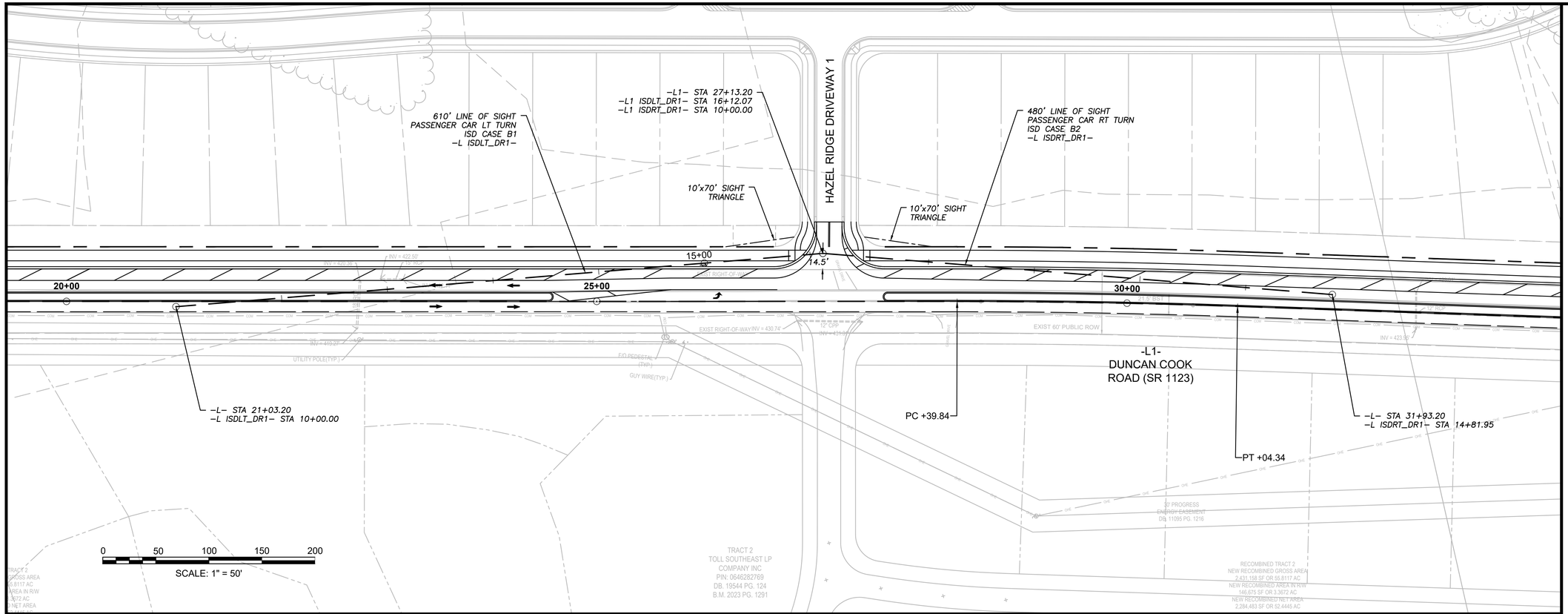
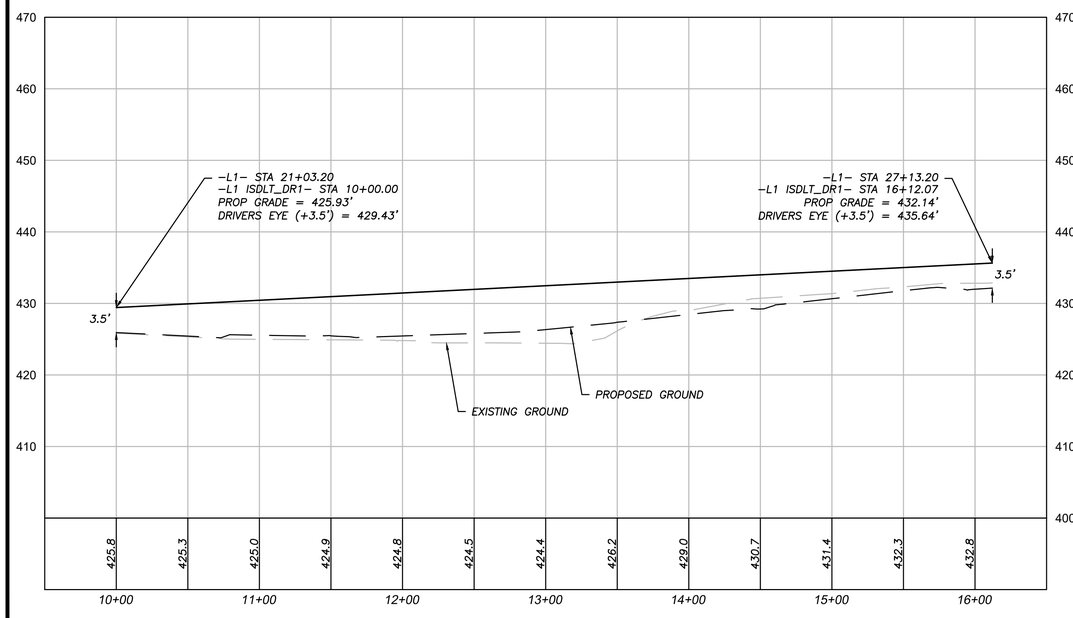
GARRETT BOYLE
SIGNATURE DATE

DESIGNED BY: GCB
REVIEWED BY: EWL
JOB NO: 00041015
DATE: 4/16/2025

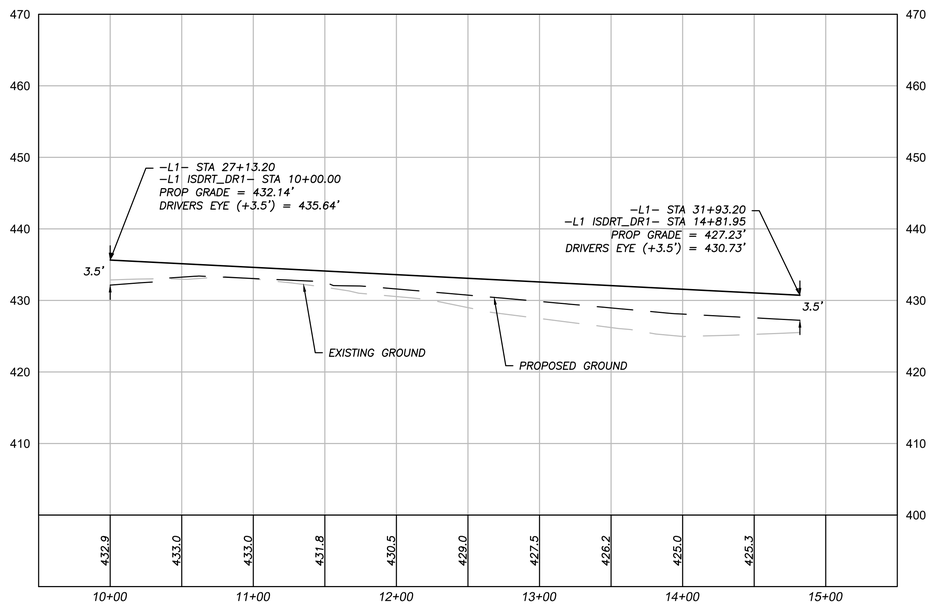
DESCRIPTION	INIT.	DATE

SHEET NO.
R-8





-L1 ISDLT_DR1-
INTERSECTION SIGHT DISTANCE
LEFT TURN
FROM HAZEL RIDGE DRIVEWAY 1
DS = 50 MPH
ISD CASE B1 = 610'



-L1 ISDRT_DR1-
INTERSECTION SIGHT DISTANCE
RIGHT TURN
FROM HAZEL RIDGE DRIVEWAY 1
DS = 50 MPH
ISD CASE B2 = 480'

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INTERSECTION SIGHT DISTANCE

SEAL
NORTH CAROLINA
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GARRETT BOYLE
052970
SEAL

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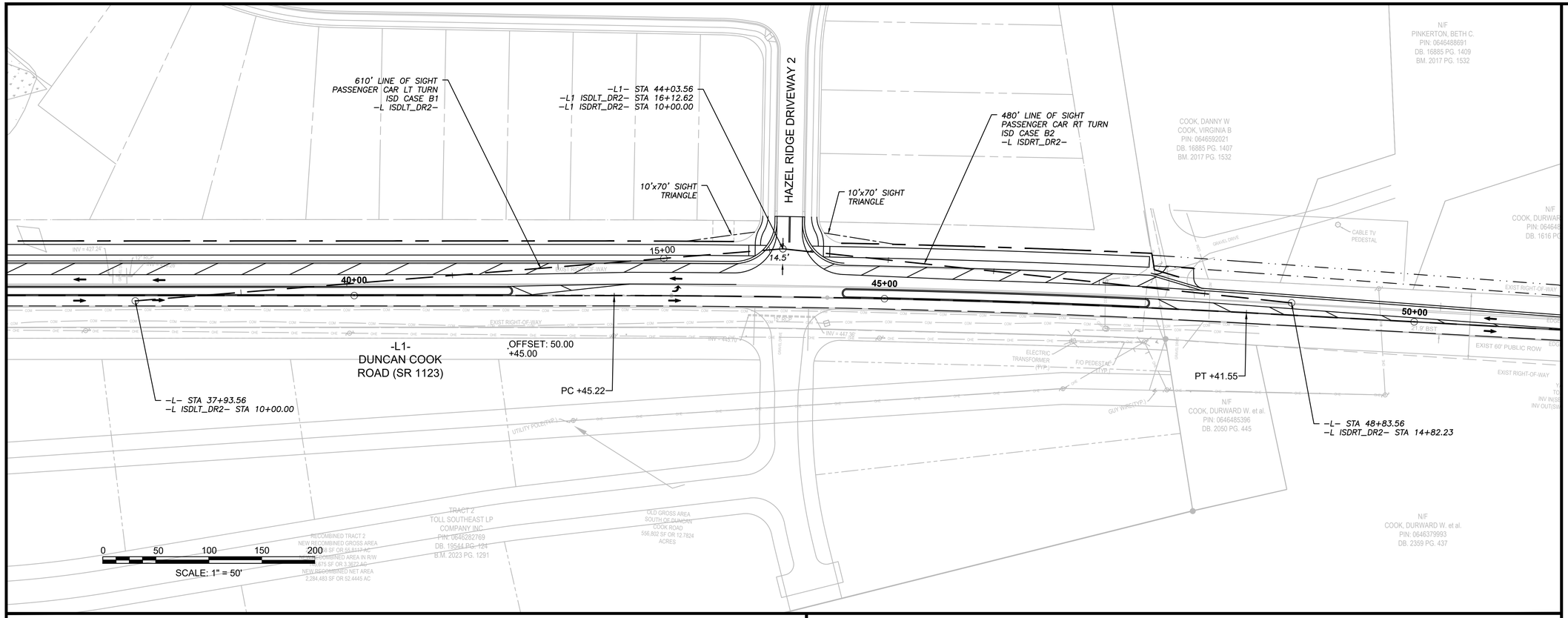
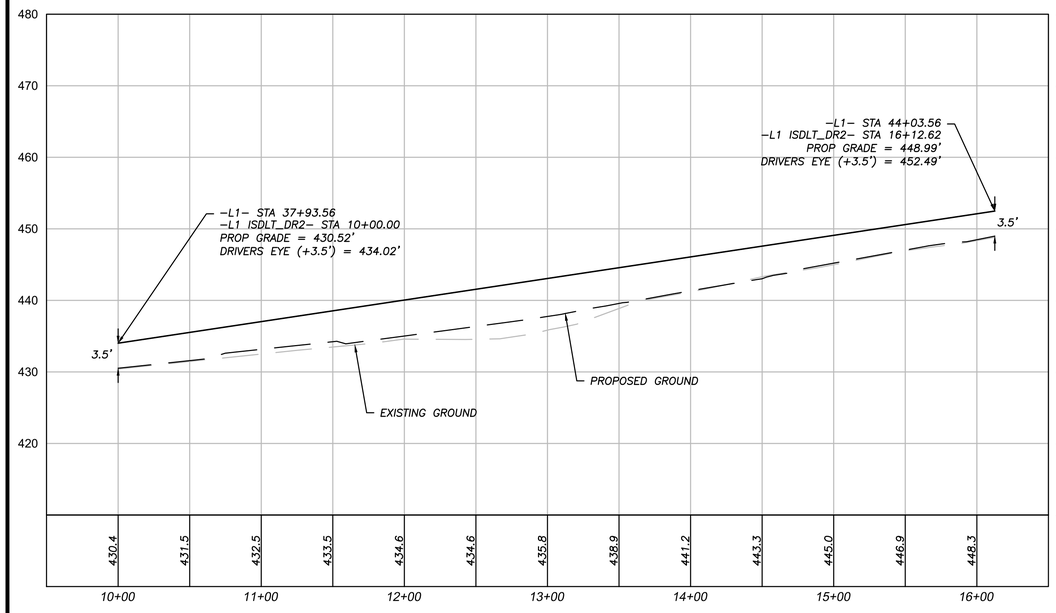
DESIGNED BY: RLM
REVIEWED BY: GCB
JOB NO: 000105004
DATE: 5/15/2025

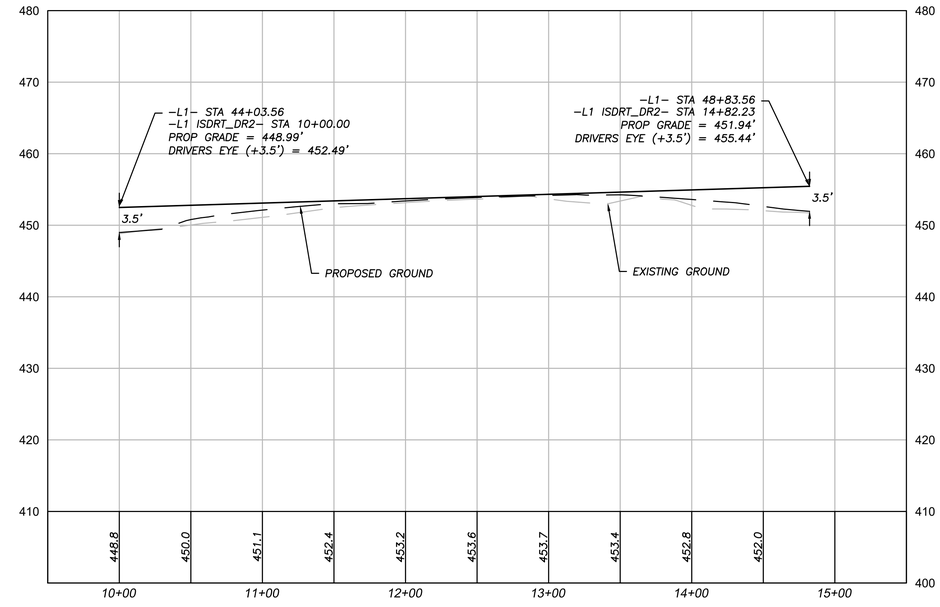
DESCRIPTION	INIT.	DATE

SHEET NO.
SD-1





-L1 ISDLT_DR2-
INTERSECTION SIGHT DISTANCE
LEFT TURN
FROM HAZEL RIDGE DRIVEWAY 2
DS = 50 MPH
ISD CASE B1 = 610'



-L1 ISDRT_DR2-
INTERSECTION SIGHT DISTANCE
RIGHT TURN
FROM HAZEL RIDGE DRIVEWAY 2
DS = 50 MPH
ISD CASE B2 = 480'

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INTERSECTION SIGHT DISTANCE

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JOB NO: 000105004
DATE: 5/15/2025

DESCRIPTION	INIT.	DATE

SHEET NO.
SD-2

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 19.

Public Hearings
Title: 1317 N Main St. Commercial Tracts Development Plan Major Amendment (21-DP-02-A02) - Quasi-Judicial Public Hearing
Strategic Priority Area: Growth Management & Economic Vitality
Staff Resource: Brett Gosney, Development Services, Elliot Blonshine, Development Services

Action(s):

- Conduct Quasi-Judicial Public Hearing.
- Adopt Resolution 25-31 to make and accept the Findings of Fact for consideration of and to approve/deny/defer Development Plan Major Amendment for 1317 N Main Street Commercial Tract.

Explanation:

- A Major Amendment to the Development Plan for 1317 N Main Street Commercial Tract has been submitted to the town for a reduction in the building height, reduction in the building square footage, and a modification of the building design at 200 Sportsmanship Way.
- This parcel is associated with an overall Master Plan for 1317 N Main St. that includes the adjacent parcel which is to be developed with a 124-unit apartment building in partnership with Wake County and Downtown Housing Improvement Corporation (DHIC).
- This Major Amendment considers only changes to the commercial portion of the Master Plan and does not impact the previously approved Development Plan for the 124-unit apartment building.
- The proposed amendment reduces the uses of the site to a single 75,000 sf office building. The previously approved plan included roughly 94,000 sf between two buildings and included a mix of uses on the site.
- The proposed amendments are inconsistent with the commitments made by the developer identified in a Development Agreement and Economic Development Agreement approved by Town Council on January 19, 2023, which specified a mix of office, retail, and hospitality uses, The proposed amendment diverges from those commitments.

Staff Recommendation: Deny
The proposed amendment is inconsistent with the Comprehensive Plan and does not meet commitments made in the approved Development Agreement and Economic Development Agreement, which outlined a mixed-use vision for the site.

Planning Board Recommendation: Approve (8-1)
A summary of the Planning Board discussion is in the Planning Board Action Report. *(Note: This*

Report is a separate attachment from the Staff Report.)

Background:

- The parcel was rezoned to CB-CD Community Business Conditional Zoning District on April 6, 2021.
    - A copy of the Rezoning Ordnance with the applicable conditions can be found in the attachments.
- The parcel had a Major Subdivision Plan (21-MAS-03) approved on October 5, 2022, which included the site and adjacent Wake County/DHIC development site.
- The parcel had a Development Plan (21-DP-06) approved on October 4, 2023.
- This development has a Development Agreement and an Economic Development Agreement that were approved on January 19, 2023.
- The Development Plan previously had a minor amendment administratively approved on October 4, 2024.
    - This minor amendment modified the building locations and layout. However, it did not reduce the overall amount of building square footage that was being proposed.
- This parcel was part of the land that was originally designated as the "borrow pit" for the South Wake Landfill. Since the property was removed from the landfill plans, Wake County sold the south half to the Town for the North Main Athletic Park (Ting Park) and the north half has remained under the ownership of the County.
- The property was identified by Wake County as part of its Evaluation and Disposition of County-owned Land for Affordable Housing Policy, which evaluates publicly-owned land for disposition to include affordable housing development. In January 2020, Wake County issued its first public land disposition RFP under the newly adopted Policy for development proposals for 1317 N. Main Street.
- In May 2020, Wake County selected the proposal by the development team of My Computer Career (MyCC) and DHIC as the Lead Applicants for the potential development of 1317 N. Main Street. MyCC was removed as a project partner via agreement modification on September 20, 2022. Capital Associates Management is now the lead applicant.

Funding Source(s):

N/A

Attachment(s):

1. 1317NMainSt_StaffReport_final
2. 21DP06A02_PlanningBoardActionReport
3. 21DP06A02_QJ_Resolution_FOF_COA
4. Development Agreement_ Ting North _Capital Associates_EXECUTED
5. EDA Ting North _Executed
6. RZ21-01 SportsmanshipWay - signed
7. 21DP06A02_1317NMain_Application
8. 21DP06A02_1317NMain_Planset

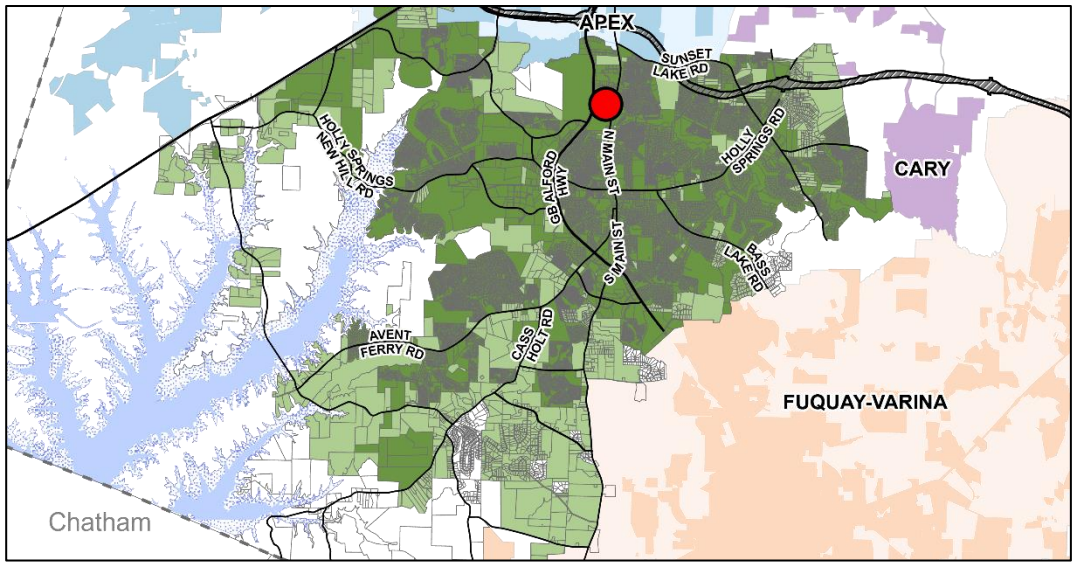
Project Type: Development Plan (Major Amendment)

Concurrent Applications:
☐ Waiver / SUP/ VAR/ CPA

Applicant / Petitioner:
Adam Pike, McAdams

Property Address: 200 Sportsmanship Way

Property Area: 11.11 ac.



Located in: ☒Holly Springs Corporate Limits ☐Holly Springs ETJ ☐Annexation Pending

Project Summary:

A Development Plan Major Amendment for a reduction in the building height from 4-story to 3, removal of the integrated center/retail building, a reduction in the building square footage from ~94,000 sf to ~76,000 sf, and changes to building design at 200 Sportsmanship Way. This amendment does not modify the existing approved Development Plan for the adjacent 124 unit DHIC affordable dwelling project.

Requested Action:

Quasi-Judicial Decision: The Town Council must hold a quasi-judicial hearing to collect facts and then make a decision based on the written and oral evidence presented and adopted town policies and procedures.

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Case Summary	Page 2
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Land Use & Character Information	Page 4
Transportation Information	Page 7
Parks, Recreation & Greenways Information	Page 9
Community Facilities Information	Page 10
Infrastructure & Utility Information	Page 11
Natural Resources Information	Page 13
Development Standards Information	Page 14
Decision-Making Information	Page 17

Case Summary

Current Zoning:
CB: Community Business
☒ Conditional Zoning District

Current Major Subdivision Plan:
1317 N Main St Master Plan



Aerial Photograph

Growth Strategy Map:
Places to Transform

Small Area Plan Designation:
N/A

Future Land Use Plan Designation:
Mixed-Use Center

Staff Analysis:

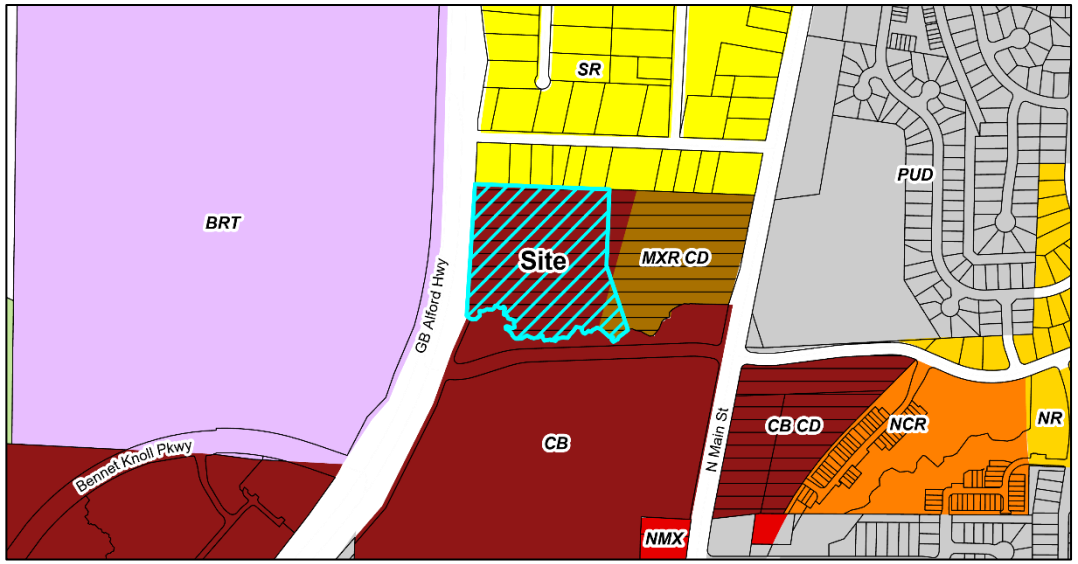
The Development Plan is: ☐ Consistent with Adopted Plans/Ordinances ☒ Inconsistent with Adopted Plans/Ordinances

While the proposed Amendment complies with minimum requirements specified in Town's Unified Development Ordinance, staff finds this inconsistent with the Comprehensive Plan. As required by Criterion 5 of the Findings-of-Fact associated with this decision type, projects must demonstrate compliance furthering the goals and policies of the Comprehensive Plan. Additionally, the project does not meet the commitments made by the developer identified in a Town Council approved Development Agreement and Economic Development Agreement which require a mixture of office, retail, and hospitality uses. The proposed Amendment reduces the uses of the development to a single office building. The previously committed mixture of uses is an important component of the Town's Land Use goals to transform the area surrounding Ting Park into a true Mixed-Use Center.

Staff Recommendation: ☐ Approve ☒ Deny

Current Zoning Information

Parcel #	Zoning	Area
0649891181	CB-CD: Community Business Conditional Zoning District	11.11 ac.
	Total Area	**11.11 ac.**



Current Zoning Map

Adjacent Property Current Zoning Information

	Zoning	Existing Land Use
Subject Property	CB-CD: Community Business Conditional Zoning District	Vacant
North	SR Suburban Residential	Single Family Homes
South	CB: Community Business	Park
East	MXR Mixed-Use Residential	Vacant
West	BRT Business & Research Technology	Landfill

Parcel Rezoning History

Rezoning Number: 20-REZ-09
Original Zoning: LB Local Business
Approved Zoning: CB-CD Community Business Conditional District
Approval Date: 4/6/21

Land Use & Character Information

Vision Holly Springs Comprehensive Plan Section 1

Growth Strategy Map: Places to Transform

Future Land Use: Mixed-Use Center

Small Area Plan: N/A



Future Land Use Map

Important Themes for Transforming Holly Springs:

Eight important themes for Holly Springs are highlighted as high-priority principles for transforming the Town. The following theme(s) should be considered with this request:

Theme	Description
☒ Establish Mixed-Use Activity Centers Throughout Holly Springs	Mixed-use and walkable development
☐ Suburban Remix	Activate neighborhood centers
☐ Suburban Retrofit	Redevelop existing centers into mixed-use, multi-modal, activated centers
☐ Context-Sensitive Infill Development Choices	Infill around single use residential areas
☐ Transitions	Complement existing development and avoid incompatibilities
☐ Increase Home & Neighborhood Choices in Holly Springs	Variety of integrated housing products
☐ Increase Diversity & Affordability of Housing in Holly Springs	Adequate supply of affordable housing
☒ More Transportation-Land Use Coordination in the Community	Equal emphasis on land use (demand), transportation (supply) and urban design (character)

Land Use & Character Information (cont.)

Growth Strategy Map: Places to Transform
Specific focus areas in Holly Springs provide opportunities to grow and transform in the future. These areas will evolve over time in terms of land use mix, density and intensity, home choices, and transportation options. These are the areas where the Town should emphasize public and private investment — increasing allowable densities and intensities, adding infrastructure capacity, improving access from nearby neighborhoods, investing in the public realm, and encouraging private investment — to diversify the Town's development strategy and support continued growth and economic prosperity in the future. Some areas identified to transform over time will require redevelopment of existing suburban shopping centers or infill development in the Downtown Village District.

Future Land Use: Mixed-Use Center
A Mixed-Use Center offers the opportunity to serve broader economic, entertainment, and housing needs in the community. Land uses and buildings on small blocks in the core may stand three or more stories tall and encourage active public spaces between the buildings. Residential units or office space are found above storefronts. Homes surrounding the core offer several choices to live and experience the center. Parking is satisfied using on-street parking, structured parking, and shared rear-lot parking strategies. The compact, walkable environment and mix of residential and non-residential uses in the center supports multiple modes of transportation, including the potential for transit-oriented development if-when a decision is made to invest in premium transit along the NC 55 corridor.

A large-scale, Mixed-Use Center may be surrounded by one or more residential neighborhoods that provide additional nearby home choices and encourage active living with a comprehensive and interconnected network of walkable streets.

Some areas designated Mixed-Use Center on the Future Land Use Map started off as suburban shopping centers. Transformation of these areas to support mixed-use development will require deliberate planning and phasing to keep the areas viable during their period of change. Build-out under the Mixed-Use Center category should follow the same use, height, mix, design, and parking expectations described for this character area in the paragraphs above; however, infill development and redevelopment activities should be coordinated closely with the Town (on a case-by-case basis) to phase development, program improvements, and set expectations during the transformation.

Key Characteristics:

- Redevelopment and new development in these areas will utilize formal small block patterns and relocate parking to the interior of blocks.
- Parking between the street and the building should be limited.
- These areas include a variety of shared public open spaces throughout a walkable, activated environment, and may include formal and informal open spaces such as greens, squares, plazas, and community gardens. The linear nature can provide opportunities for greenway links to other parts of the Town.
- Buildings should be 3 to 5 stories along the corridor, but may be 2 to 3 stories in transitional areas.

Land Use & Character Information (cont.)

Small Area Plan: N/A

Historic Structures: ☒ None

Land Use & Character Staff Analysis:

The Development Plan is: ☐ Consistent ☒ Inconsistent with the Land Use & Character Plan/Ordinances

The Comprehensive Plan provides 8 important themes as high-priority principles for transforming the Town from a bedroom community to a self-sustaining community. Two Key Themes are important to this proposal, "Establish Mixed-Use Activity Centers Throughout Holly Springs" and "Suburban Remix." Together, these themes advocate for enhancing activity centers throughout the community, highlighting the importance of mixed-use, walkable development areas. Integrating uses that create places where people live, work, shop, and play as a cohesive community begin to move development patterns away from clearly separated uses and building types, a lack of street connectivity, and a population increasingly reliant on automobiles. Mixed-use development in activity centers furthers the economic vitality and sustainability of the area, the efficiency of utilities and transportation serving the area, and the sense of community experienced by residents, business owners, and visitors to the area. Community Character Recommendations CC-6 Promote Compact Mixed-Use Development in Appropriate Character Areas, CC-8 Increase Walkability, and CC-9 Enhance Character and Walkability by Orienting All Buildings to the Street, further support these themes in the Land Use & Character Plan.

In the context of the Land Use & Character Plan, "Mixed-Use Center" typically refers to vertically integrated buildings, with non-residential uses such as office or retail on the lower floors, and residential units above. However, in certain contexts, a "Mixed-Use Center" may be more appropriate as a "mixture-of-uses" without vertical integration of uses. This type of development may not fit neatly in the traditional mixed-use style, but it can be considered with relevant context and overall community needs.

For this project, the approved Development Plan for this site was considered as part of a "mixture-of-uses" subdivision plan that includes the adjacent 124 dwelling unit apartment project. At a high level, project supports goals for providing a "mixture-of-uses" within the development with 2 separate Commercial and Apartment areas, the key components of mixed-use places. A proposed interior public street runs through the site, providing interconnected access to both use areas, open space areas are shared between the two areas, and the proposal includes a building that is three stories high to meet the goals in the Future Land Use Plan.

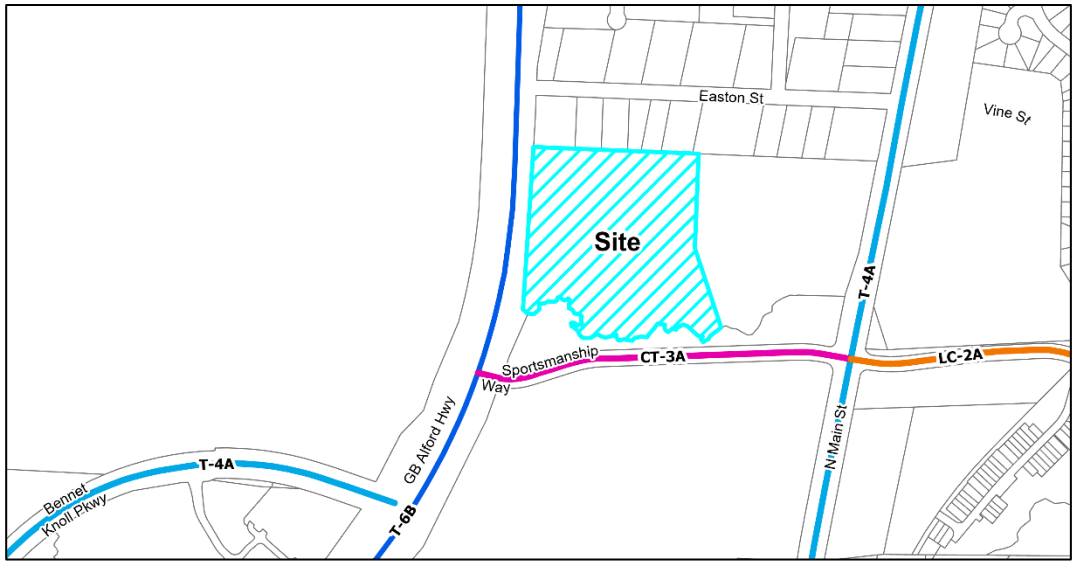
The proposed amendment does not meet the Comprehensive Plan goal of increasing allowable intensities within Places to Transform since this amendment reduces the intensity of land uses of the original approval. Additionally, within a Mixed-Use Center, parking is to be satisfied using on-street parking, structured parking, and shared rear-lot parking strategies, and while the original approval included off-street parking lots, this amendment reduces building footprint and further intensifies the area of off-street parking. Additionally, the proposed amendment is inconsistent with the Comprehensive Plan and the mixed-use commitments made by the developer identified in a Town Council approved Development Agreement and Economic Development Agreement for the property. In these agreements, the applicant agreed to provide a mixture of office, retail, and hospitality uses and the proposed Development Plan Major Amendment reduces the uses the development to a single office building. This mixture of uses is an important component of the Town's Land Use goals to transform the area surrounding Ting Park into a true Mixed-Use Center.

Transportation Information

Vision Holly Springs Comprehensive Plan Section 2

Comprehensive Transportation Plan

Road Widening along Project Frontage	☐ Required ☒ Not Required
New Location Roadways	☐ Required ☒ Not Required
Hotspot/Safety Study Location	☐ Yes ☒ No



Roadway Map

Comprehensive Transportation Plan Summary

Road Widening along Project Frontage:
This amendment is to Lot 1, or the western side, of the overall development. This project does not have frontage on Sportsmanship Way but is constructing a driveway connection to Sportmanship Way with a sidewalk to the existing bus stop in accordance with the previously approved rezoning and development plan for this project.

New Location Roadways:
There are no new roadways impacting the subject property shown on the Comprehensive Transportation Plan.

Hotspot/Safety Study Location:
There are no Hotspot/Safety studies adjacent to this parcel.

Improvement Prioritization:
N/A

Transportation Information (cont.)

Traffic Study Policy

☒Traffic Study Required

☐Tier 1
☐Tier 2
☐Tier 3
☒Traffic Verification Memo

Traffic Study Summary
The applicant provided a Traffic Verification Memo with this amendment. The total number of site trips is reduced with the proposed changes. This amendment does not reduce or change the previously approved TIA and mitigation improvements and the developer is still committed to completing the improvements previously identified.

Transportation Staff Analysis:

The Development Plan is: ☒ Consistent ☐ Inconsistent with the Comprehensive Transportation Plan/Ordinances

Because the proposed amendment reduces the number of overall daily trips, the previously approved TIA and mitigation improvements still stands and this development plan is therefore consistent with the TIA and Comprehensive Transportation Plan.

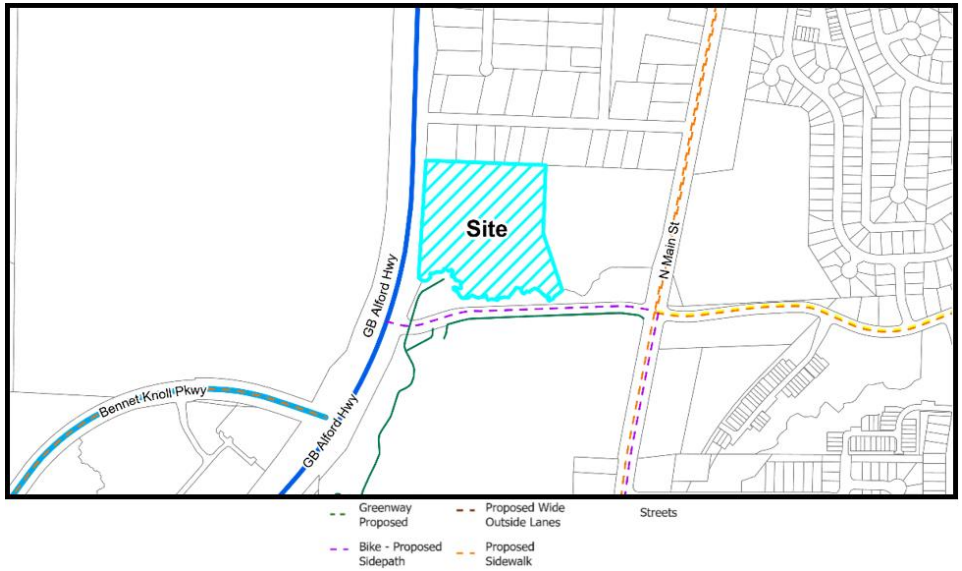
Parks, Recreation & Greenways Information

Vision Holly Springs Comprehensive Plan Section 3

Park Search Area

☐ Yes

☒ No



Active Transportation Map

Required Active Transportation Improvements

☒ Greenway ☐ Sidepath

The greenway runs along the southeast portion of the site and connects to the underpass/culvert crossing GB Alford Hwy.

Parks, Recreation, & Greenways Summary

A Greenway is proposed which connects to the existing public Greenway stub just north of Sportsmanship Way, in the southwest corner of this property. The Greenway also leads to the existing underpass/culvert crossing of NC 55 on the west boundary of the property. The remainder of the greenway leads east to the central driveway location where an at-grade crossing currently exists.

Parks, Recreation, & Greenways Staff Analysis:

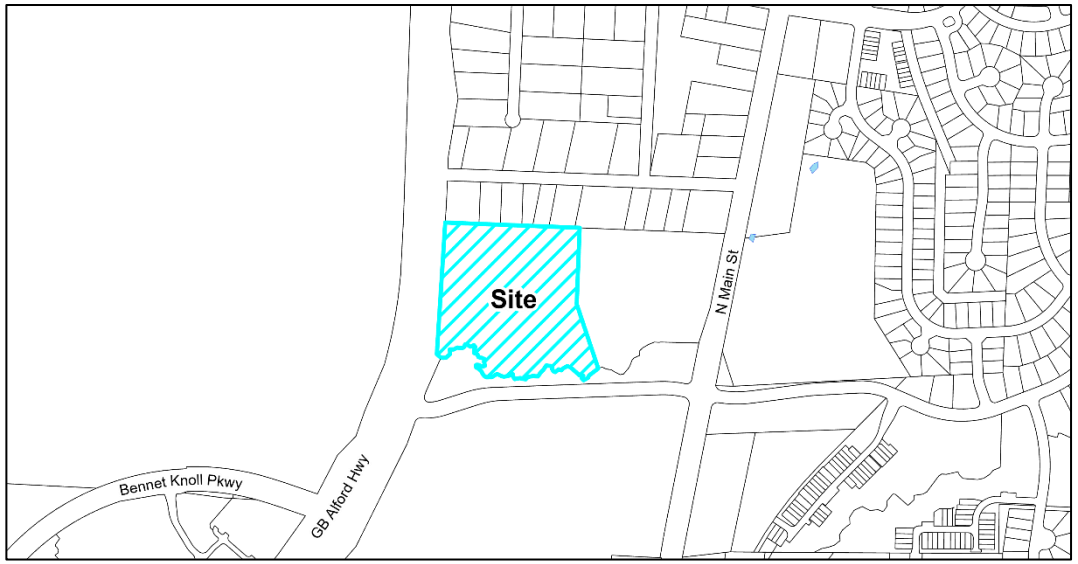
The Development Plan is: ☒ Consistent ☐ Inconsistent with the Parks, Recreation & Greenways Master Plan/Ordinances

The Development Plan is not proposing any changes to previously committed to Greenway and is meeting the requirements of the Rezoning and Unified Development Ordinance.

Community Facilities Information

Vision Holly Springs Comprehensive Plan Section 4

Population growth increases demand for public services. In order to fulfill this demand, community facilities must be appropriately planned for and constructed. These facilities may range from additional public safety stations, such as police and fire, to new schools to handle the influx of school-aged children into an area.



No Facilities Identified

Community Facilities Map

WCPSS Coordination

A Letter of Impact from Wake County Public School System (WCPSS) was received for this rezoning and is included in the attachments.

Schools at the following grade levels within the current assignment area for the proposed rezoning are anticipated to have insufficient capacity for future students; transportation to schools outside of the current assignment area should be anticipated:

☐ Elementary ☐ Middle ☐ High School ☒ N/A: All grade levels are anticipated to have sufficient capacity

The following mitigation of capacity concerns due to school construction or expansion is anticipated:

☐ School expansion or construction within the next five years is not anticipated to address concerns.

☐ School expansion or construction within the next five years may address concerns at these grade levels:

☐ Elementary ☐ Middle ☐ High School

☒Not applicable – existing school capacity is anticipated to be sufficient.

Community Facilities Staff Analysis:

The Development Plan Major Amendment is: ☒ Consistent ☐ Inconsistent with the Community Facilities Plan/Ordinances

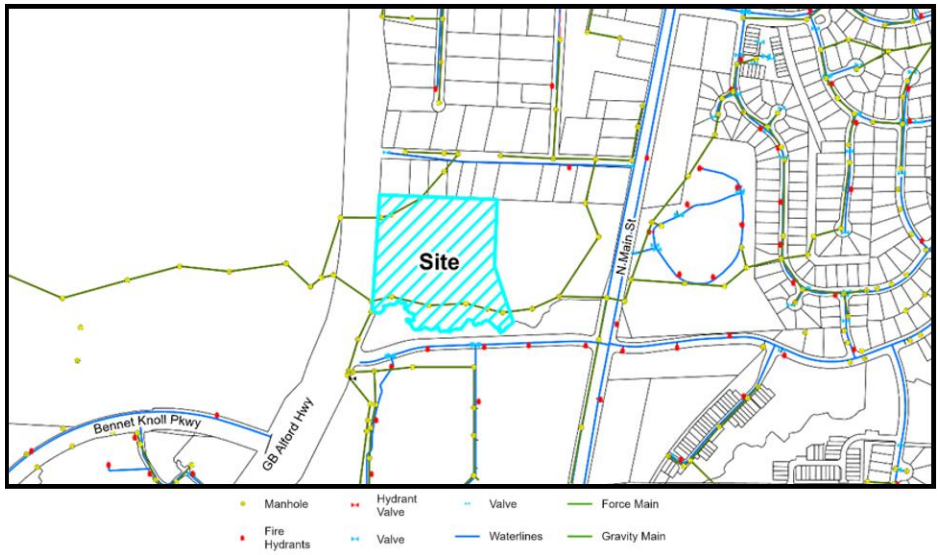
The subject property is outside of a search area for a public safety station as designated on the Community Facilities Map.

Infrastructure & Utility Information

Vision Holly Springs Comprehensive Plan Section 5

Utility Availability

Water	☒ Yes ☐ No ☐ Study Required
Sanitary Sewer	☒ Yes ☐ No ☐ Study Required
Reclaim	☐ Yes ☒ No ☐ Study Required



Utility Map

Infrastructure & Utility Summary

Water:

This amendment is proposing minor changes to the site's internal water main layout. The project is required to tie to existing water mains and extend into the development in accordance with Town Policies. A Fire Flow Analysis Memo was submitted with the amendment to confirm the conclusions of the previously approved Fire Flow Analysis are still valid and there is adequate water pressure within the Town's system.

Sanitary Sewer:

This amendment is proposing minor changes to the site's internal sewer main layout. The project is required to tie to existing sewer mains and extend into the development in accordance with Town Policies. A Sewer Verification Memo was submitted with the amendment to confirm wastewater flows generated from this project are less than the flows generated from the previously approved Sewer Study.

Reclaimed:

This project is outside of the Reclaimed Service Area and is not required to extend reclaimed water to the site.

Infrastructure & Utility Information (cont.)

Water Resource Management (WRMP) Policy

☐ WRMP Applicable
☒ WRMP Not Applicable

☐Tier 1
☐Tier 2
☐Tier 3

Allocation Elements

☐ Public Infrastructure Improvements
☐ Sustainable Design
☐ Work Force Housing
☐ Open Space/Tree Preservation

Water Resource Management Policy Summary

This project is not subject to the Water Resource Management Policy since it was allocated with the previously approved rezoning prior to the effective date of the Policy. As previously mentioned, the proposed amendment will generate less sewer flow than the previously allocated sewer amount.

Infrastructure & Utility Staff Analysis:

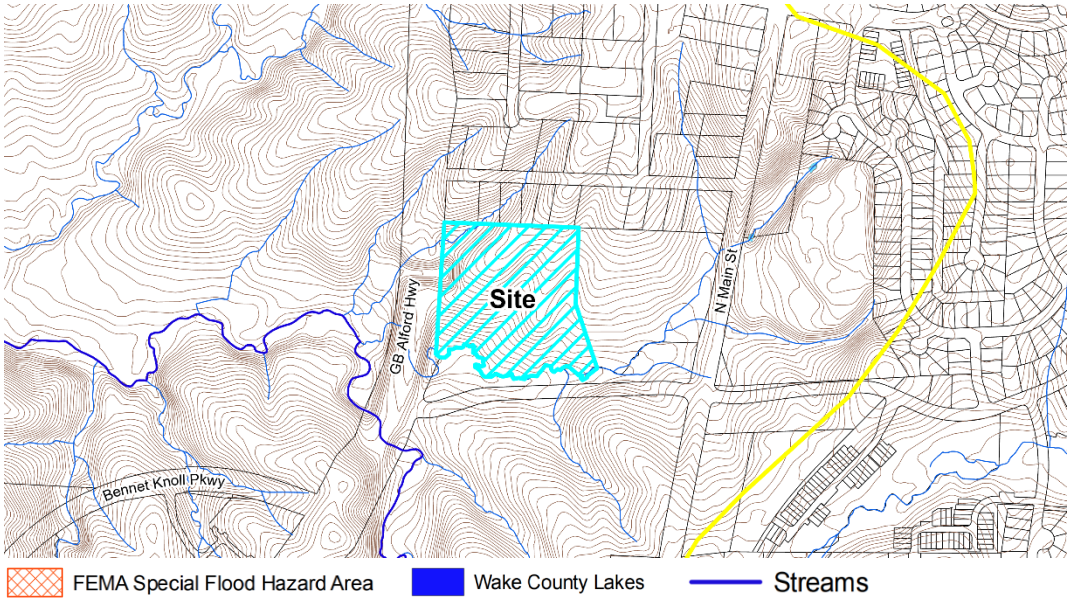
The Development Plan is: ☒ Consistent ☐ Inconsistent with the Infrastructure & Utilities Plan/Ordinances

The proposed utility connections and extensions are consistent with the Comprehensive Plan as well as the previously approved Engineering Studies.

Natural Resources & Open Space Information

Vision Holly Springs Comprehensive Plan Section 6

On-site Private Open Space	**10.5%**
Tree Preservation Area	10%
Active Recreation Area	.5% (2,710 sq ft)
Urban Civic Space	0%
Flexible Space	0%



Natural Resources Map

Natural Resources & Open Space Summary

Open Space:

The Tree Preservation is being provided within the entirety of the Major Subdivision Plan and this development plan amendment is proposing modifications to the active open space. Elements such as an outdoor seating area are being provided both in front of the building as well as interior to the site.

Stormwater:

The project is located within the Cape Fear River Basin and is proposing to treat new impervious surfaces onsite with multiple Stormwater Control Measures. There are several jurisdictional features located on and adjacent to the site such as wetlands, streams, ponds and Riparian buffer.

Natural Resources & Open Space Staff Analysis:

The Development Plan is: ☒ Consistent ☐ Inconsistent with the Natural Resources Plan/Ordinances

The open space elements comply with the minimum requirements that were established with the Rezoning and Major Subdivision Plan. The overall open space elements are in combination with the adjacent property that is also associated with the same Major Subdivision Plan. Any and all permits required to construct this development must be obtained prior to Civil Construction Drawing approval.

Development Standards Information

Unified Development Ordinance

The following is a summary of how the proposed development satisfies the applicable 2022 Holly Springs Unified Development Ordinance (UDO) and Community Business Conditional Zoning District and 1317 North Main Street Master Plan (21-MAS-03).

Development Standards Summary

Development Standards (UDO Section 2 & 21-MAS-03):

Building Placement	UDO Standard	Proposed Standard
Thoroughfare Setback (front)	50'	256'
Side – Corner Setback	30'	376'7"
All Other Setbacks (Side and Rear)	5'	168'6"
Setback Adjacent to Residential Zone	50'	123'9"

Building Height	UDO Standard	Proposed Standard
Maximum Building Height	75'*	50'4"**

*The 75' maximum building height was approved per the Development Agreement.
**The previously approved building was proposed at 69'

Landscaping (UDO Section 5 & 21-MAS-03):

	Standard	Proposed Standard
Perimeter Buffers		
East	N/A	N/A
North	30' Undisturbed Buffer	30' Undisturbed Buffer
South	30' Undisturbed Buffer	30' Undisturbed Buffer
West	50' Undisturbed Buffer	50' Undisturbed Buffer
Foundation (per square footage of landscaped area outside the structure, parking area, or loading area)		
Trees	1 overstory tree/5,000 sq. ft. or 1 small tree/ 3,000 sq. ft.	5 canopy trees & 6 understory trees
Shrubs	1.5 medium shrubs or 2 small shrubs/1,000 sq. ft.	139 large shrubs
Interior Vehicle Parking Area		
	1 landscape island with one tree and 4 shrubs/10 parking spaces	54 canopy trees & 216 shrubs

Street Trees		
	Thoroughfare: Trees on private property within 5 ft of the right-of-way	6 trees

Parking (UDO Section 6):

	UDO Standard	Proposed Standard
Vehicle Parking Locations	Unrestricted	Unrestricted
Minimum Parking	304 spaces	372 spaces*
Maximum Parking	456 spaces	
Bike Parking	10 spaces	12 spaces

*EV parking does not apply to this amendment, however, the applicant has proposed 2 EV parking spaces.

Building, Site and Subdivision Design (UDO Section 8 & 21-MAS-03):

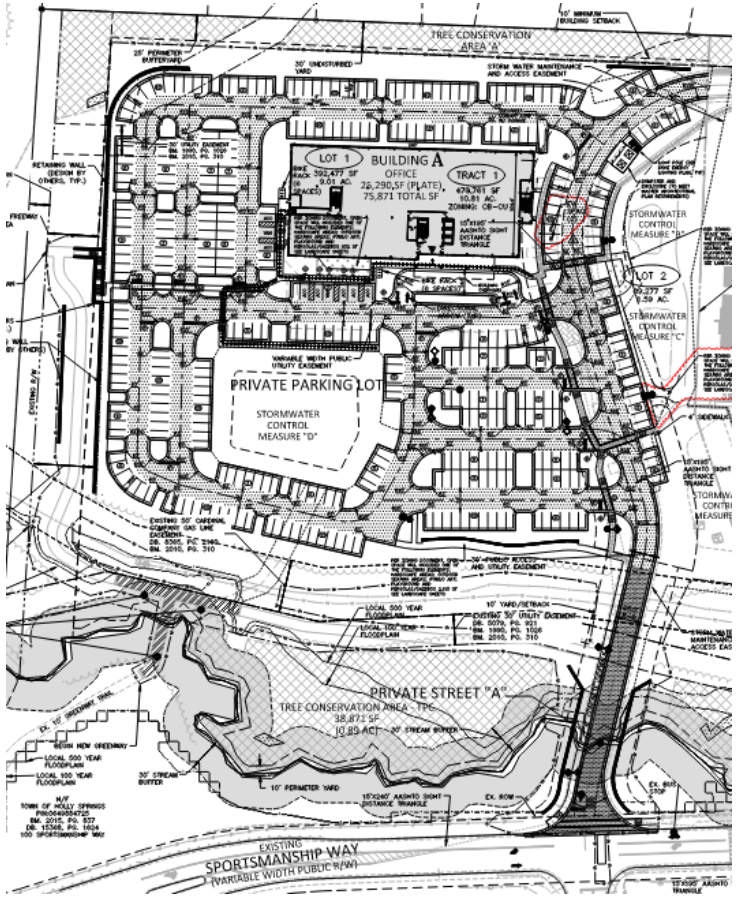
	Proposed Standard
Building Design	
Building Materials	Wood Cladding, Modular Brick, Aluminum Composite Metal Panel.
Horizontal Variation	Base, Middle, & Top of the building are provided with the Middle being greater than 50%.
Vertical Variation	Variations provided a minimum of every 25'.
Roof Expression	Roofline standards do not apply to buildings 3 stories or taller.

Building Elevations (UDO Section 8 and Conditional Zoning District)



- Each elevation includes at a minimum 60% type 1 materials.
- The building materials include Light Gray and Black Modular Brick, Wood Cladding, and 1" low-e glass.
- The ground floor of each building is meeting the minimum requirement of 20% transparency as well as the 15% for the upper levels. The most prominent area is the glass entry feature.

Proposed Site Design (UDO Section 8 and Conditional Zoning District)



Site Design Highlights

- One three story approximately 75,000 sf building is located on the site.
- The use being proposed for the building is a medical office.
- The site includes 372 parking spaces.
- Open space has been provided in front of the building as a seating area as well as located near the east property line.

Development Standards Staff Analysis

The Development Plan Major Amendment is: ☒ Consistent ☐ Inconsistent with the Unified Development Ordinance

The proposed Development Plan Major Amendment is consistent with the development standards of the 1317 N Main Street Master Plan and the Unified Development Ordinance (UDO). While it is consistent with the UDO, staff will note, however, the proposed amendment is inconsistent with the commitments made by the developer identified in a Town Council approved Development Agreement and Economic Development Agreement for the property. In these agreements, the applicant agreed to provide a mixture of office, retail, and hospitality uses and the proposed Development Plan Major Amendment reduces the uses the development to a single office building.

Decision-Making Information

Comprehensive Plan and Unified Development Ordinance Consistency Summary Table

Vision Holly Springs Comprehensive Plan	
Land Use & Character Plan/Ordinances (Section 1)	☐ Consistent ☒ Inconsistent
Comprehensive Transportation Plan/Ordinances (Section 2)	☒ Consistent ☐ Inconsistent
Parks, Recreation & Greenways Master Plan/Ordinances (Section 3)	☒ Consistent ☐ Inconsistent
Community Facilities Plan/Ordinances (Section 4)	☒ Consistent ☐ Inconsistent
Infrastructure & Utilities Plan/Ordinances (Section 5)	☒ Consistent ☐ Inconsistent
Natural Resources Plan/Ordinances (Section 6)	☒ Consistent ☐ Inconsistent
Unified Development Ordinance	
Unified Development Ordinance	☒ Consistent ☐ Inconsistent

Development Plan Staff Analysis
The applicant must demonstrate that the proposed Development Plan Major Amendment complies with minimum requirements specified in Town's adopted land development policies and ordinances.

While the proposed Amendment complies with minimum requirements specified in Town's Unified Development Ordinance, staff finds this inconsistent with the Comprehensive Plan. As required by Criterion 5 of the Findings-of-Fact associated with this decision type, projects must demonstrate compliance furthering the goals and policies of the Comprehensive Plan. Additionally, the project does not meet the commitments made by the developer identified in a Town Council approved Development Agreement and Economic Development Agreement which require a mixture of office, retail, and hospitality uses. The proposed Amendment reduces the uses of the development to a single office building. The previously committed mixture of uses is an important component of the Town's Land Use goals to transform the area surrounding Ting Park into a true Mixed-Use Center.

Staff Recommendation: ☐ Approve ☒ Deny

Previous Case Related Items

Neighborhood Meeting
The applicant must hold a neighborhood meeting with all property owners within 500 feet of the project prior to submitting an application. A report of the neighborhood meeting has been submitted and is included in the agenda item attachments.

Meeting Date: 4/14/2025
Summary of Issues:

- Concerns regarding the traffic and the access locations to the site.
- Questions regarding the timing of the project and when construction will begin.

Planning Board Consideration & Action

Planning Board Meeting Date: 6/24/2025

A summary of the Planning Board discussion and final recommendation can be found in the Planning Board Action Report attached with the agenda item.

Application Modifications

The following modifications have been made to the application as a result of feedback received from the Planning Board:

- None

Town Council Consideration & Action

Quasi-Judicial Public Hearing

Prior to the Quasi-Judicial Public Hearing:

- Mailed notice will be sent to all property owners within 500 feet of the project.
- Posted notice will be made with a public hearing sign on the property.

Town Council Decision: Quasi-Judicial Decision

Quasi-Judicial Decision:

Quasi-Judicial decisions are determined by the presentation of factual evidence as to whether the proposed Development Plan satisfies the applicable development standards. The Town Council must hold a Quasi-Judicial public hearing to collect facts and then make a decision based on the written and oral evidence presented. A Quasi-Judicial decision must be made on facts and evidence and cannot be based on opinions or hearsay. Anyone who presents facts and evidence during the Quasi-Judicial public hearing must be sworn in under oath and may be subject to cross-examination. These criteria shall be used to evaluate whether the proposal will cause significant adverse impacts on adjacent properties:

Criterion 1: The land uses and development intensity of the proposed project will not have significant adverse impacts on adjacent properties and are consistent with the character of the Zoning District and the land uses authorized therein.

Criterion 2: The proposed project provides for the preservation, improvement, and/or enhancement of open spaces and provides sufficient land dedicated for public park space or an equivalent fee-in-lieu.

Criterion 3: The proposed layout of streets, lots, utilities, water metering, and public improvements, and their relation to the topography of the land, reflect a design which can be economically served by the Town with public services and facilitates the use and future development of adjacent properties.

Criterion 4: The proposed building or site design enhances the public realm, maximizes natural surveillance and visibility, facilitates pedestrian access and circulation, and reinforces the Town's character.

Criterion 5: The design of the project furthers the goals and policies of the Comprehensive Plan.

Potential Development Plan Major Amendment Petition Motion

Adopt Resolution #25-31 to make and accept Findings of Fact for and to approve / deny Development Plan Major Amendment 21-DP-06-A02.

Planning Board Meeting Date: 6/24/2025

Per NCGS §160D-301(b), the Planning Board may provide a preliminary forum for review of quasi-judicial decisions, provided that no part of the forum or recommendation may be used as a basis for the deciding board.

Planning Board Decision Type: Advisory Decision

Advisory Decision
The Planning Board must review the application and make a recommendation to the Town Council.

The Planning Board should consider whether or not the proposed Development Plan Major Amendment is consistent with the technical standards of Town of Holly Springs Unified Development Ordinance.

The Planning Board discussed the following issues and concerns:
- The affordable housing project that is located adjacent to this site and is associated with the Major Subdivision Plan.
- The project not including a mix of uses and the only use on this site being medical.
- Discussed the timing of the development and when the commercial pieces would be constructed.

Development Plan Major Amendment Motion
The Planning Board recommends the Town Council approve Development Plan Major Amendment 21-DP-06-A02 for 1317 N Main St. Commercial Tracts as submitted by Adam Pike, McAdams, dated Revised 6/11/2025 with staff recommended conditions.

The Planning Board voted in favor of the recommendation (8 - 1)

Those voting against the motion:
- Mr. Crandall – The project is not consistent with Criterion 5.

Resolution No. 25-31
Date Submitted: July 15, 2025
Date Adopted: July 15, 2025

RESOLUTION OF THE TOWN OF HOLLY SPRINGS TOWN COUNCIL MAKING FINDINGS OF FACT FOR AND TO APPROVE WITH CONDITIONS / DENY DEVELOPMENT PLAN MAJOR AMENDMENT (21-DP-06-A02); FOR 1317 N MAIN ST COMMERCIAL TRACTS

WHEREAS, the Town of Holly Springs Town Council adopted *Town of Holly Springs Unified Development Ordinance* ("UDO") in March 2022; and

WHEREAS, pursuant to NCGS §§160D 403 and Chapter 11 of the Town of Holly Springs UDO, the Town Council of Holly Springs ("Town Council") has the authority to grant approval of Development Plans if competent and substantial evidence is presented by the Petitioner which allows the Town Council to find as a fact that conditions either currently exist or may exist after implementation of conditions by the Town Council. Such findings are each of the following:

Development Plan Major Amendment Findings of Fact:
The Town Council shall consider the following review criteria in determining whether to approve, approve with conditions, or deny a Development Plan.

Criterion 1: The land uses and development intensity of the proposed project will not have significant adverse impacts on adjacent properties and are consistent with the character of the Zoning District and the land uses authorized therein.

Criterion 2: The proposed project provides for the preservation, improvement, and/or enhancement of open spaces and provides sufficient land dedicated for public park space or an equivalent fee-in-lieu.

Criterion 3: The proposed layout of streets, lots, utilities, water metering, and public improvements, and their relation to the topography of the land, reflect a design which can be economically served by the Town with public services and facilitates the use and future development of adjacent properties.

Criterion 4: The proposed building or site design enhances the public realm, maximizes natural surveillance and visibility, facilitates pedestrian access and circulation, and reinforces the Town's character.

Criterion 5: The design of the project furthers the goals and policies of the Comprehensive Plan.

WHEREAS, the Town Council has heard sworn testimony and has accepted and entered the Applicant's written findings of fact into the minutes (Exhibit A), have received site plans, and have considered conditions of approval (Exhibit B) for the following requested Development Plan Major Amendment:

Development Plan Major Amendment (21-DP-06-A02): Major Amendment for a reduction in the building height, reduction in the building square footage, and a modification in the building design.

SUPPORTING APPROVAL

WHEREAS, the Town Council has received competent and substantial evidence and has therefore found the written findings of fact. The Town Council finds that the Applicant's findings of fact to be consistent with the public testimony received on the requested Development Plan, and therefore the Town Council is able to reach conclusions independently (Exhibit C) or be reasonably able to meet the conclusions on the Findings of Fact upon implementation of additional conditions listed on Exhibit D to this Resolution.

THEREFORE, BE IT RESOLVED by the Town Council to make and accept the Findings of Fact and to approve with conditions (Exhibit B) Development Plan Major Amendment (21-DP-06-A02) for 1317 N Main St Commercial Tracts; as submitted by Adam Pike, McAdams.

SUPPORTING DENIAL

WHEREAS, the Town Council has received competent and substantial evidence and has therefore found the written findings of fact. The Town Council finds the Applicant's findings of fact (Exhibit A) not consistent with the public testimony received on the requested Development Plan, and therefore the Town Council reaches conclusions independently (Exhibit C).

THEREFORE, BE IT RESOLVED by the Town Council to make and accept the Findings of Fact and to deny Development Plan Major Amendment (21-DP-06-A02) for 1317 N Main St Commercial Tracts; as submitted by Adam Pike, McAdams.

Adopted by the Holly Springs Town Council on this, the 15th day of July, 2025.

Town of Holly Springs by **ATTEST**:

_____ _____

Sean Mayefskie, Mayor Linda McKinney, Town Clerk

RESOLUTION EXHIBIT A

DEVELOPMENT PLAN MAJOR AMENDMENT (21-DP-06-A02) FINDINGS OF FACT SUBMITTED BY APPLICANT

Criterion 1: The subject property is zoned Community Business Conditional Use, which allows for a wide variety of uses, including the proposed use, professional office. Additionally, the approved zoning conditions assure there are no adverse impacts to adjacent properties. The proposed perimeter buffer to Easton Acres will be undisturbed, which means existing plant material will remain and shall be supplemented to achieve a C-150 planting standard. The major amendment also drops down the height of the building from 4 story to 3 story, which was appreciated by the neighbors in attendance at the neighborhood meeting. Greenway connections are also proposed to nearby Ting Park, which will allow safe pedestrian connections to this wonderful community amenity.

Criterion 2: The subject site is located adjacent to Ting Park, so no public park dedication was required. However, the project will be installing greenway to Ting Park as well as a rapidly flashing beacon crosswalk across Sportsmanship Way, allowing for safe pedestrian access to the wonderful open space that is the nearby town park. Additionally, as part of the original rezoning approval, the overall project (combined with the affordable housing development), is also required to pay a parks & recreation fee-in-lieu payment to the Town.

Criterion 3: The proposed project layout will ensure that streets, lots, utilities and public improvements are served by town services in an economical way. The proposed development will extend public utilities to the site. The developer agrees to design and construct the mitigation improvements set forth in the sewer study. Additionally, the developer will be construction a vital stream crossing across town owned property adjacent to Sportsmanship Way, allowing access to the property, all on the developer’s dime.

Criterion 4: As noted elsewhere, the project will be saving existing trees in the perimeter buffer adjacent to Easton Acres, as well as the buffer along the Highway 55 bypass. Additionally, there is an existing environmental protection area along Sportsmanship Way. All these contribute to maximizing a natural surveillance surrounding the property on all sides. The extension and construction of the planned greenway as well as the crosswalk across Sportsmanship Way, work well to facilitate pedestrian access and circulation, as well as sidewalks throughout the development.

Criterion 5: This project is designed to utilize the acreage to the greatest extent possible whilst being a good neighbor, exactly what the Comprehensive Plan designation of Mixed-Use Center envisions. The entrance road into the site will feature sidewalk, as well as street trees, elsewhere the greenway along NC 55 bypass will be extended, ensuring pedestrian access will be enhanced – another key goal of the Comprehensive Plan. More importantly, the overall development, will provide a mix of uses that will improve and enhance the community – professional office and affordable housing – the first mix of this kind in Holly Springs!

RESOLUTION EXHIBIT B

DEVELOPMENT PLAN MAJOR AMENDMENT (21-DP-06-A02) CONDITIONS OF APPROVAL

1. All previous conditions of approval for *1317 N Main Commercial Tracts 1 & 2 Development Plan* apply to this plan amendment except for any condition that describes a fee or a fee-in-lieu to be paid shall now comply with the current amounts due pursuant to the Town's current annual budget or any unexpired development agreement.
2. Approval of Stormwater Management Plan is required prior to issuance of a land disturbance permit or construction drawing approval.
3. Payment of the Stormwater Fee-in-Lieu will be required prior to construction drawing approval.
4. All items listed on the Stormwater Submittal Checklist, Form #16003, must be included with the first construction drawing submittal.
5. Please note that this project will be required to meet Town's NPDES Phase II Post Construction Stormwater ordinance. A general stormwater requirement may affect this project. Refer to NCDWQ's website for more information.
6. Please note that the Town Staff has been delegated approval authority by NCDWQ for stormwater management plans. Documentation of approval to NCDEQ is the responsibility of the owner.
7. Stormwater sureties are required on this project. A performance surety in the form of a bond, letter of credit or cash is required in the amount of 125% estimated construction cost of the stormwater BMP prior to the preconstruction meeting.
8. All environmental permits must be obtained prior to construction drawing approval and/or issuance of a land disturbance permit for the entire project. This will become a condition of plan approval.
9. The layout of the sewer and retaining wall on the northwest corner of the site will be further coordinated during Civil Construction Drawing Review.
10. Internal pedestrian connectivity via sidewalks around the north side of Building A will continue to be coordinated during Civil Construction Drawing Review.
11. The proposed dumpster location will continue to be coordinated during Civil Construction Drawing Review.

RESOLUTION EXHIBIT C

TOWN COUNCIL'S FINDINGS OF FACT

The Town Council accepts the findings of fact as presented in Exhibit A or otherwise reaches conclusions independently specified below:

The Town Council made the following additional findings:

Criterion 1: X No additional findings

Criterion 2: X No additional findings

Criterion 3: X No additional findings

Criterion 4: X No additional findings

Criterion 5: X No additional findings

RESOLUTION EXHIBIT D

ADDITIONAL CONDITIONS OF APPROVAL

The Town Council added the following conditions in order to adequately make and accept the Findings of Fact:

X No additional conditions of approval

PREPARED BY/RETURN TO: JOHN SCHIFANO, ROD BOX 105

STATE OF NORTH CAROLINA
COUNTY OF WAKE

DEVELOPMENT AGREEMENT REGARDING INFRASTRUCTURE CONSTRUCTION AND FEE REIMBURSEMENT
(N.C. GEN. STAT. § 160A-420.20 *et seq.*)

BY AND BETWEEN

THE TOWN OF HOLLY SPRINGS

and

CAPITAL ASSOCIATES MANAGEMENT LLC
& DHIC, INC

THIS DEVELOPMENT AGREEMENT REGARDING INFRASTRUCTURE CONSTRUCTION AND FEE REIMBURSEMENT (this "Agreement"), made and entered into this 19 day of January, 2023 (the "Effective Date"), by and between the **TOWN OF HOLLY SPRINGS**, a North Carolina Municipal corporation, hereafter referred to as the "Town" and **CAPITAL ASSOCIATES MANAGEMENT, LLC**, a North Carolina limited liability company ("CAM"), and **DHIC, Inc.**, a North Carolina non-profit corporation ("DHIC"). CAM, DHIC and their respective successors and assigns, are hereafter referred to collectively as the "Developers," and each may be referred to herein as a "Developer." The Town and the Developers are collectively referred to herein as the "Parties."

WITNESSETH:

WHEREAS, CAM is the contract purchaser of a tract of land in Wake County, North Carolina, being pictured and labeled as "Tract A" on Exhibit A attached hereto and incorporated herein by reference ("Tract 1"), which is situated within the corporate limits of the Town;

WHEREAS, DHIC is the contract purchaser of a tract of land in Wake County, North Carolina, being pictured and labeled as "Tract B" on Exhibit A ("Tract 2"), which is situated within the corporate limits of the Town;

WHEREAS, Tract 1 and Tract 2 are adjacent to each other, and together have a collective area of approximately 19 acres (collectively, the "Property"); and,

WHEREAS, the Developers are requesting approval of a development plan for a mixed-use commercial and residential development the Property, in a manner consistent with the sketch plans prepared by the Developer attached hereto as Exhibit B and incorporated herein by reference and with the terms of this Agreement (the "Project"); and,

WHEREAS, the Property is currently located within the corporate limits of the Town and is currently served by the Town potable water and sewer service; and,

WHEREAS, the Developers desire careful integration between public and private capital facilities planning, financing and construction, and further desire sufficient assurances that development standards, ordinances, policies and procedures shall remain stable throughout the extended period of development of the Property; and,

WHEREAS, it is beneficial to both the Town and the Developers to construct certain on-site and off-site infrastructure improvements relative to the Project to enable the safe and responsible treatment of wastewater by the Town and to provide potable drinking water to the ultimate users of the Project, as well as other infrastructure; and,

WHEREAS, the Town requires, pursuant to N.C.G.S. § 160A-372 and its Unified Development Ordinance ("UDO"), the dedication and construction of streets and rights of way and other infrastructure and for the distribution of population and traffic in such a manner that it will avoid congestion and overcrowding and will create conditions essential to public health, safety, and the general welfare, which may be accomplished through private drives and cross access easements across the Property; and,

WHEREAS, pursuant to rezoning 20-REZ-03, approved on April 6, 2021, the Town approved rezoning Tract 1 to Commercial Business (CB) and Tract 2 to RMF-15 pursuant to the UDO (collectively, the "Approved Rezoning"); and,

WHEREAS, the Town has enacted a subdivision control ordinance, pursuant to N.C.G.S. §160A-372, which provides for the orderly control of growth and development in the Town in general and on the Property; and,

WHEREAS, the Town is authorized pursuant to N.C.G.S § 160A-311 *et. seq.* to operate and does in fact operate a water and sewer treatment enterprise and requires, pursuant to N.C.G.S. § 160A-317, the connection to the system by owners of developed lands located within the Town, for a cost set forth in the Town's annual budget or as amended herein; and,

WHEREAS, the Town is authorized to enter into this Agreement pursuant to N.C.G.S. §§ 160A-16 and 160A-400.20 *et seq.*, and may contract with the Developers to carry out the public purposes set forth herein pursuant to N.C.G.S. §160A-20. A public hearing on this Agreement was held on September 20, 2022, and after consideration of the facts brought forth during the hearing, together with the promises and inducements contained herein, the Town Council of Holly Springs determined that it was in the best interests of its citizens to enter into this Agreement; and,

WHEREAS, the Town requires certain fees to be paid upon development of land and for the granting of a building permit, said fees being listed in the Town's annual budget and as listed as Exhibit D, and each Developer, in consideration of the foregoing benefits set forth in this Agreement, hereby agrees that (a) it (i) is familiar with these fees listed on the Town's website as of the Effective Date pursuant to

its annual adopted budget ordinance, (ii) does not dispute the reasonableness of such fees; and (b) notwithstanding any reimbursements discussed below or any fees reduced or waived via an economic development agreement between the Town and such Developer, hereby agrees to timely pay all normal and customary fees to the extent applicable to such Developer, in connection with its development of its portion of the Project at such time as each such applicable fee becomes due to the Town, in the ordinary course of development, unless otherwise provided for herein; and,

WHEREAS, the Town considers the Project favorable to the Town because (i) it contains a significant amount of non-residential (commercial, office, and retail) uses, (ii) it will add affordable housing to the community, which is a condition placed upon development of the Property by the previous owner of the Property (Wake County), (iii) it is consistent with the Town's strategic planning initiative, and (iv) the Developers have agreed to incorporate several needed public infrastructure improvements as more fully described below (the "Public Improvements") in the vicinity of the Property, which will serve the Project as well as other nearby properties, and will generally benefit the Town as a whole;

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein the Town and the Developer agree as follows:

ARTICLE I
DEFINITIONS

1. **Definitions:** The terms below shall have the following meanings as used herein:

a. Actual Costs: The amount of true costs actually incurred by the Developers for construction of the Project, upon final completion and approval thereof by the Town, inclusive of the cost of acquiring easements or rights of way from those not party to this agreement, but exclusive of (i) any administrative costs (i.e., profit and overhead) of the Developers, and (ii) any construction contingency for the Project. Actual Costs, which hereinafter are agreed to be reimbursed or otherwise paid by the Town, shall be audited by the Town under generally accepted accounting principles for governments for a period of three (3) years after the last act of the Developers in connection with the Project under this Agreement. The Developers' right of reimbursement for Actual Costs pursuant to the terms of this Agreement is contingent upon the Developer first receiving from the Town advance written consent to the expected cost before the cost is incurred, provided, that such consent shall not be unreasonably withheld or delayed by the Town.

b. Affordable Housing: One hundred twenty-four (124) residential units to be built and professionally managed by DHIC, where rents shall be set at a price that on average is affordable to a household with an annual income that is no greater than 60% of the Area Median Income for the respectively-sized household in the Raleigh, NC MSA, as determined by the United States Department of Housing and Urban Development.

c. Development: Generally defined as the planning for or carrying out of a building activity, the making of a material change in the use or appearance of any structure or property, or the dividing of land into two or more parcels. "Development," as designated in a law or in a Development Permit, includes the planning for and all other activity customarily associated with it unless otherwise specified. When appropriate to the context, "Development" refers to the planning for or the act of developing or to the result of development. Specifically, in

this Agreement, the term "Development" refers to the construction by the Developers of all building activities associated with the Project as set forth on the Concept Plans.

d. Development Permit: A building permit, zoning permit, subdivision approval, special exception or conditional use permit, variance, or any other official action of the Town having the effect of permitting the Development of real property.

e. Land Development Regulations: Ordinances and regulations enacted by the Town for the regulation of any aspect of development and includes zoning, subdivision, or any other land development ordinances, including but not limited the UDO.

f. Laws: All ordinances, resolutions, regulations, comprehensive plans, land development regulations, policies, and rules adopted by the Town affecting the Development of real property, and includes laws governing permitted uses of real property, density, design, and improvements.

g. Master Plan: The plan described in Section 3.01 of the Town's Development Procedures Manual.

h. NCDOT: the North Carolina Department of Transportation.

i. Offsite Infrastructure: The public sanitary sewer gravity line, all potable water lines, and other Town-owned equipment or facilities, to the extent not located on the Property.

j. Person: An individual, corporation, business or land trust, estate, trust, partnership, association, two or more persons having a joint or common interest, State agency, or any legal entity.

k. Concept Plans: The sketch plans for the Project attached hereto as Exhibit B, which were previously submitted by Developers to the Town and have been approved by the Town.

l. Public Infrastructure: Offsite Infrastructure as well as the public sanitary sewer gravity line, all potable water lines, and other Town-owned equipment or facilities, and road improvements or fees in lieu required by the Town or NCDOT, each to the extent located on the Property or in an easement appurtenant to the Property.

m. Public Benefit: The construction and dedication of the Public Infrastructure by the Developer, an increase in commercial and retail uses as well as an increase in the Town's stock of affordable housing, each of which furthers the Town's strategic planning efforts, and in the case of the Project on Tract 1, the additional financial revenue of the Town brought by the incremental ad valorem tax value of Tract 1 as so improved.

n. Property: All real property shown or described in Exhibit A, which is subject to land-use regulation of the Town and includes any improvements, fixtures, or structures customarily regarded as a part of real property.

o. Project: The Developers' plan to develop the Property in the manner described in Concept Plans, and as approved by the Town Council of Holly Springs through its normal development

process. The Project shall include the construction of affordable housing units as well as a commercial development including office, retail and a hotel.

ARTICLE II
DESCRIPTION OF DEVELOPMENT AGREEMENT

1. SCOPE: The legal description of the Property subject to this agreement and the names of its legal and equitable property owners are contained in Exhibit A.

2. TERM: The duration of this Agreement is ten (10) years, beginning on the Commencement Date, as defined herein. The parties are not precluded from entering into subsequent development agreements that may extend this period of duration. The condition precedent to this Agreement are: (1) that Wake County shall transfer ownership of the Property to the Town; (2) that the Developers shall have received any financing necessary for their acquisition and Development of the Property; (3) that no later than ninety (90) days of the latest of (i) approval of the Master Plan and the site plan for the Development, and (ii) issuance of grading permit for the Project, the Town shall transfer ownership of Tract 1 to CAM and of Tract 2 to DHIC. The day upon which the last of the conditions precedent set forth in the preceding sentence shall be fulfilled shall be the "Commencement Date".

3. DEVELOPMENT PERMITTED USES: The development uses permitted on the Property are shown on the Concept Plans, and are subject to the Zoning Conditions as listed in Exhibit C.

a. The Project generally and initially shall consist of the Development of two (2) tracts:

(i) Tract 1 consists of approximately 11.11 acres on the western half of the Property. Development of Tract 1 shall include one or more office buildings, as well as retail facilities, a hotel, and parking.

(ii) Tract 2 consists of approximately 8.78 acres on the eastern half of the Property. Development of Tract 1 shall include one hundred twenty-four (124) residential rental dwelling units in buildings of 3 to 3-1/2 stories, as well as a playground, community building, and outside picnic areas. The improvements on Tract 1 shall be actively managed by DHIC (or an affiliate of DHIC) as an Affordable Housing development.

b. The Town hereby agrees that the land uses described herein and the Project as shown on Exhibit B is in the best interest of the Town and is in keeping with the land use plans of the Town.

c. The Developers voluntarily offered those zoning conditions set forth in Exhibit C attached hereto and incorporated herein by this reference (the "Zoning Conditions") for the Approved Rezoning, which are binding upon Development of the Property.

4. SEWER IMPROVEMENTS: The Town and the Developers evaluated whether the existing gravity and force-main lines, together with the existing Twelve Oaks Pump Station (collectively, the "Existing Sewer Infrastructure") had the capacity to support the Project, or if improvements to the Existing Sewer Infrastructure would be necessary, and they determined that the Existing Sewer Infrastructure is

not adequate to support the Project. In consideration of the early payment by the Developers of the System Development Fees required for this Project, as set forth herein, which fees are also described in the Town's annual budget for its water and sewer system, the Town has completed the construction upgrades required to the Existing Sewer Infrastructure (the "Water-Sewer Upgrades"). Notwithstanding the foregoing, in no event shall a delay associated with the Town's completion of the Water-Sewer Upgrades be cause for the Town to delay in issuance of certificates of occupancy for any portion of the Project.

Each Developer shall pay the sum of all the fees set forth in this Section 4 as required for water and sewer for the Project on such Developer's portion of the Property (the "System Development Fees" or "SDF") at such time as such Developer (i) receives construction drawing approval, subject to payment of all SDF, and (ii) has a pre-construction meeting with the Town regarding Development of the Project on such Developer's portion of the Property. The Town agrees that DHIC's obligation to install metered water connections shall be modified as follows: DHIC shall only be required to install a single metered water connection for each building of residential units (as opposed to individual metered connections for each unit) and DHIC shall pay the SDF accordingly. For purpose of clarity the following tables describe the difference:

	Residential (Normal)				
	Units	type	Cost	Total	Notes
SDF - Water	124	3/4" <3000 Sf	$ 3,741.00	$ 463,884.00	per unit 3/4" charge
SDF - Sewer	124	3/4" <3000 Sf	$ 4,054.00	$ 502,696.00	per unit 3/4" charge
SDF - Water	1	1 1/2" 3000-20,000 Sf	$ 6,890.00	$ 6,890.00	Club house
SDF - Sewer	1	1 1/2" 3000-20,000 Sf	$ 7,467.00	$ 7,467.00	Club house
			Total SDF	$ 980,937.00	

Residential (Modified approach for Affordable Housing)					
	Units	type	Cost	Total	Notes
SDF - Water	5	3" >20,000 Sf	$ 12,010.00	$ 60,050.00	
SDF - Sewer	5	3" >20,000 Sf	$ 13,015.00	$ 65,075.00	
SDF - Water	1	1 1/2" 3000-20,000 Sf	$ 6,890.00	$ 6,890.00	Club house
SDF - Sewer	1	1 1/2" 3000-20,000 Sf	$ 7,467.00	$ 7,467.00	Club house
			Total SDF	$ 139,482.00	

Note: The above fees are the SDF fees for the 2021 budget year and will be applicable to the Project if applied for and paid in the ordinary course of development as required by the Town, but any SDF fees paid after June 30, 2024 may be subject to change. The parties acknowledge that (a) SDF is dependent on the type and number of meters used, (b) construction drawing approval is required prior to application for water service, and (c) payment of SDF is required prior to final construction drawing approval.

5. TRANSPORTATION IMPROVEMENTS: The Developers shall design, permit and construct the following Public Infrastructure improvements relating to transportation:

a. Design and construct half of the recommended 86-foot, 4-lane median thoroughfare with bike lanes on N. Main Street from the northern property line of the Property to Sportsmanship Way.

b. Design and construct a northbound left turn lane (approximately 100 feet in length) on N. Main Street at the access point on N. Main Street north of Sportsmanship Way, opposite Trellis Pointe Drive.

c. Provide a Fee-in-Lieu ("FIL") payment in the amounts set forth below for its proportionate share of the following improvement projects as required by the Town, and such payment shall be made upon the approval of civil construction drawings for such Developer's portion of the Project:

- FIL of design and construction of northbound right turn lane on N. Main Street at Old Smithfield Road / Sunset Lake Road, in an amount to be determined prior to Master Plan approval, as calculated by an opinion of probable cost by a licensed professional engineer, the selection of which is mutually agreed to by the applicable Developer and the Town;
- FIL of design and construction of future traffic signal on N. Main Street at Katha Drive / Arbor Creek Drive in the amount of $12,995 for the Project as a whole;
- FIL of half a 20-foot median from the terminus of the existing median on N. Main Street [Trellis Pointe Drive] to the Northern property line of the Property, in the amount of $10,325 for the Project as a whole;

d. The Development of the Project shall include construction and installation of a pedestrian crosswalk featuring a rapid beacon signals across Sportsmanship Way, as illustrated on the Master Plan.

e. Construction of Approximately 510 linear feet of pedestrian sidewalk along the eastern border of the Property adjacent to and running parallel with N. Main Street. In the event the pedestrian sidewalk shall cross onto property owned by the Town, the Town will provide the necessary easements to the Developers to construct the pedestrian sidewalk on its property.

f. Construction of Approximately 500 linear feet of a pedestrian greenway beginning at the end of the existing greenway path as of the Effective Date, just to the north of Sportsmanship Way, and continuing north along the western boundary of the Property, ending at the underpass beneath North Carolina Highway 55. In the event the pedestrian greenway shall cross onto property owned by the Town, the Town will provide the necessary easements to the Developers to construct the pedestrian greenway on its property.

g. As a FIL, the Developers shall dedicate right of way to the Town for upgrades to NC 55 consisting of a 20 foot wide strip running along the westernmost edge of the Property.

h. The Developers shall dedicate a 10+/- foot wide strip of right of way to the Town on N. Main Street from the northern property line of the Property to Sportsmanship Way (included in subparagraph 5(a) above).

i. The Developers shall be allowed to construct a roadway across land currently owned by the Town adjacent to Sportsmanship Way (the "Town Property") in order to provide

b. Provide any off-site parks and recreation amenity for dedication to the Town, in the sole discretion of the Town, such as a dedicated greenway on the western side of NC 55 By-pass, on property owned by Wake County.

11. TERMS REQUIRED FOR PUBLIC SAFETY: Description of any conditions, terms, restrictions, or other requirements determined to be necessary by the Town for the public health, safety, or welfare of its citizens.

a. All Zoning Conditions shall be complied with in the Development of the Project.

12. HISTORIC STRUCTURES: None exist on the Property.

13. DEVELOPMENT SCHEDULE: The Developers, in consideration of the covenants contained herein, shall be allowed the following expedited review considerations: (i) concurrent review of a master plan and a development plan; (ii) concurrent review of construction drawings (civil) and building permit review; (iii) to submit the items in clause (ii) for review by Town staff prior to Town Council approval of a development plan or master plan for the Project, so long as a favorable recommendation for the Project has been received from the Town's Planning Board.

ARTICLE III
DUTIES OF THE DEVELOPERS

1. The Developers shall design, permit, and construct the Offsite Infrastructure for the Project in the location(s) approved by the Town and as shown on plans (to be submitted), according to engineering best practices, requirements of the Town, and requirements of NCDEQ and any other applicable State regulatory agency. The Developers shall secure and dedicate to the Town all easements on the Property necessary for the construction and perpetual maintenance of the Public Infrastructure constructed in connection with the Project. For Public Infrastructure to be installed by the Developers on any land not owned by or controlled by the Developers, the Town shall convey such land to the Developers, if owned by the Town, or secure all necessary easements on any such land, if owned by third parties, for the construction and perpetual maintenance of the Public Infrastructure in a timely manner so as not to delay the completion of the Developers' duties hereunder.

2. The Developers shall construct in a workmanlike manner the Public Infrastructure on the Property (i) according to the design specifications and criteria of the Town which are in existence as of the Effective Date, and (ii) in full compliance with any applicable NCDEQ requirements. The Public Infrastructure on the Property, together with any and all appurtenances, easements, and equipment associated with the Project and required for public dedication, shall be dedicated to the Town in a manner consistent with the development plan for the Project and in a manner in accordance with the Town's standards.

3. The Developers shall construct the Public Infrastructure on the Property and the Offsite Infrastructure according to the plans and specifications submitted in a manner consistent with the standards of the Town in effect as of the Effective Date.

4. The Developers shall pay all development fees for the Project at the time they would otherwise ordinarily be due (or as otherwise amended pursuant to Section 4 above), in an amount that is

determined by the fee schedule approved in the annual budget which is in effect at the time of this Agreement.

ARTICLE IV
GENERAL TERMS

1. All of the Developers' obligations under this Agreement, including but not limited to the obligations under Articles II and III of this Agreement, are contingent upon (i) satisfaction of the conditions precedent set forth in Section 2 of Article II above, and (ii) the Town's approval of the Master Plan and a site plan for the Project, and (iii) issuance of all Development Permits for the Project to one or both of the Developers.

2. All reimbursements, if any, for the Project shall be provided on the basis of final documented Actual Costs, as approved by the Director of Engineering for the Town, in accordance with this Agreement. Any opinions of project cost included in this Agreement are based upon preliminary designs and are approximate.

3. The Developers shall be responsible for the complete design and construction of the Project, including all surveying, design, permitting, plat preparation and recordation, testing, engineering, bidding, construction, inspection, acceptance, easement maps and documents, construction management, construction administration, and all other necessary functions to ensure that the Project is complete-in-place and fully functional, built and operational in accordance with Town and State standards and approved plans for the Project. The costs of all of these items shall be borne by the Developers and shall not be subject to reimbursement or participation by the Town, except as specifically described in this Agreement.

4. In the course of installing the sewer line or any other work on easements obtained by the Town or under the Town's ownership, the Developers shall operate under permission to encroach onto a Town easement and shall hold the Town harmless from acts or omissions by or on behalf of the Developers.

5. Each Developer agrees to protect, defend, indemnify and hold the Town, and its officers, employees and agents, free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees, and other expenses or liabilities of every kind or character, to the extent arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings, or causes of actions of every kind and character, made by third parties, in connection with or arising out of the entry onto and performance of work for the Project or the Public Infrastructure on easements held by the Town, except to the extent that any such liability arises out of the negligence or willful misconduct of the Town or its agents, employees or contractors.

6. The Town agrees to protect, defend, indemnify and hold the Developers, and their respective officers, employees and agents, free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees, and other expenses or liabilities of every kind or character, to the extent arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings, or causes of actions of every kind and character made by third parties, in connection with or arising out of the injury to (including death of) persons or physical damage to property arising out of the performance of Town's obligations under this Agreement by the Town, its agents, employees and contractors (collectively, "Claims"), except to the extent any such Claims arise out

of the negligence or willful misconduct of a Developer, or its agents, employees or contractors. The Town further agrees to investigate, handle, provide defense for and respond to, any such Claims at its sole expense and agrees to bear all other costs and expenses related to such Claims, even if such Claims are groundless, false, or fraudulent but only to the extent the same are not expressly excluded as set forth herein.

7. The Project shall be subject to the Town's policies and procedures regarding Town acceptance and warranty on Public Infrastructure.

8. It shall be the responsibility of the Developers to ensure that all regulatory approvals for the Project or any part thereof, are in place before beginning construction.

9. The Town Manager is authorized to make decisions in regard to approvals, including changes to this Agreement in order to complete the scope of work required, within his authority granted by the Town Council, except as otherwise stated herein or required by Town ordinance.

10. The Town shall secure all necessary easements for the Public Infrastructure that is the subject of this Agreement.

ARTICLE V
OTHER

1. The Project shall be subject to the Town's policies and procedures regarding Town acceptance and warranty on Offsite Infrastructure. This Agreement shall not modify the warranty and acceptance procedures established by the Town through the Engineering Standards in place as of the Effective Date.

2. All notices, reports, and other communications given pursuant to this Agreement shall be in writing and shall either be mailed by first class mail, postage prepaid, certified or registered with return receipt requested, or by next-business day delivery via a nationally recognized overnight courier, or delivered in person to the intended addressee. Notice sent by certified or registered mail shall be effective upon the date of delivery indicated on the return receipt. Notice given in any other manner shall be effective upon actual receipt, or rejection of delivery, by the addressee.

3. This Agreement does not provide for the application of subsequently enacted Laws, ordinances, development policies, practices, procedures or standards. The Laws, ordinances, development policies, practices, procedures and standards applicable to the Development of the Project are those in force as of the Effective Date, in the manner prescribed by Holly Springs Ordinance § 14-164.

4. Notices under this Agreement shall be sent to the following:

FOR THE TOWN:

Randy J. Harrington
Town Manager
PO Box 8
Holly Springs, NC 27540
Reference:

FOR THE DEVELOPERS:

Capital Associates Management, LLC
Attn: Frank Baird, Manager
1501 Sunrise Ave, Suite 100
Raleigh, NC 27608

DHIC, Inc.
Attn: Natalie Britt
Vice President, Real Estate Development
113 S Wilmington Street
Raleigh, NC 27601

5. This Agreement shall be governed by and construed in accordance with the law of the State of North Carolina. The Parties consent to the jurisdiction of Superior Court Division of the General Court of Justice located in Wake County, North Carolina in the event a dispute arises between them regarding the terms of this Agreement.

6. If any paragraph or part of this Agreement is found void or unenforceable, the remainder of this Agreement shall continue in full force and effect.

7. This Agreement shall be binding upon and inure to the benefit of the Parties hereto, their respective heirs, successors and assigns.

8. This Agreement contains the entire agreement of the parties and there are no representations, inducements or other provisions relevant to the subject matter hereof, other than those expressed in writing.

9. Exhibit List: The following exhibits attached hereto are incorporated herein by this reference:

EXHIBIT A:	Map of the Property
EXHIBIT B:	Concept Plan
EXHIBIT C:	Zoning Conditions

IN WITNESS WHEREOF, the parties have executed this Agreement the day and year first above written.

TOWN OF HOLLY SPRINGS

(*Town Seal*)

BY: _____
Randy J. Harrington, Town Manager

ATTEST:

_____
Linda McKinney, Town Clerk
Kathy White, Deputy Town Clerk

This document is sufficient as to form.

_____
John P. Schifano, Town Attorney

This instrument has been pre-audited in the manner proscribed by the Local Government Finance Act.

_____
Patty Dressen
Interim Finance Director

NORTH CAROLINA
WAKE COUNTY

I, a Notary Public of the County and State aforesaid, certify that Linda C. McKinney personally came before me this day and acknowledged that she is the Town Clerk/Deputy Town Clerk of the Town of Holly Springs, and that the seal affixed to the foregoing instrument in writing is the corporate seal of said Town, and that said writing was signed and sealed by her in behalf of said corporation by its authority duly given and the said person acknowledged this writing to be the act a deed of said corporation.

WITNESS my hand and official stamp (or seal), this the 19th day of January, 2023.

KATHRYN L WHITE
NOTARY PUBLIC
WAKE COUNTY, NC
My Commission Expires 3-4-2025

_____
Notary Public

My Commission Expires: 3-4-25

[Agreement signatures continue on next page]

[Agreement signatures continued from previous page]

CAPITAL ASSOCIATES MANAGEMENT, LLC

By: _____
Name: Frank P. Baird
Title: CEO, Manager

(*Seal*)

STATE OF NORTH CAROLINA
COUNTY OF Wake

I, a Notary Public for the aforesaid county and state, certify that Frank P. Baird, personally came before me this day and acknowledged that he is the CEO and a Manager of Capital Associates Management, LLC, a North Carolina limited liability company, and that he, in such capacity, executed the foregoing on behalf of the said limited liability company.

WITNESS my hand and official stamp (or seal), this the 13th day of January, 2023

TERRI PAGNANI NOTARY Comm. Exp. 3-15-2025 PUBLIC WAKE COUNTY, NC

[Official Seal]

Terri Pagnani
Notary Public
Terri Pagnani, Notary Public
Typed/Printed Name
My Commission expires: 03-15-2025 tmp

DHIC, Inc.

By: _____
Name: Natalie Britt
Title: Vice President

(*Seal*)

STATE OF NORTH CAROLINA
COUNTY OF _____

I, a Notary Public for the aforesaid county and state, certify that Natalie Britt, personally came before me this day and acknowledged that she is the Vice President of DHIC, Inc., a North Carolina non-profit corporation, and that she, in such capacity, being authorized to do so, executed the foregoing on behalf of the said non-profit corporation.

WITNESS my hand and official stamp (or seal), this the ___ day of January, 2023.

_____
Notary Public
_____, Notary Public
Typed/Printed Name
My Commission expires: _____

[Official Seal]

[end of Agreement signatures]

[Agreement signatures continued from previous page]

CAPITAL ASSOCIATES MANAGEMENT, LLC

By: _____
(*Seal*) Name: Frank P. Baird
Title: CEO, Manager

STATE OF NORTH CAROLINA
COUNTY OF _____

I, a Notary Public for the aforesaid county and state, certify that Frank P. Baird, personally came before me this day and acknowledged that he is the CEO and a Manager of Capital Associates Management, LLC, a North Carolina limited liability company, and that he, in such capacity, executed the foregoing on behalf of the said limited liability company.

WITNESS my hand and official stamp (or seal), this the ___ day of January, 2023

_____
Notary Public

_____, Notary Public
Typed/Printed Name

[Official Seal] My Commission expires:_____

DHIC, Inc.

By: Natalie Britt
(*Seal*) Name: Natalie Britt
Title: Vice President

STATE OF NORTH CAROLINA
COUNTY OF Wake

I, a Notary Public for the aforesaid county and state, certify that Natalie Britt, personally came before me this day and acknowledged that she is the Vice President of DHIC, Inc., a North Carolina non-profit corporation, and that she, in such capacity, being authorized to do so, executed the foregoing on behalf of the said non-profit corporation.

WITNESS my hand and official stamp (or seal), this the 13 day of January, 2023.

Kayla Rosenberg
Notary Public

Kayla Rosenberg, Notary Public
Typed/Printed Name

[Official Seal] My Commission expires: April 30, 2025

[end of Agreement signatures]

KAYLA ROSENBERG
Notary Public, North Carolina
Wake County
My Commission Expires
April 30, 2025

EXHIBIT A
Map of Property

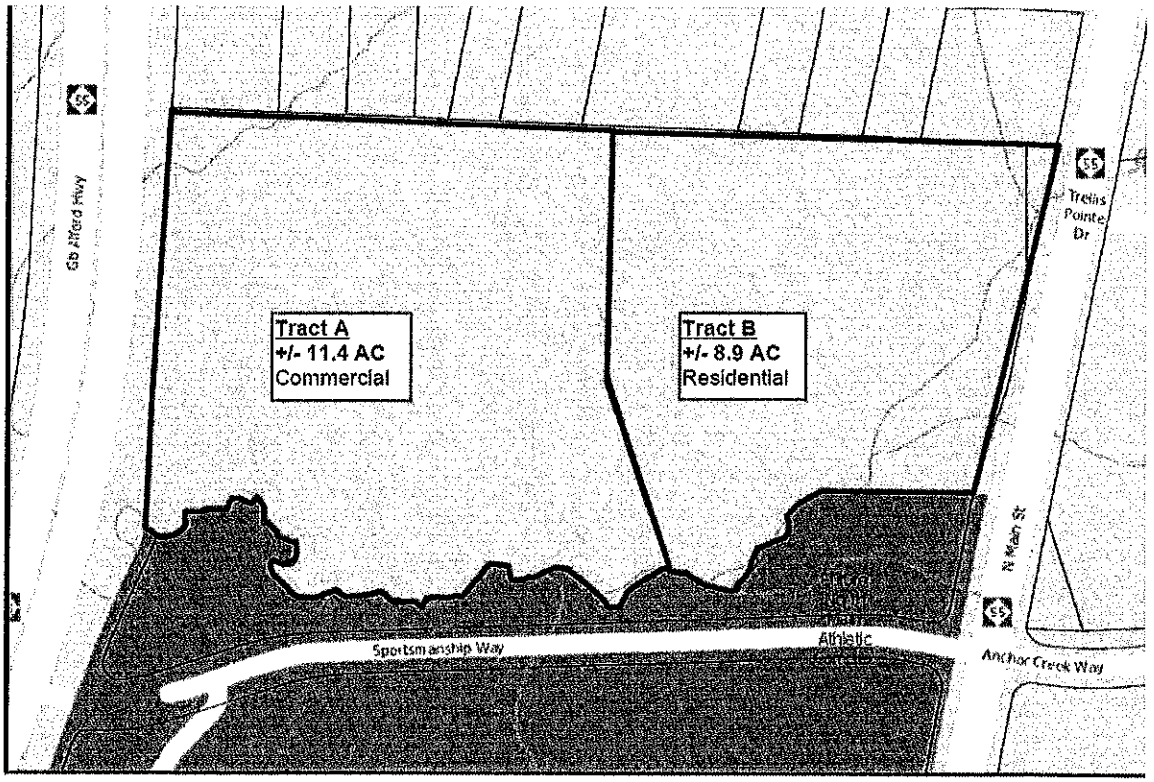
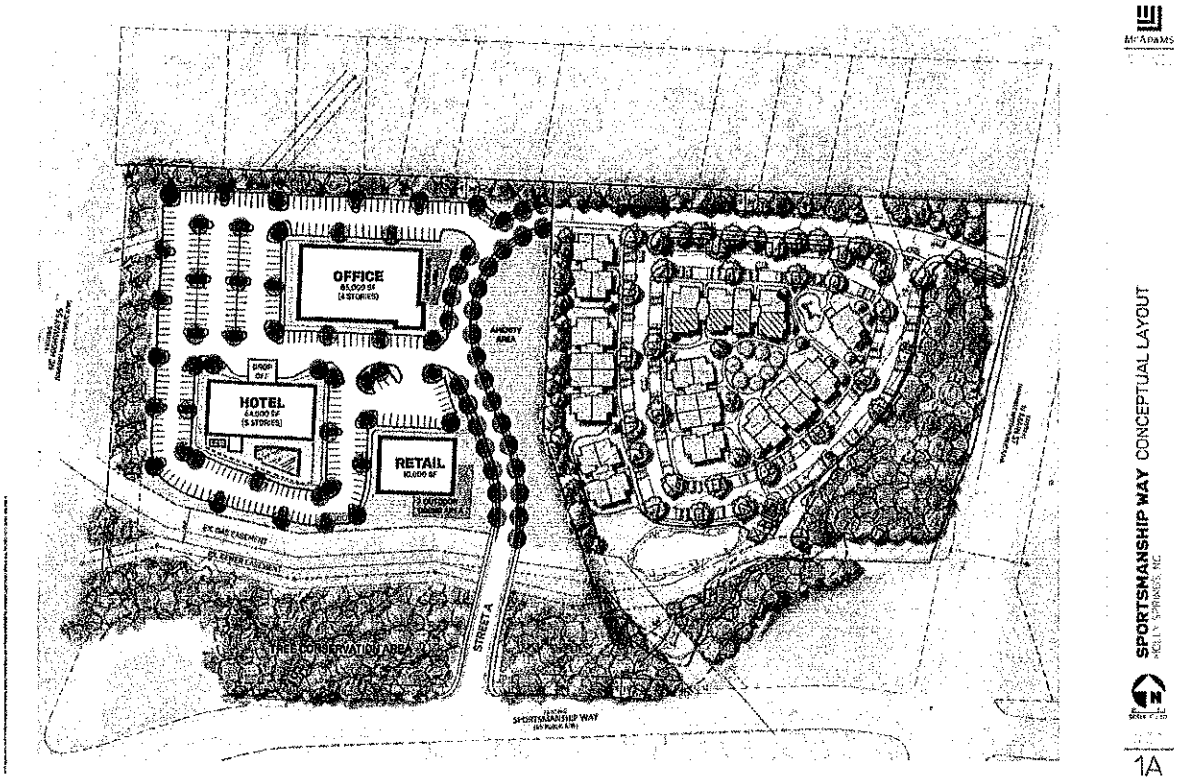


Exhibit B
Concept Plan



[continued on next page]

[end of Exhibit B]

Exhibit C
Zoning Conditions

1) The following uses shall be prohibited uses within the CB zoning district: Automotive Sales & Service: Automobile Parts Sales (new); Quick Oil Change Facility; Car Wash (automatic or self); Gasoline Service Station without repair; Motor Cycle/Scooter Sales; Automotive Sales & Service: Automotive Repair – Minor; Gasoline Service Station with minor repair (not to exceed two (2) accessory indoor service bays); Kennels (with outdoor runs); Food Sales and Service: Restaurant Drive Through, Stand Alone; Public Facilities: Neighborhood Recycling Collection Point; Communications/Utilities: Electricity Relay Station; Retail: Satellite Dish Sales and Service (outdoor display).

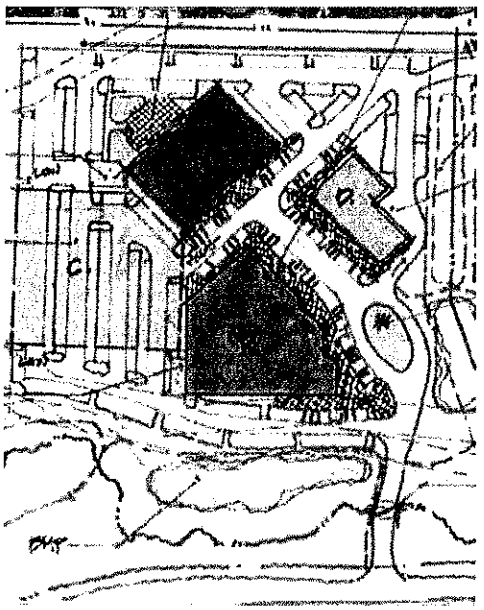
2) The CB zoning district shall contain a Class A commercial office building with a minimum square footage of 70,000 Square Feet with a minimum building height of 2 stories.

3) The following uses shall be permitted uses within the R-MF-15 zoning district: Residential:

   Multifamily dwellings. The allowed residential uses must meet the requirements of Section 42 of the Internal Revenue Code or a substantially equivalent form of affordable rental housing. 100% of the dwelling units developed on the property must meet this requirement. Accordingly, rents shall be set at a price that on average is affordable to a household with an annual income that is no greater than 60% of the Area Median Income for the respectively-sized household in the Raleigh, NC MSA, as determined by the United States Department of Housing and Urban Development.

4) The CB and R-MF-15 parcels will have both vehicular and pedestrian connectivity so that the two zoning parcels that make up this request will be interconnected and function as a horizontal mixed use development. Each parcel shall record an easement in a form approvable by the Town allowing cross access.

5) The CB zoned parcel shall provide a primary entrance driveway/street from Sportsmanship Way. To create a walkable street scape along this primary driveway/street, a minimum and maximum building setback will be established by the project master plan. To establish the intent of commercial building placement, no more than one bay of off-street parking spaces shall be constructed between the building and primary driveway/street. This is more particularly illustrated below:



Note: The above illustration is conceptual in nature and meant to illustrate desired building placement only. Final design will be determined at the time of development plan(s) submittal(s).

6) Off-street parking within the CB zoning district shall utilize shared parking. This shared parking shall be memorialized within a shared parking agreement. The property owners involved in the joint use of off-street parking areas shall submit a legal agreement approved by the town attorney as to form and content guaranteeing that said required off-street parking shall be maintained so long as the use requiring off-street parking is in existence or unless the required off-street parking is provided elsewhere in accordance with the provisions of this Section. Such instrument, when approved as conforming to the provisions of this section, shall be recorded by the property owner with the Wake County Register of Deeds and a copy thereof filed with the Department of Development Services.

7) The development shall construct and install a pedestrian crosswalk featuring a rapid beacon signals across Sportsmanship Way, such location shall be determined at the time of master plan submittal.

8) Developed open space areas within the proposed developments shall feature at least one of the following: hardscape areas; outdoor seating areas; public art; playground and pergolas/gazebos.

9) A minimum of one of the following types of Green Stormwater Infrastructure shall be used in connection with any development on the subject property: permeable pavement parking spaces or pervious pavers in pedestrian areas; or rainwater harvesting (cisterns); or bio-swales. Reclaimed water for commercial irrigation purposes whenever feasible shall be utilized.

10) Emphasis shall be placed on placemaking within the development. To ensure this occurs, the following landscaping practices shall be utilized:
   a. The use of vertical landscaping or public art shall be utilized adjacent to a minimum of two (2) commercial outdoor seating or gathering areas;
   b. To the greatest extent possible, street trees shall be installed in accordance with the Town of Holly Springs UDO requirements along the primary entrance driveway/street from Sportsmanship Way.
   c. Within the CB zoning district, the use of planters shall be positioned as to energize and identify pedestrian entrances, such entrances shall be flanked by at least one planter. Planters shall have a minimum height 24" and a minimum width of 18".

[end of Exhibit C]

STATE OF NORTH CAROLINA

COUNTY OF WAKE

ECONOMIC DEVELOPMENT AGREEMENT

BY AND BETWEEN

CAPITAL ASSOCIATES MANAGEMENT, LLC

And

THE TOWN OF HOLLY SPRINGS, NC

DATED: January 19, 2023

This Economic Development Agreement (this "Agreement") is entered into, effective as of January 19, 2023, by and between Capital Associates Management, LLC, (hereinafter the "Company"), the Town of Holly Springs, a North Carolina Municipality, (hereinafter, the "Town").

RECITALS

WHEREAS, the Town is vitally interested in the economic welfare of its citizens and the creation and maintenance of sustainable jobs for its citizens in strategically important industries and therefore wishes to provide the necessary conditions to create a non-residential business complex, stimulate investment in the local economy and promote business, resulting in the creation and retention of a substantial number of jobs at competitive wages, and to encourage economic growth and development opportunities which the Town has determined will be made possible pursuant to the Project (as defined below); and,

WHEREAS, the Company has proposed (i) to make or cause to be made a capital investment of at least $20 million for the Project consisting of a "Class A" office building containing at least 70,000 square feet, retail, and a potential hotel according to a site plan approved by the Town, which will include taxable land, buildings, and equipment having an initial aggregate cost of at least $20 million, and (ii) to complete the necessary site work for the Project and for the nearby affordable housing project being undertaken by DHIC to move forward (collectively, the "Target Capital Investment").

WHEREAS, the Town recognizes that the Project will bring direct and indirect benefits to the Town, including, but not limited to, job creation, increase in ad valorem tax base, economic diversification and stimulus and has offered economic development incentives and inducements (the "Inducements") to induce the Company to locate the Project at the Site, and such Incentives do in fact induce the Company to locate the Project at the Site, and;

WHEREAS, the Company fully intends to establish, through the Project, an important presence in the Town by creating a Class A office building, which will accommodate a large number of employees and yield a substantial returns to the Town.

WHEREAS, the Town hereby acknowledges that the terms of this Agreement, including specifically the Inducements and other assistance described in this Agreement, constitute a dispositive inducement to the Company to locate the Project at the Site.

WHEREAS, the Company hereby acknowledges that its decision to locate the Project at the Site resulted from the Town's offer of the Inducements and other assistance described in this Agreement, and;

WHEREAS, the Company proposes to build the Project at the Site (defined below), which is an approximate 10-acre site owned by Wake County ("County"). The County

requires the Town to serve as an intermediary between the County and the Company for purposes of the land acquisition by the Company, which shall be a purchase for fair market value as determined by an appraiser; and,

WHEREAS, The Town is authorized pursuant to N.C.G.S. § 158-7.1 to acquire and assemble land for commercial and industrial development purposes, and make appropriations and expenditures and convey interest in real property by private negotiation, and upon a public hearing, make a determination of proper consideration for such conveyance based on such factors as prospective tax revenues from improvements, increase of jobs, and other stimuli of the local economy. Expenses by the Town pursuant to this statute are limited by law, and the Parties understand that the expenses undertaken by the Town do not exceed this limitation; and,

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein the Town and the Company agree as follows:

ARTICLE I

LOCAL ECONOMIC DEVELOPMENT INCENTIVES RELATED TO LOCATION OF PROJECT; LAND, DEVELOPMENT AND INFRASTRUCTURE

A. Land Acquisition for Project

(1) The Company agrees to locate the real estate development consisting of the "Class A" office building containing at least 70,000 square feet, plus retail and a potential hotel (collectively, the "Project"), on a tract of land to be purchased by the Company from the Town for a purchase price equal to the fair market value thereof, as more particularly described below. The tract of land consists of approximately 10 acres located on Sportsmans Way, north of Ting Park (such property being referred to as the "Site"). The Site is denoted on the map attached hereto as Exhibit A.

(2) The Company agrees to pay the Town an amount equal to the fair market value for the Site, as determined by an appraisal dated October 28, 2020, by Kirkland Appraisals, LLC with an indicated value of One Million Twenty Thousand and No/100 Dollars ($1,020,000) (the "Appraised Value"). The Town shall acquire the Site from the County pursuant to a Disposition Contract, attached hereto as Exhibit B. Sale of the Site to the Company in lieu of a sale of the land compliant with ordinary public bidding law is authorized as an economic development incentive, as the Company shall develop a business park consistent with its plans described in the Project and approved through the Town's normal development process, irrespective of any promises or inducements made in this Agreement. As further described in Article III, below, failure of the Company to complete at least 80% of the Target Capital Investment within a specified timeframe may result in a reconveyance of the Site to the Town.

(3) The Town's conveyance of the Site to the Company shall be subject to (i) any easements, rights of way, or other property of record at the time of conveyance, and (ii) the Town's reservation of any further easements then known by the Town to be necessary to be dedicated as a result of the Project, as approved by the Company. In the event that additional rights of way or easements are necessary for completion of the Project, the Company agrees to convey those easements to the Town without compensation in the ordinary course of the development of the Project.

(4) The form of the Company's contract with the Town for acquisition of the Site (the "Company PSA") is attached hereto as Exhibit D. The Company PSA provides a due diligence period of not more than 90 days and requires that the Town shall tender a Special Warranty Deed with a deed reference to the covenants contained in this Economic Development Agreement. The closing under the Company PSA shall occur on the date (the "Closing Date") that is thirty (30) days after the latest of (i) issuance of site plan approval, (ii) approval of a subdivision plat for the Site, and (iii) the issuance of a grading permit to the Company for the Project. The Company PSA further provides that in no event shall the Closing Date occur later than the third anniversary of the Company submitting for the last of the approvals described in clauses (i) – (iii) of the previous sentence.

B. Compliance with Development Agreement

The Parties are contemporaneously entering into a Development Agreement pursuant to NCGS § 160D-1001, et. seq., setting forth development-related criteria and inducements (the "Development Agreement"), in the form attached hereto as Exhibit C.

C. Summary of Inducements.

The Company represents that the Inducements are necessary for the Project and without said Inducements, the Company would not locate the Project in Holly Springs, would not develop the Project and would not complete the Target Capital Investment. In summary, the Inducements offered by the Town to the Company are as follows:

(1) Transfer of the Site pursuant to the Company PSA for fair market value, based on a certified appraisal, without the requirement of a public bid and upset period;

(2) Compliance with all requirements of the Development Agreement; and

(3) The final approved site plan for the Project shall remain active and the Company shall not be required to re-apply for site plan approval for a period of three (3) years after the Closing Date.

ARTICLE II

COMPANY INVESTMENT REQUIREMENTS

Some of the Inducements are offered to the Company by the Town prior to the Company's completion of the Target Capital Investments, however the Inducements are expressly conditioned upon the following:

(a) The "Investment Period" shall be defined as the date that is five years after the Closing Date. During the Investment Period, the Company shall use all best efforts to achieve the Target Capital Investment, provided that the Town agrees that bonding of the site work portion of the Target Capital Investment in a manner sufficient for the DHIC project to proceed shall be deemed as completion of that portion of the Target Capital Investment for purposes of the foregoing Investment Period requirement; and

(b) The Company is not in arrears in the payment of its annual property taxes, utility fees, or other obligations to the Town.

ARTICLE III

UNSUCCESSFUL COMPLETION OF TARGET CAPITAL INVESTMENT

A. Reimbursement and Refund When Operations Cease After Completion of the Project

If the Company does not complete construction of the Target Capital Investment within five (5) years of the Company's receipt of the later of site plan approval and grading permits for such construction (such later date, the "Commencement Date"), subject to any extension agreed to by the Company and Town, then the Town, at its option, may, by written notice to the Company to be delivered on or before the sixth (6th) anniversary of the Commencement Date, repurchase the Site at a purchase price equal to the Company's purchase price for the Site under the Company PSA plus all actual cost expended by the Company on the development of the Site to include all construction cost, payments in lieu, engineering, architectural, and other consulting fees expended to develop the Site for the Project.

B. Security in the Event Operations Cease Prior to Completion of the Project.

Upon receipt of construction drawing approval by the Town for the utilities and site work for the Project and for the DHIC affordable housing project, the Company shall provide a sealed engineer's estimate evidencing the actual construction costs of all such site work (the "Site Work Costs"). Company shall submit, at its election, one of the following forms of security to the Town equal to 115% of the Site Work Costs: (i) a payment and performance bond; (ii) a letter of credit from a bank with a situs within 150 miles of the Town; or (iii) a cash deposit ("Site Work Security"). In the event the Company or its developer shall fail to complete the site work portion of the Target

Capital Investment within thirty-six (36) months of the Closing Date, the Town shall be entitled to payment of the Site Work Security, for the full amount, without offset.

ARTICLE IV

GENERAL PROVISIONS FOR LOCAL INCENTIVES

A. Payment of Inducements.

The Inducements shall be paid in the manner permitted by North Carolina law and shall be expended only in accordance with N.C.G.S. §158-7.1 and other applicable provisions of federal, state and local laws. In no event shall any such payment be made except from lawfully available funds, nor shall payment be made if the Company has outstanding property taxes with respect to the Project, or other amounts owed to the Town, then due (in which case payment shall be made after such. obligations are discharged following written notice of such delinquency to the Company). If all conditions set forth herein have been satisfied, unless otherwise specified, the term "Year" refers to a fiscal year of the Town, which begins on July 1 and ends on the following June 30.

ARTICLE V

OTHER PROVISIONS

A. Adverse Change

The parties acknowledge that the Project is mutually beneficial and supports the substantial investments in the Project by each party as outlined herein. The Project is based on current laws, policies, regulations and commitments. If during the term of the Project, the benefits to the parties as contemplated herein are successfully challenged or are adversely affected by changes resulting from legislative changes or administrative or judicial interpretation of laws, policies or regulations, the parties will, to the extent permitted by law, amend the Project and the Inducements so the parties receive at least the same benefits contemplated herein as if such laws, policies, regulations and commitments, or the Interpretations thereof, have not changed.

B. Change in Law

In the event any applicable law, policy or regulations applicable to the Company adversely affects or impacts the effective operation of the Project, the Town will endeavor to amend such law, policy or regulation to facilitate effective operation of the Project, so long as such amendment is in the interest of the Town.

C. Further Action

The parties acknowledge that the terms of the Project and the Inducements and

other assistance described in this Agreement are subject to further actions legally necessary under North Carolina law to implement the Agreement in a lawful manner.

D. Entire Agreement; Amendment; Authority

This Agreement is the entire agreement between these parties as to the subject matter referenced herein, without regard to any prior agreements, understandings or undertakings (whether oral, written, electronic or otherwise), and no amendment may be made to this Agreement except with the prior written consent of all parties. The parties, and each person executing this Agreement on behalf thereof, represent and warrant that they have the full right and authority to enter into this Agreement, which is binding, and to sign on behalf of the party indicated, and are acting on behalf of themselves, their members and the successors and assigns of each of them. This Agreement shall be governed by and construed in accordance with the laws of the State of North Carolina, without regard to any construction arising from the application of conflicts or choice of law principles, and without regard to any construction arising by virtue of the negotiation or the persons who drafted this Agreement. The Parties consent to exclusive jurisdiction of the State of North Carolina, Wake County for this Agreement. Furthermore, NO PROVISION OF THIS AGREEMENT SHALL BE CONSTRUED OR INTERPRETED AS CREATING A PLEDGE OF THE FAITH AND CREDIT OF THE TOWN WITHIN THE MEANING OF ANY CONSTITUTIONAL DEBT LIMITATION. NO PROVISION OF THIS AGREEMENT SHALL BE CONSTRUED OR INTERPRETED AS DELEGATING GOVERNMENTAL POWERS NOR AS A DONATION OR A LENDING OF THE CREDIT OF THE TOWN WITHIN THE MEANING OF THE CONSTITUTION OF THE STATE OF NORTH CAROLINA. THIS AGREEMENT SHALL NOT DIRECTLY OR INDIRECTLY OR CONTINGENTLY OBLIGATE THE TOWN TO MAKE ANY PAYMENTS BEYOND THOSE APPROPRIATED BY THE TOWN FOR ANY FISCAL YEAR IN WHICH THIS AGREEMENT SHALL BE IN EFFECT. NO PROVISION OF THIS AGREEMENT SHALL BE CONSTRUED TO PLEDGE OR TO CREATE A LIEN ON ANY CLASS OR SOURCE OF THE CITY OR THE COUNTY'S MONIES, NOR SHALL ANY PROVISION OF THE AGREEMENT OPERATE BEYOND ITS INTENDED SCOPE SO AS TO RESTRICT, TO ANY EXTENT PROHIBITED BY LAW, ANY FUTURE ACTION OR RIGHT OF ACTION ON THE PART OF THE TOWN COUNCIL. TO THE EXTENT OF ANY CONFLICT BETWEEN THIS SECTION AND ANY OTHER PROVISION OF THIS AGREEMENT, THIS SECTION SHALL TAKE PRIORITY. THE TOWN HAS HAD THIS AGREEMENT, AND THE INCENTIVES CONTEMPLATED HEREUNDER, PRE-AUDITED TO ENSURE COMPLIANCE WITH THE BUDGETARY ACCOUNTING REQUIREMENTS (IF ANY) THAT APPLY. THIS AGREEMENT IS CONDITIONED UPON, AND SHALL NOT BECOME OPERATIVE UNTIL, ANY REQUIRED PRE-AUDITED CERTIFICATION IS SUPPLIED.

E. Severability

If any court of competent jurisdiction holds any provision of this Agreement invalid or unenforceable, then (a) such holding shall not invalidate or render

unenforceable any other provision of this Agreement, unless such provision is contingent on the invalidated provision; and (b) the remaining terms hereof shall, in such event, constitute the parties' entire agreement.

F. Assignment

The Company shall not assign this Agreement or any portion thereof without the written consent of the Town, nor shall the Company assign any funds due or to become due to it hereunder without the prior written consent of the Town, except, however, that the Town's consent shall not be required for the Company's assignment of its rights and obligations under this Agreement to the same entity that receives a Permitted Assignment (as defined in the Company PSA), pursuant to the terms of the Company PSA. In the event of a substantial change of ownership of the Company, the Company shall inform the Town in writing, which may declare such change in ownership as an assignment requiring either renegotiation or termination of this Agreement.

G. Certificate of Authority

Should the Company (or the appropriate wholly owned subsidiary of the Company) not have an active Certificate of Authority to transact business in North Carolina, the Company (or the appropriate wholly owned subsidiary of the Company) shall file a Certificate of Authority with the Office of the Secretary of State to transact business in the State of North Carolina as required by North Carolina Law promptly after the execution of this Agreement.

H. Counterparts; Jurisdiction

This Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed an original. The parties submit to the exclusive jurisdiction of the state courts, Wake County.

I. Audit Right

The Town reserves the right to require a certified audit or may perform the audit through the use of its staff pertaining to the Company's compliance with the capital investment contemplated under this Agreement.

J. Annual Report

In the event the Company is not a public company or should cease to be a public company, with its annual report publicly available online for review, the Company shall furnish to the Town a copy of its annual Financial Statements prepared by its CFO as soon as It becomes available to the Company, but no later than six months following the Company's fiscal year end.

K. Due Authorization

Each of the parties hereto represents and warrants to each of the other parties that the execution, delivery and performance of this Agreement has been duly and validly authorized by all necessary corporate or governmental action on its part.

L. Recording

This Agreement shall not be recorded, but the parties agree to cause a memorandum hereof, to be mutually approved by the parties, to be recorded prior to conveyance of the Site to the Company pursuant to the Company PSA.

EXHIBIT LIST

Exhibit A Map of Site and surrounding area.

Exhibit B: Land Disposition Contract Between County

Exhibit C: Development Agreement

Exhibit D: Company PSA

IN WITNESS WHEREOF, the parties have executed this Agreement the day and year first above written.

TOWN OF HOLLY SPRINGS

(*Town Seal*)

BY: _____
Randy J. Harrington, Town Manager

ATTEST:

_____
Linda McKinney, Town Clerk
Kathy White, Deputy Town Clerk

This document is sufficient as to form.

_____
John P. Schifano, Town Attorney

This instrument has been pre-audited in the manner proscribed by the Local Government Finance Act.

_____
Patty Dressen
Interim Finance Director

NORTH CAROLINA
WAKE COUNTY

I, a Notary Public of the County and State aforesaid, certify that Linda C McKinney personally came before me this day and acknowledged that she is the Town Clerk/Deputy Town Clerk of the Town of Holly Springs, and that the seal affixed to the foregoing instrument in writing is the corporate seal of said Town, and that said writing was signed and sealed by her in behalf of said corporation by its authority duly given and the said person acknowledged this writing to be the act a deed of said corporation.

WITNESS my hand and official stamp (or seal), this the 19th day of January, 2023.

KATHRYN L WHITE
NOTARY PUBLIC
WAKE COUNTY, NC
My Commission Expires 3-4-2025

_____
Notary Public

My Commission Expires: 3-4-25

[Agreement signatures continue on next page]

[Agreement signatures continued from previous page]

CAPITAL ASSOCIATES MANAGEMENT, LLC

By: _____

(*Seal*) Name: Frank P. Baird
Title: CEO, Manager

STATE OF NORTH CAROLINA
COUNTY OF Wake

I, a Notary Public for the aforesaid county and state, certify that Frank P. Baird, personally came before me this day and acknowledged that he is the CEO and a Manager of Capital Associates Management, LLC, a North Carolina limited liability company, and that he, in such capacity, executed the foregoing on behalf of the said limited liability company.

WITNESS my hand and official stamp (or seal), this the 13th day of January, 2023

Melissa A. DeVita
Notary Public

Melissa A. DeVita, Notary Public
Typed/Printed Name

[Official Seal] My Commission expires: 11/3/25

MELISSA A. DEVITA
My Commission Expires
NOTARY PUBLIC
November 3, 2025
JOHNSTON COUNTY, NC

[End of Agreement signatures]

Exhibit A

Map of Site and surrounding area

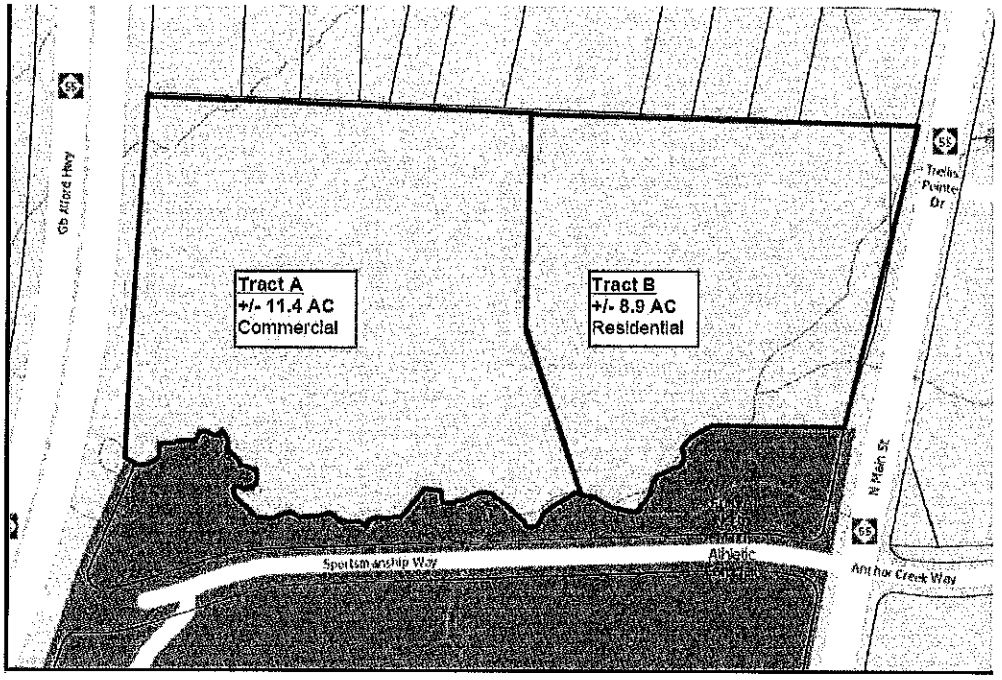


Exhibit B

Land Disposition Contract Between County and Town

[Attached]

Department: 47 - Housing & Community Revitalization

Vendor: VC0000001085 - TOWN OF HOLLY SPRINGS

Original Description of Services: In reference to the Amended Memorandum of Agreement for Disposition and Development of Affordable Housing on County-Owned Property at 1317 N. Main St., Holly Springs, approved by the BOC on 11/16/2020, this agreement describes the terms and conditions for the donative conveyance of a 10+/- acre portion of the subject Property to the Town of Holly Springs, NC.

Original Start Date: 12/1/2020
Original End Date: 12/31/2023
Original Max Amt Payable: $0.00

Current Start Date: 12/1/2020
Current End Date: 12/31/2023
Current Max Amt Payable: $0.00

Amendment History: (Completed Amendments)

Amendment Accounting History:

Current Amendment: EC00000000005583-01

Term: **New Contract Start Date:**
New Contract End Date:

Scope Change: The purpose of this amendment is to update the parties of this agreement after My Computer Career (MCC) withdrew from the agreement. This agreement also updates the closing date for the agreement from 06/01/2021 to 06/01/2023.

Amount Change:

New MAP:

Accounting:

DocuSign Envelope ID: EBE161AC-DEF4-4CB4-AA40-C46439EC028B

NORTH CAROLINA **DISPOSITION CONTRACT**

WAKE COUNTY **Pursuant to N.C.G.S. 160A-274**

This **DISPOSITION CONTRACT** ("Contract") made and entered into this 26 day of December, 2022 by and between **WAKE COUNTY, NORTH CAROLINA,** a body politic and corporate, whose address is P.O. Box 550, Raleigh, North Carolina 27602 (the "County") and the **TOWN OF HOLLY SPRINGS, NORTH CAROLINA**, a municipal corporation and body politic (the "Town"), jointly referred to herein as the "Parties."

WITNESSETH:

WHEREAS, the County owns 19+ acres of real property ("the Property") more particularly described in Exhibit "A" attached hereto and incorporated and further identified in Deed Book 5418, Page 249, Wake County Registry, located in Holly Springs, North Carolina; and

WHEREAS, by vote of the Wake County Board of Commissioners ("Board") on or about June 5, 2017, the Property was declared "surplus"; and

WHEREAS, in January 2020, an RFP was released for the purpose of solicit offers for its sale pursuant which mandated a certain portion of the real property be utilized for the construction of affordable housing, subject to final acceptance by the Board; and

WHEREAS, My Computer Career, Inc. ("MCC") and DHIC, Inc. ("DHIC") were the only parties to respond to the RFP and submitted a satisfactory, joint proposal, that includes a plan for the subdivision of the real property into two parcels for the construction of affordable housing and commercial development; and

WHEREAS, MCC and DHIC entered into an Memorandum of Agreement (MOA) originally dated September 16, 2020, and subsequently revised, approved by the respective governing boards of the County and Town; and

WHEREAS, MCC has withdrawn from the MOA, but DHIC and the Town have expressed an ongoing commitment to the proposed joint development and the Town has identified a replacement commercial developer and the parties have entered into a new MOA; and

WHEREAS, the County and Town agree that the County is best suited to handle the real estate transaction for the parcel intended to be dedicated for affordable housing in accordance with G.S. 153A-378(3) and the Town is best suited to handle the real estate transaction to for the parcel intended to be sold for commercial development under the Town's economic development policy in accordance with G.S. 158-7.1; and WHEREAS, the Town shall maintain all jurisdictional control over land use planning and development permitting for the Property given its location in the Town limits; and

WHEREAS, the County and Town desire to enter into it this Disposition Contract which shall replace and supersede the original contract authorized by the Wake County Board of Commissioners on November 16, 2020 and the Town of Holly Springs Town Council on November 17, 2020 for the purpose of effectuating the their desire to finalize the donative conveyance of an approximate 10+/- acre portion

of the property ("Town Parcel") as identified in Exhibit B, said conveyance being duly, and subject to the modified terms and conditions of this Agreement; and

WHEREAS, the County will retain ownership of the approximate 9+/- acre portion of the property ("County Parcel") as identified in Exhibit B for the purpose of facilitating development of the planned affordable housing; and

WHEREAS, upon the terms hereinafter set out, the County hereby agrees to transfer, and the said Town hereby agrees to accept fee simple ownership in Town Parcel.

NOW THEREFORE, in consideration of the mutual promises and covenants contained herein, the County and the Town agree that the terms and conditions governing the donative conveyance of the Town Parcel is as follows:

1. The Town Parcel shall be conveyed, without monetary consideration, to the Town pursuant to N.C.G.S. 160A-274, subject to the terms and conditions set forth and incorporated herein.

2. As a condition to the County's donative conveyance of the Town Parcel, the Town must demonstrate satisfaction of the following special conditions prior to conveyance:

   i. Rezoning of the Property to allow for intended development and use of a portion appropriate thereof for multi-family residential development;

   ii. A resolution approved by the Town Council entered upon its minutes that: 1) authorizes the Manager to enter into this Contract, 2) accepts the conveyance of the Town Parcel subject to a deed restriction for public use with a compensation reservation in favor of the County in the event the parcel is sold or leased for non-public use, and 3) accepts conveyance of the Town Parcel with the condition that the County is not required to expend any additional funding to effectuate the conveyance or improve the Town Parcel; and

   iii. Approval of a subdivision plat of the subject Property into two (2) separate parcels, roughly 9+/- acres and 10+/- to accommodate the intended development and use of the 9+/- acre parcel for multi-family residential development.

   iv. Failure of the Town to comply with any of the above executory actions shall be considered a breach, and the remedy would be specific performance by the County, or its assigns.

3. As a condition to the County's donative conveyance of the Town Parcel, the Town hereby obligates itself to the following executory actions, which may occur at any time relative to the conveyance:

   i. Final site plan approval for the County Parcel vesting rights for the development of a multi-family residential development with a minimum of 124 affordable housing units in conformance with the MOA approved by the County;

   ii. Failure of the Town to comply with any of the above executory actions shall be considered a breach, and the remedy would be specific performance by the County, or its assigns.

4. The Parties additionally make the following representations, warranties and covenants as of the date of this Contract and as of the date of closing; such representations, warranties and covenants shall survive closing:

   i. The Parties have full authority to enter into this Contract and to execute all documents contemplated hereby, and their execution, delivery and performance of this Contract will not violate the provisions of any other contract or agreement to which either Party is bound.

   ii. The Town Parcel will be conveyed in its present condition "as is", "where is", "with all faults," environmental or otherwise, including both latent and patent defects, and without any representations and warranties whatsoever from the County. Except for the express warranties contained herein, the Town hereby waives all warranties, and accepts the Town Parcel and any improvements thereon "as is" without recourse against the County.

   iii. The County shall not be required to expend any additional funding to effectuate the conveyance of the Town Parcel to the Town. The County shall not be required to make any additional improvements to the Town Parcel.

   iv. The County has good and marketable title to the Town Parcel and has not pledged the Town Parcel as collateral or otherwise encumbered the Town Parcel with any security contract, lien (including materialmen's lien), promissory note, Deed of Trust, or mortgage and as such, there are no known persons or entities other than County who have a right, claim, ownership or interest in the Town Parcel.

   v. Within three (3) years of conveyance, the Town (and/or its designees/successors/assigns) covenants and agrees to develop the Town Parcel or offer for development to a third-party for uses compatible with the proposed multi-family residential development on the adjacent County Parcel. For purpose of clarity, the Parties agree that the following uses office space, neighborhood entertainment, and retail are compatible. Until such time as the Town determines what portion of the Town Parcel shall be suitable for disposition to a third-party, the Town covenants and agrees that any use of the Town Parcel shall be a public use that is compatible with the proposed multi-family residential development planned on the County Parcel, as determined and approved by the Town. For purposes of this section, "public use" shall exclude any commercial uses of the Town Parcel that do not further or advance a municipal or governmental function, purpose, or activity. Nothing herein shall restrict the Town's ability to independently determine appropriate public uses of the Town Parcel or to partner with private or non-profit entities for the joint use of the Town Parcel, provided the use is in keeping with the restrictions stated herein.

   vi. The Town covenants and agrees that in the event the Town Parcel, or any portion thereof, is sold at a future date for monetary consideration, the Town will disburse the net sales proceeds derived from said sale to the County. For purposes of this provision, any sale of the Town Parcel, or a portion thereof, must comply with Article 12 of Chapter 160A of the North Carolina General Statutes and unless otherwise exempt, shall be sold for fair market value. For purposes of this Contract, fair market value shall be determined based on an appraisal performed by a licensed North Carolina MAI appraiser mutually selected by the Town and the County. This covenant is inserted as a condition to the donative conveyance and in

consideration of the County's investment in the Town Parcel. It is not the intent of this restriction to foreclose or restrict the Town's ability to dispose of the Town Parcel in accordance with any of the disposition procedures set forth in Chapter 160A of the General Statutes, but to merely preserve the County's consideration for transferring the Town Parcel in accordance with G.S. 160A-274 without the benefit of monetary consideration or payment to the County.

5. There are no prorations or adjustments between the Parties to be paid at closing.

6. The Town Parcel must be in substantially the same condition at Closing as on the date of this Contract. The Town shall remove the County's name or logo from all signage located on the Town Parcel within 30 days of closing.

7. Title will be delivered at closing by Non-Warranty Deed. The form of Deed for this transaction is attached hereto as "Exhibit C" and shall include the following special covenants and reservations, being further described in paragraphs 2 and 3above:

   i. *Covenant of Restriction on Use*: The Town Parcel may be used for any public purpose without advancement of compensation to the Grantor. If a portion or portions of the Town Parcel are conveyed or leased for a non-public purpose, the Town shall receive consideration equal to fair market value and compensate the Grantor in accordance with the Compensation Reservation provision set forth herein. Any use of the Town Parcel shall be compatible with the multi-family residential use of the adjacent County Parcel.

   ii. *Grantor's Compensation Reservation*: As part of the consideration for this Deed, the County hereby reserves for itself the right to compensation in the event the Town Parcel, or any portion thereof, is leased, sold, conveyed, or transferred by the Town to a third-party ("Sale") for monetary consideration. The Town hereby covenants and agrees that any Sale of the Town Parcel will not be less than fair market value as determined by a licensed North Carolina real estate appraiser. For purposes of this reservation, the County shall be entitled to a portion of the net proceeds "County Proceeds" (as defined and calculated below), derived from the Sale. The "County Proceeds" shall be calculated by subtracting from the "Net Closing Proceeds" received by the Town at closing, any reasonable costs or expenses incurred by the Town in maintaining the Town Parcel during the Town's period of ownership, which shall not exceed $50,000.00 ("Town Holding Costs"). The "Net Proceeds" shall be that same amount listed on the standard HUD- Settlement Statement "Cash to Seller" line, representing the net amount allocated to the Seller (Town) at closing or the rental payment proceeds as identified by a lease agreement. The "County Proceeds" shall be paid by the Town at or within three (3) business days from the closing date or alternatively to coincide with the first date of a prospective lease term.

      COUNTY PROCEEDS = Net Proceeds – Town Holding Costs

   iii. *Reverter Clause*: In the event the Town Parcel is not actively used by the Town or conveyed within three (3) years from the date of this Deed, all right, title, and interest in the property shall automatically revert to the grantor. The Parties understand that in order to accommodate the residential use on the County Parcel, it may be necessary to dedicate certain sections of the Town Parcel for right of way, easements, or other public uses necessary to serve the County Parcel. As such, in the event of any reverter, the Town shall transfer back to the County only those areas of the Town Parcel not otherwise encumbered by rights of way,

easements, or other hereditaments necessary to accommodate the residential use on the County Parcel.

8. This Contract may not be assigned without approval of the Wake County Board of Commissioners and the Town Council.

9. Any provision herein contained which by its nature and effect if required to be observed, kept or performed after the closing shall survive the closing and remain binding upon and for the benefit of the parties hereto until fully observed, kept or performed.

10. The Town acknowledges that it has preliminarily inspected the Town Parcel and has received due diligence documents and site inspection reports associated with the Town Parcel. The Town shall have the ability to perform due diligence to complete its final inspections, surveys, appraisals, environmental audits and other assessments any time before Closing, but shall coordinate with the County to obtain access to the Town Parcel for accomplishing the same. The Town and County shall equally split the costs associated with the survey work to be performed associated with the subdivision of the Property contemplated herein and the appraisal to be performed in accordance with Section 3(vi) of this Contract.

11. The Parties confirm they have not hired or engaged a broker or agent in this transaction. To the extent legally permissible, the Parties shall each indemnify and hold the other harmless from and against any claim made by any broker or other person or entity claiming a commission or fee as a result of having any Contract with the indemnifying party, in connection with this transaction.

12. The Town shall pay for the recording fees associated with the Non-Warranty Deed.

13. Subject to satisfaction of all closing conditions, the terms and conditions of this Contract, the Parties agree to execute any and all documents and papers necessary in connection with closing and transfer title on or before June 1, 2023 ("CLOSING DATE"), unless a later closing date is agreed to in writing. For purposes of this section, the Parties may extend the Closing Date upon execution of an addendum mutually agreed upon by the County Manager and Town Manager, provided the Town is in compliance with the conditions of this Contract and is advancing the development approvals required for the development of the County Parcel in a satisfactory manner to the County.

14. This Contract contains the entire agreement of the Parties and there are no representations, inducements, or other provisions other than those expressed in writing. All changes, additions or deletions hereto must be in writing and signed by all Parties.

15. The Parties, their successors and/or assigns agree to cooperate with each other during development with respect to any temporary or utility easements necessary to effectuate the development purposes stated herein.

IN TESTIMONY WHEREOF, said parties have executed this CONTRACT in duplicate originals (one copy of which is retained by each party) the day and year written below.

WAKE COUNTY

DocuSigned by:
David Ellis
David Ellis, County Manager

Date: 12/26/2022

Approved as to form:

DocuSigned by:
Beth Smerko for SWW
Senior Assistant County Attorney

Date: 12/22/2022

Wake County, Department of Housing Affordability & Community Revitalization

DocuSigned by:
Mark Perlman
Mark Perlman, Division Director

DocuSigned by:
Ed Barberio
Edward Barberio, Deputy Director

DocuSigned by:
Lorena D. McDowell
Lorena McDowell, Department Director

TOWN OF HOLLY SPRINGS

DocuSigned by:
RANDY HARRINGTON
Randy Harrington, Town Manager

Date: 12/18/2022

Approved as to form:

DocuSigned by:
John Schifano
John Schifano, Town Attorney

Date: 12/13/2022

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

DocuSigned by:
Antwan Morrison
Town Finance Director, or designee

Date: 12/14/2022

DocuSigned by:
Linda McKinney
Linda McKinney, Town Clerk

Date: 12/19/2022

DocuSign Envelope ID: EBE161AC-DEF4-4CB4-AA40-C46439EC028B

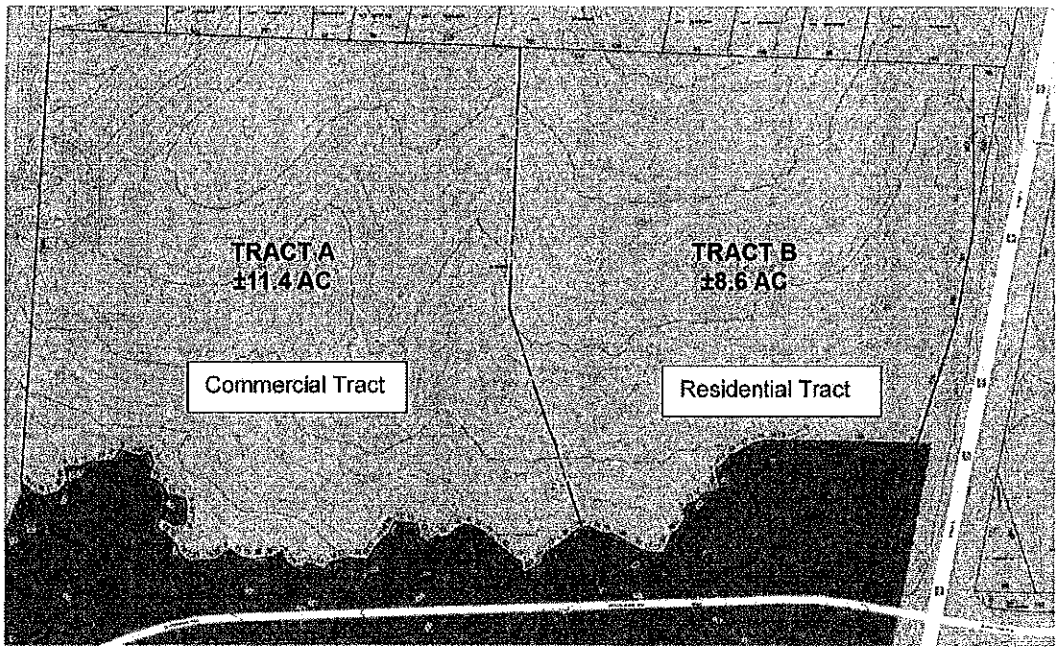
EXHIBIT A

Being the 19.936+/- acre parcel depicted as Tract 2 on the Recombination Map of The County of Wake Property dated February 8, 2013 and recorded in Book of Maps 2013, Page 310, Wake County Registry.

DocuSign Envelope ID: EBE161AC-DEF4-4CB4-AA40-C46439EC028B

EXHIBIT B

Proposed Subdivided Parcels
(County Parcel & Town Parcel)



Proposed Site Subdivision

Exhibit C

Development Agreement

[Attached]

PREPARED BY/RETURN TO: JOHN SCHIFANO, ROD BOX 105

STATE OF NORTH CAROLINA
COUNTY OF WAKE

DEVELOPMENT AGREEMENT REGARDING INFRASTRUCTURE CONSTRUCTION AND FEE REIMBURSEMENT
(N.C. GEN. STAT. § 160A-420.20 *et seq.*)

BY AND BETWEEN

THE TOWN OF HOLLY SPRINGS

and

CAPITAL ASSOCIATES MANAGEMENT LLC
& DHIC, INC

THIS DEVELOPMENT AGREEMENT REGARDING INFRASTRUCTURE CONSTRUCTION AND FEE REIMBURSEMENT (this "Agreement"), made and entered into this _____ day of January, 2023 (the "Effective Date"), by and between the **TOWN OF HOLLY SPRINGS**, a North Carolina Municipal corporation, hereafter referred to as the "Town" and **CAPITAL ASSOCIATES MANAGEMENT, LLC**, a North Carolina limited liability company ("CAM"), and **DHIC, Inc.**, a North Carolina non-profit corporation ("DHIC"). CAM, DHIC and their respective successors and assigns, are hereafter referred to collectively as the "Developers," and each may be referred to herein as a "Developer." The Town and the Developers are collectively referred to herein as the "Parties."

WITNESSETH:

WHEREAS, CAM is the contract purchaser of a tract of land in Wake County, North Carolina, being pictured and labeled as "Tract A" on Exhibit A attached hereto and incorporated herein by reference ("Tract 1"), which is situated within the corporate limits of the Town;

WHEREAS, DHIC is the contract purchaser of a tract of land in Wake County, North Carolina, being pictured and labeled as "Tract B" on Exhibit A ("Tract 2"), which is situated within the corporate limits of the Town;

WHEREAS, Tract 1 and Tract 2 are adjacent to each other, and together have a collective area of approximately 19 acres (collectively, the "Property"); and,

WHEREAS, the Developers are requesting approval of a development plan for a mixed-use commercial and residential development the Property, in a manner consistent with the sketch plans prepared by the Developer attached hereto as Exhibit B and incorporated herein by reference and with the terms of this Agreement (the "Project"); and,

WHEREAS, the Property is currently located within the corporate limits of the Town and is currently served by the Town potable water and sewer service; and,

WHEREAS, the Developers desire careful integration between public and private capital facilities planning, financing and construction, and further desire sufficient assurances that development standards, ordinances, policies and procedures shall remain stable throughout the extended period of development of the Property; and,

WHEREAS, it is beneficial to both the Town and the Developers to construct certain on-site and off-site infrastructure improvements relative to the Project to enable the safe and responsible treatment of wastewater by the Town and to provide potable drinking water to the ultimate users of the Project, as well as other infrastructure; and,

WHEREAS, the Town requires, pursuant to N.C.G.S. § 160A-372 and its Unified Development Ordinance ("UDO"), the dedication and construction of streets and rights of way and other infrastructure and for the distribution of population and traffic in such a manner that it will avoid congestion and overcrowding and will create conditions essential to public health, safety, and the general welfare, which may be accomplished through private drives and cross access easements across the Property; and,

WHEREAS, pursuant to rezoning 20-REZ-03, approved on April 6, 2021, the Town approved rezoning Tract 1 to Commercial Business (CB) and Tract 2 to RMF-15 pursuant to the UDO (collectively, the "Approved Rezoning"); and,

WHEREAS, the Town has enacted a subdivision control ordinance, pursuant to N.C.G.S. §160A-372, which provides for the orderly control of growth and development in the Town in general and on the Property; and,

WHEREAS, the Town is authorized pursuant to N.C.G.S § 160A-311 *et. seq.* to operate and does in fact operate a water and sewer treatment enterprise and requires, pursuant to N.C.G.S. § 160A-317, the connection to the system by owners of developed lands located within the Town, for a cost set forth in the Town's annual budget or as amended herein; and,

WHEREAS, the Town is authorized to enter into this Agreement pursuant to N.C.G.S. §§ 160A-16 and 160A-400.20 *et seq.*, and may contract with the Developers to carry out the public purposes set forth herein pursuant to N.C.G.S. §160A-20. A public hearing on this Agreement was held on September 20, 2022, and after consideration of the facts brought forth during the hearing, together with the promises and inducements contained herein, the Town Council of Holly Springs determined that it was in the best interests of its citizens to enter into this Agreement; and,

WHEREAS, the Town requires certain fees to be paid upon development of land and for the granting of a building permit, said fees being listed in the Town's annual budget and as listed as Exhibit D, and each Developer, in consideration of the foregoing benefits set forth in this Agreement, hereby agrees that (a) it (i) is familiar with these fees listed on the Town's website as of the Effective Date pursuant to

its annual adopted budget ordinance, (ii) does not dispute the reasonableness of such fees; and (b) notwithstanding any reimbursements discussed below or any fees reduced or waived via an economic development agreement between the Town and such Developer, hereby agrees to timely pay all normal and customary fees to the extent applicable to such Developer, in connection with its development of its portion of the Project at such time as each such applicable fee becomes due to the Town, in the ordinary course of development, unless otherwise provided for herein; and,

WHEREAS, the Town considers the Project favorable to the Town because (i) it contains a significant amount of non-residential (commercial, office, and retail) uses, (ii) it will add affordable housing to the community, which is a condition placed upon development of the Property by the previous owner of the Property (Wake County), (iii) it is consistent with the Town's strategic planning initiative, and (iv) the Developers have agreed to incorporate several needed public infrastructure improvements as more fully described below (the "Public Improvements") in the vicinity of the Property, which will serve the Project as well as other nearby properties, and will generally benefit the Town as a whole;

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein the Town and the Developer agree as follows:

ARTICLE I
DEFINITIONS

1. **Definitions**: The terms below shall have the following meanings as used herein:

a. Actual Costs: The amount of true costs actually incurred by the Developers for construction of the Project, upon final completion and approval thereof by the Town, inclusive of the cost of acquiring easements or rights of way from those not party to this agreement, but exclusive of (i) any administrative costs (i.e., profit and overhead) of the Developers, and (ii) any construction contingency for the Project. Actual Costs, which hereinafter are agreed to be reimbursed or otherwise paid by the Town, shall be audited by the Town under generally accepted accounting principles for governments for a period of three (3) years after the last act of the Developers in connection with the Project under this Agreement. The Developers' right of reimbursement for Actual Costs pursuant to the terms of this Agreement is contingent upon the Developer first receiving from the Town advance written consent to the expected cost before the cost is incurred, provided, that such consent shall not be unreasonably withheld or delayed by the Town.

b. Affordable Housing: One hundred twenty-four (124) residential units to be built and professionally managed by DHIC, where rents shall be set at a price that on average is affordable to a household with an annual income that is no greater than 60% of the Area Median Income for the respectively-sized household in the Raleigh, NC MSA, as determined by the United States Department of Housing and Urban Development.

c. Development: Generally defined as the planning for or carrying out of a building activity, the making of a material change in the use or appearance of any structure or property, or the dividing of land into two or more parcels. "Development," as designated in a law or in a Development Permit, includes the planning for and all other activity customarily associated with it unless otherwise specified. When appropriate to the context, "Development" refers to the planning for or the act of developing or to the result of development. Specifically, in

this Agreement, the term "Development" refers to the construction by the Developers of all building activities associated with the Project as set forth on the Concept Plans.

d. Development Permit: A building permit, zoning permit, subdivision approval, special exception or conditional use permit, variance, or any other official action of the Town having the effect of permitting the Development of real property.

e. Land Development Regulations: Ordinances and regulations enacted by the Town for the regulation of any aspect of development and includes zoning, subdivision, or any other land development ordinances, including but not limited the UDO.

f. Laws: All ordinances, resolutions, regulations, comprehensive plans, land development regulations, policies, and rules adopted by the Town affecting the Development of real property, and includes laws governing permitted uses of real property, density, design, and improvements.

g. Master Plan: The plan described in Section 3.01 of the Town's Development Procedures Manual.

h. NCDOT: the North Carolina Department of Transportation.

i. Offsite Infrastructure: The public sanitary sewer gravity line, all potable water lines, and other Town-owned equipment or facilities, to the extent not located on the Property.

j. Person: An individual, corporation, business or land trust, estate, trust, partnership, association, two or more persons having a joint or common interest, State agency, or any legal entity.

k. Concept Plans: The sketch plans for the Project attached hereto as Exhibit B, which were previously submitted by Developers to the Town and have been approved by the Town.

l. Public Infrastructure: Offsite Infrastructure as well as the public sanitary sewer gravity line, all potable water lines, and other Town-owned equipment or facilities, and road improvements or fees in lieu required by the Town or NCDOT, each to the extent located on the Property or in an easement appurtenant to the Property.

m. Public Benefit: The construction and dedication of the Public Infrastructure by the Developer, an increase in commercial and retail uses as well as an increase in the Town's stock of affordable housing, each of which furthers the Town's strategic planning efforts, and in the case of the Project on Tract 1, the additional financial revenue of the Town brought by the incremental ad valorem tax value of Tract 1 as so improved.

n. Property: All real property shown or described in Exhibit A, which is subject to land-use regulation of the Town and includes any improvements, fixtures, or structures customarily regarded as a part of real property.

o. Project: The Developers' plan to develop the Property in the manner described in Concept Plans, and as approved by the Town Council of Holly Springs through its normal development

process. The Project shall include the construction of affordable housing units as well as a commercial development including office, retail and a hotel.

ARTICLE II
DESCRIPTION OF DEVELOPMENT AGREEMENT

1. SCOPE: The legal description of the Property subject to this agreement and the names of its legal and equitable property owners are contained in Exhibit A.

2. TERM: The duration of this Agreement is ten (10) years, beginning on the Commencement Date, as defined herein. The parties are not precluded from entering into subsequent development agreements that may extend this period of duration. The condition precedent to this Agreement are: (1) that Wake County shall transfer ownership of the Property to the Town; (2) that the Developers shall have received any financing necessary for their acquisition and Development of the Property; (3) that no later than ninety (90) days of the latest of (i) approval of the Master Plan and the site plan for the Development, and (ii) issuance of grading permit for the Project, the Town shall transfer ownership of Tract 1 to CAM and of Tract 2 to DHIC. The day upon which the last of the conditions precedent set forth in the preceding sentence shall be fulfilled shall be the "Commencement Date".

3. DEVELOPMENT PERMITTED USES: The development uses permitted on the Property are shown on the Concept Plans, and are subject to the Zoning Conditions as listed in Exhibit C.

a. The Project generally and initially shall consist of the Development of two (2) tracts:

(i) Tract 1 consists of approximately 11.11 acres on the western half of the Property. Development of Tract 1 shall include one or more office buildings, as well as retail facilities, a hotel, and parking.

(ii) Tract 2 consists of approximately 8.78 acres on the eastern half of the Property. Development of Tract 1 shall include one hundred twenty-four (124) residential rental dwelling units in buildings of 3 to 3-1/2 stories, as well as a playground, community building, and outside picnic areas. The improvements on Tract 1 shall be actively managed by DHIC (or an affiliate of DHIC) as an Affordable Housing development.

b. The Town hereby agrees that the land uses described herein and the Project as shown on Exhibit B is in the best interest of the Town and is in keeping with the land use plans of the Town.

c. The Developers voluntarily offered those zoning conditions set forth in Exhibit C attached hereto and incorporated herein by this reference (the "Zoning Conditions") for the Approved Rezoning, which are binding upon Development of the Property.

4. SEWER IMPROVEMENTS: The Town and the Developers evaluated whether the existing gravity and force-main lines, together with the existing Twelve Oaks Pump Station (collectively, the "Existing Sewer Infrastructure") had the capacity to support the Project, or if improvements to the Existing Sewer Infrastructure would be necessary, and they determined that the Existing Sewer Infrastructure is

not adequate to support the Project. In consideration of the early payment by the Developers of the System Development Fees required for this Project, as set forth herein, which fees are also described in the Town's annual budget for its water and sewer system, the Town has completed the construction upgrades required to the Existing Sewer Infrastructure (the "Water-Sewer Upgrades"). Notwithstanding the foregoing, in no event shall a delay associated with the Town's completion of the Water-Sewer Upgrades be cause for the Town to delay in issuance of certificates of occupancy for any portion of the Project.

Each Developer shall pay the sum of all the fees set forth in this Section 4 as required for water and sewer for the Project on such Developer's portion of the Property (the "System Development Fees" or "SDF") at such time as such Developer (i) receives construction drawing approval, subject to payment of all SDF, and (ii) has a pre-construction meeting with the Town regarding Development of the Project on such Developer's portion of the Property. The Town agrees that DHIC's obligation to install metered water connections shall be modified as follows: DHIC shall only be required to install a single metered water connection for each building of residential units (as opposed to individual metered connections for each unit) and DHIC shall pay the SDF accordingly. For purpose of clarity the following tables describe the difference:

	Residential (Normal)				
	Units	type	Cost	Total	Notes
SDF - Water	124	3/4" <3000 Sf	$ 3,741.00	$ 463,884.00	per unit 3/4" charge
SDF - Sewer	124	3/4" <3000 Sf	$ 4,054.00	$ 502,696.00	per unit 3/4" charge
SDF - Water	1	1 1/2" 3000-20,000 Sf	$ 6,890.00	$ 6,890.00	Club house
SDF - Sewer	1	1 1/2" 3000-20,000 Sf	$ 7,467.00	$ 7,467.00	Club house
			Total SDF	$ 980,937.00	

Residential (Modified approach for Affordable Housing)					
	Units	type	Cost	Total	Notes
SDF - Water	5	3" >20,000 Sf	$ 12,010.00	$ 60,050.00	
SDF - Sewer	5	3" >20,000 Sf	$ 13,015.00	$ 65,075.00	
SDF - Water	1	1 1/2" 3000-20,000 Sf	$ 6,890.00	$ 6,890.00	Club house
SDF - Sewer	1	1 1/2" 3000-20,000 Sf	$ 7,467.00	$ 7,467.00	Club house
			Total SDF	$ 139,482.00	

Note: The above fees are the SDF fees for the 2021 budget year and will be applicable to the Project if applied for and paid in the ordinary course of development as required by the Town, but any SDF fees paid after June 30, 2024 may be subject to change. The parties acknowledge that (a) SDF is dependent on the type and number of meters used, (b) construction drawing approval is required prior to application for water service, and (c) payment of SDF is required prior to final construction drawing approval.

5. TRANSPORTATION IMPROVEMENTS: The Developers shall design, permit and construct the following Public Infrastructure improvements relating to transportation:

a. Design and construct half of the recommended 86-foot, 4-lane median thoroughfare with bike lanes on N. Main Street from the northern property line of the Property to Sportsmanship Way.

b. Design and construct a northbound left turn lane (approximately 100 feet in length) on N. Main Street at the access point on N. Main Street north of Sportsmanship Way, opposite Trellis Pointe Drive.

c. Provide a Fee-in-Lieu ("FIL") payment in the amounts set forth below for its proportionate share of the following improvement projects as required by the Town, and such payment shall be made upon the approval of civil construction drawings for such Developer's portion of the Project:

- FIL of design and construction of northbound right turn lane on N. Main Street at Old Smithfield Road / Sunset Lake Road, in an amount to be determined prior to Master Plan approval, as calculated by an opinion of probable cost by a licensed professional engineer, the selection of which is mutually agreed to by the applicable Developer and the Town;
- FIL of design and construction of future traffic signal on N. Main Street at Katha Drive / Arbor Creek Drive in the amount of $12,995 for the Project as a whole;
- FIL of half a 20-foot median from the terminus of the existing median on N. Main Street [Trellis Pointe Drive] to the Northern property line of the Property, in the amount of $10,325 for the Project as a whole;

d. The Development of the Project shall include construction and installation of a pedestrian crosswalk featuring a rapid beacon signals across Sportsmanship Way, as illustrated on the Master Plan.

e. Construction of Approximately 510 linear feet of pedestrian sidewalk along the eastern border of the Property adjacent to and running parallel with N. Main Street. In the event the pedestrian sidewalk shall cross onto property owned by the Town, the Town will provide the necessary easements to the Developers to construct the pedestrian sidewalk on its property.

f. Construction of Approximately 500 linear feet of a pedestrian greenway beginning at the end of the existing greenway path as of the Effective Date, just to the north of Sportsmanship Way, and continuing north along the western boundary of the Property, ending at the underpass beneath North Carolina Highway 55. In the event the pedestrian greenway shall cross onto property owned by the Town, the Town will provide the necessary easements to the Developers to construct the pedestrian greenway on its property.

g. As a FIL, the Developers shall dedicate right of way to the Town for upgrades to NC 55 consisting of a 20 foot wide strip running along the westernmost edge of the Property.

h. The Developers shall dedicate a 10+/- foot wide strip of right of way to the Town on N. Main Street from the northern property line of the Property to Sportsmanship Way (included in subparagraph 5(a) above).

i. The Developers shall be allowed to construct a roadway across land currently owned by the Town adjacent to Sportsmanship Way (the "Town Property") in order to provide

vehicular and pedestrian access to Tract 1. Such roadway shall be a public street for the length of the Town Property.

j. Each Developer shall record reciprocal cross-access easements on the Property for all internal drive access areas, in a form subject to approval by the Town.

6. BUILDING HEIGHT: CB zoning under the UDO typically allows for a maximum building height of fifty-five (55) feet, but the office building included in the Project is expected to include four (4) stories with an anticipated height of approximately seventy-five (75) feet. The Developer of Tract 1 is hereby approved by the Town to increase the building height on Tract 1 to seventy-five (75) feet for the commercial portion of the Project, so long as (i) any such building is set back at least 50 feet from the northern boundary of the Property, to the extent adjacent to residential properties within Easton Acres (the "Northern Residential Boundary"), and (ii) the Developer of Tract 1 shall provide a 30 foot wide undisturbed bufferyard along the Northern Residential Boundary (the "Special Northern Bufferyard") and shall supplement the Special Northern Bufferyard with additional evergreen tree plantings to achieve the minimum type C-150 plant unit value (as described in UDO § 7.01(k)). The owner of Tract 1 shall maintain the Special Northern Bufferyard in perpetuity.

7. PARCEL SUBDIVISION: The Developers shall be allowed to subdivide the Property and record one subdivision plat creating Tract 1 and Tract 2 as described herein, prior to the completion of any Offsite Improvements; however, prior to the approval of any subsequent subdivision plats of Tract 1, the Developer of Tract 1 shall cause all Offsite Improvements to be completed and all FIL obligations relative to Tract 1 to be fulfilled.

8. [Intentionally Deleted.]

9. REQUIRED PERMITS: Each Developer shall secure all construction drawing approvals, erosion and sedimentation control approvals, grading approvals, and Development Permits as shall be necessary for such Developer's portion of the Project under the Land Development Regulations in existence of the time of such permit application. The Town shall aid each Developer in securing all encroachment permits as required by the NCDOT, the North Carolina Department of Environmental Quality ("NCDEQ"), or other state or federal agencies, as required for roads, sewer, and water for the Project. The failure of this Agreement to address a particular permit, condition, term, or restriction shall not relieve the Developers of the need to comply with the Laws applicable to permitting requirements, conditions, terms, or restrictions.

10. PARKS AND RECREATION LAND DEDICATION: Under the UDO, the Town requires land dedication for parks and recreation purposes, or a fee in lieu of such dedication may be paid at the discretion of the Town Council. For the Property, the Town agrees to accept a fee in lieu of land dedication in an amount commensurate with the value of the Property at the time of subdivision. The parties currently stipulate that this results in a fee in lieu amount as calculated of $726,465 for the Property, based on the most current appraisal obtained by the Town. At any time prior to DHIC obtaining the first certificate of occupancy for Affordable Housing on Tract 2, as such time as the FIL shall be due, the Developer may:

a. Submit a more recent appraisal of the Property, if obtained by the Developers and if satisfactory to the Town, and recalculate the FIL according to the new appraisal; or

b. Provide any off-site parks and recreation amenity for dedication to the Town, in the sole discretion of the Town, such as a dedicated greenway on the western side of NC 55 By-pass, on property owned by Wake County.

11. TERMS REQUIRED FOR PUBLIC SAFETY: Description of any conditions, terms, restrictions, or other requirements determined to be necessary by the Town for the public health, safety, or welfare of its citizens.

a. All Zoning Conditions shall be complied with in the Development of the Project.

12. HISTORIC STRUCTURES: None exist on the Property.

13. DEVELOPMENT SCHEDULE: The Developers, in consideration of the covenants contained herein, shall be allowed the following expedited review considerations: (i) concurrent review of a master plan and a development plan; (ii) concurrent review of construction drawings (civil) and building permit review; (iii) to submit the items in clause (ii) for review by Town staff prior to Town Council approval of a development plan or master plan for the Project, so long as a favorable recommendation for the Project has been received from the Town's Planning Board.

ARTICLE III
DUTIES OF THE DEVELOPERS

1. The Developers shall design, permit, and construct the Offsite Infrastructure for the Project in the location(s) approved by the Town and as shown on plans (to be submitted), according to engineering best practices, requirements of the Town, and requirements of NCDEQ and any other applicable State regulatory agency. The Developers shall secure and dedicate to the Town all easements on the Property necessary for the construction and perpetual maintenance of the Public Infrastructure constructed in connection with the Project. For Public Infrastructure to be installed by the Developers on any land not owned by or controlled by the Developers, the Town shall convey such land to the Developers, if owned by the Town, or secure all necessary easements on any such land, if owned by third parties, for the construction and perpetual maintenance of the Public Infrastructure in a timely manner so as not to delay the completion of the Developers' duties hereunder.

2. The Developers shall construct in a workmanlike manner the Public Infrastructure on the Property (i) according to the design specifications and criteria of the Town which are in existence as of the Effective Date, and (ii) in full compliance with any applicable NCDEQ requirements. The Public Infrastructure on the Property, together with any and all appurtenances, easements, and equipment associated with the Project and required for public dedication, shall be dedicated to the Town in a manner consistent with the development plan for the Project and in a manner in accordance with the Town's standards.

3. The Developers shall construct the Public Infrastructure on the Property and the Offsite Infrastructure according to the plans and specifications submitted in a manner consistent with the standards of the Town in effect as of the Effective Date.

4. The Developers shall pay all development fees for the Project at the time they would otherwise ordinarily be due (or as otherwise amended pursuant to Section 4 above), in an amount that is

determined by the fee schedule approved in the annual budget which is in effect at the time of this Agreement.

ARTICLE IV
GENERAL TERMS

1. All of the Developers' obligations under this Agreement, including but not limited to the obligations under Articles II and III of this Agreement, are contingent upon (i) satisfaction of the conditions precedent set forth in Section 2 of Article II above, and (ii) the Town's approval of the Master Plan and a site plan for the Project, and (iii) issuance of all Development Permits for the Project to one or both of the Developers.

2. All reimbursements, if any, for the Project shall be provided on the basis of final documented Actual Costs, as approved by the Director of Engineering for the Town, in accordance with this Agreement. Any opinions of project cost included in this Agreement are based upon preliminary designs and are approximate.

3. The Developers shall be responsible for the complete design and construction of the Project, including all surveying, design, permitting, plat preparation and recordation, testing, engineering, bidding, construction, inspection, acceptance, easement maps and documents, construction management, construction administration, and all other necessary functions to ensure that the Project is complete-in-place and fully functional, built and operational in accordance with Town and State standards and approved plans for the Project. The costs of all of these items shall be borne by the Developers and shall not be subject to reimbursement or participation by the Town, except as specifically described in this Agreement.

4. In the course of installing the sewer line or any other work on easements obtained by the Town or under the Town's ownership, the Developers shall operate under permission to encroach onto a Town easement and shall hold the Town harmless from acts or omissions by or on behalf of the Developers.

5. Each Developer agrees to protect, defend, indemnify and hold the Town, and its officers, employees and agents, free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees, and other expenses or liabilities of every kind or character, to the extent arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings, or causes of actions of every kind and character, made by third parties, in connection with or arising out of the entry onto and performance of work for the Project or the Public Infrastructure on easements held by the Town, except to the extent that any such liability arises out of the negligence or willful misconduct of the Town or its agents, employees or contractors.

6. The Town agrees to protect, defend, indemnify and hold the Developers, and their respective officers, employees and agents, free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees, and other expenses or liabilities of every kind or character, to the extent arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings, or causes of actions of every kind and character made by third parties, in connection with or arising out of the injury to (including death of) persons or physical damage to property arising out of the performance of Town's obligations under this Agreement by the Town, its agents, employees and contractors (collectively, "Claims"), except to the extent any such Claims arise out

of the negligence or willful misconduct of a Developer, or its agents, employees or contractors. The Town further agrees to investigate, handle, provide defense for and respond to, any such Claims at its sole expense and agrees to bear all other costs and expenses related to such Claims, even if such Claims are groundless, false, or fraudulent but only to the extent the same are not expressly excluded as set forth herein.

7. The Project shall be subject to the Town's policies and procedures regarding Town acceptance and warranty on Public Infrastructure.

8. It shall be the responsibility of the Developers to ensure that all regulatory approvals for the Project or any part thereof, are in place before beginning construction.

9. The Town Manager is authorized to make decisions in regard to approvals, including changes to this Agreement in order to complete the scope of work required, within his authority granted by the Town Council, except as otherwise stated herein or required by Town ordinance.

10. The Town shall secure all necessary easements for the Public Infrastructure that is the subject of this Agreement.

ARTICLE V
OTHER

1. The Project shall be subject to the Town's policies and procedures regarding Town acceptance and warranty on Offsite Infrastructure. This Agreement shall not modify the warranty and acceptance procedures established by the Town through the Engineering Standards in place as of the Effective Date.

2. All notices, reports, and other communications given pursuant to this Agreement shall be in writing and shall either be mailed by first class mail, postage prepaid, certified or registered with return receipt requested, or by next-business day delivery via a nationally recognized overnight courier, or delivered in person to the intended addressee. Notice sent by certified or registered mail shall be effective upon the date of delivery indicated on the return receipt. Notice given in any other manner shall be effective upon actual receipt, or rejection of delivery, by the addressee.

3. This Agreement does not provide for the application of subsequently enacted Laws, ordinances, development policies, practices, procedures or standards. The Laws, ordinances, development policies, practices, procedures and standards applicable to the Development of the Project are those in force as of the Effective Date, in the manner prescribed by Holly Springs Ordinance § 14-164.

4. Notices under this Agreement shall be sent to the following:

FOR THE TOWN:

Randy J. Harrington
Town Manager
PO Box 8
Holly Springs, NC 27540
Reference:

FOR THE DEVELOPERS:

Capital Associates Management, LLC
Attn: Frank Baird, Manager
1501 Sunrise Ave, Suite 100
Raleigh, NC 27608

DHIC, Inc.
Attn: Natalie Britt
Vice President, Real Estate Development
113 S Wilmington Street
Raleigh, NC 27601

5. This Agreement shall be governed by and construed in accordance with the law of the State of North Carolina. The Parties consent to the jurisdiction of Superior Court Division of the General Court of Justice located in Wake County, North Carolina in the event a dispute arises between them regarding the terms of this Agreement.

6. If any paragraph or part of this Agreement is found void or unenforceable, the remainder of this Agreement shall continue in full force and effect.

7. This Agreement shall be binding upon and inure to the benefit of the Parties hereto, their respective heirs, successors and assigns.

8. This Agreement contains the entire agreement of the parties and there are no representations, inducements or other provisions relevant to the subject matter hereof, other than those expressed in writing.

9. Exhibit List: The following exhibits attached hereto are incorporated herein by this reference:

EXHIBIT A:	Map of the Property
EXHIBIT B:	Concept Plan
EXHIBIT C:	Zoning Conditions

IN WITNESS WHEREOF, the parties have executed this Agreement the day and year first above written.

TOWN OF HOLLY SPRINGS

(*Town Seal*)

BY:_____
Randy J. Harrington, Town Manager

ATTEST:

_____
Linda McKinney, Town Clerk
Kathy White, Deputy Town Clerk

This document is sufficient as to form.

_____
John P. Schifano, Town Attorney

This instrument has been pre-audited in the manner proscribed by the Local Government Finance Act.

_____
Patty Dressen
Interim Finance Director

NORTH CAROLINA
WAKE COUNTY

I, a Notary Public of the County and State aforesaid, certify that _____ personally came before me this day and acknowledged that she is the Town Clerk/Deputy Town Clerk of the Town of Holly Springs, and that the seal affixed to the foregoing instrument in writing is the corporate seal of said Town, and that said writing was signed and sealed by her in behalf of said corporation by its authority duly given and the said person acknowledged this writing to be the act a deed of said corporation.

WITNESS my hand and official stamp (or seal), this the ___ day of January, 2023.

_____
Notary Public

My Commission Expires:_____

[Agreement signatures continue on next page]

[Agreement signatures continued from previous page]

CAPITAL ASSOCIATES MANAGEMENT, LLC

By: _____
(Seal) Name: Frank P. Baird
Title: CEO, Manager

STATE OF NORTH CAROLINA
COUNTY OF _____

I, a Notary Public for the aforesaid county and state, certify that Frank P. Baird, personally came before me this day and acknowledged that he is the CEO and a Manager of Capital Associates Management, LLC, a North Carolina limited liability company, and that he, in such capacity, executed the foregoing on behalf of the said limited liability company.

WITNESS my hand and official stamp (or seal), this the ___ day of January, 2023

_____
Notary Public

_____, Notary Public
Typed/Printed Name
[Official Seal] My Commission expires:_____

DHIC, Inc.

By: _____
(Seal) Name: Natalie Britt
Title: Senior VP of Real Estate Development

STATE OF NORTH CAROLINA
COUNTY OF _____

I, a Notary Public for the aforesaid county and state, certify that Natalie Britt, personally came before me this day and acknowledged that she is the Senior VP of Real Estate Development of DHIC, Inc., a North Carolina non-profit corporation, and that she, in such capacity, being authorized to do so, executed the foregoing on behalf of the said non-profit corporation.

WITNESS my hand and official stamp (or seal), this the ___ day of January, 2023.

_____
Notary Public

_____, Notary Public
Typed/Printed Name
[Official Seal] My Commission expires:_____

[end of Agreement signatures]

EXHIBIT A
Map of Property

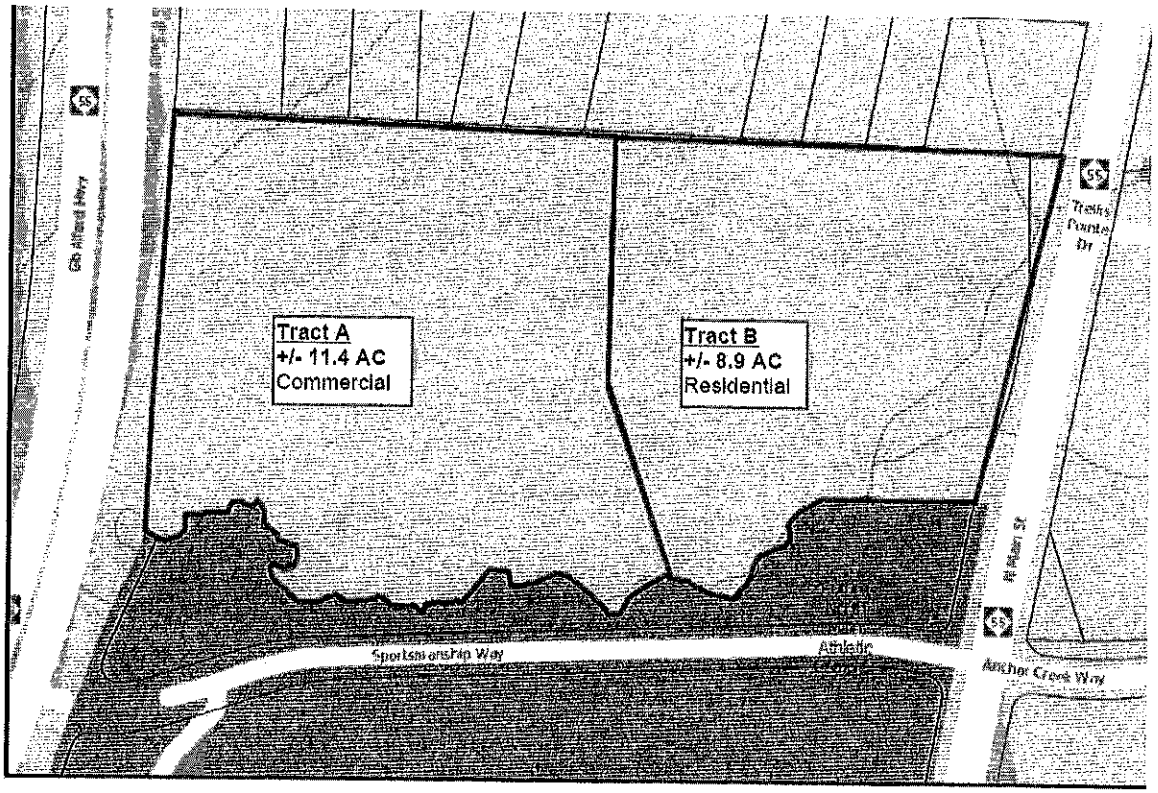


Exhibit B
Concept Plan



[continued on next page]

[end of Exhibit B]

Exhibit C
Zoning Conditions

1) The following uses shall be prohibited uses within the CB zoning district: Automotive Sales & Service: Automobile Parts Sales (new); Quick Oil Change Facility; Car Wash (automatic or self); Gasoline Service Station without repair; Motor Cycle/Scooter Sales; Automotive Sales & Service: Automotive Repair – Minor; Gasoline Service Station with minor repair (not to exceed two (2) accessory indoor service bays); Kennels (with outdoor runs); Food Sales and Service: Restaurant Drive Through, Stand Alone; Public Facilities: Neighborhood Recycling Collection Point; Communications/Utilities: Electricity Relay Station; Retail: Satellite Dish Sales and Service (outdoor display).

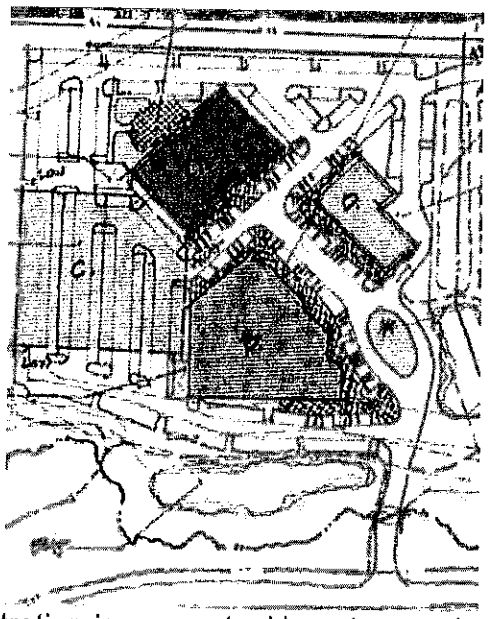
2) The CB zoning district shall contain a Class A commercial office building with a minimum square footage of 70,000 Square Feet with a minimum building height of 2 stories.

3) The following uses shall be permitted uses within the R-MF-15 zoning district: Residential:

   Multifamily dwellings. The allowed residential uses must meet the requirements of Section 42 of the Internal Revenue Code or a substantially equivalent form of affordable rental housing. 100% of the dwelling units developed on the property must meet this requirement. Accordingly, rents shall be set at a price that on average is affordable to a household with an annual income that is no greater than 60% of the Area Median Income for the respectively-sized household in the Raleigh, NC MSA, as determined by the United States Department of Housing and Urban Development.

4) The CB and R-MF-15 parcels will have both vehicular and pedestrian connectivity so that the two zoning parcels that make up this request will be interconnected and function as a horizontal mixed use development. Each parcel shall record an easement in a form approvable by the Town allowing cross access.

5) The CB zoned parcel shall provide a primary entrance driveway/street from Sportsmanship Way. To create a walkable street scape along this primary driveway/street, a minimum and maximum building setback will be established by the project master plan. To establish the intent of commercial building placement, no more than one bay of off-street parking spaces shall be constructed between the building and primary driveway/street. This is more particularly illustrated below:



Note: The above illustration is conceptual in nature and meant to illustrate desired building placement only. Final design will be determined at the time of development plan(s) submittal(s).

6) Off-street parking within the CB zoning district shall utilize shared parking. This shared parking shall be memorialized within a shared parking agreement. The property owners involved in the joint use of off-street parking areas shall submit a legal agreement approved by the town attorney as to form and content guaranteeing that said required off-street parking shall be maintained so long as the use requiring off-street parking is in existence or unless the required off-street parking is provided elsewhere in accordance with the provisions of this Section. Such instrument, when approved as conforming to the provisions of this section, shall be recorded by the property owner with the Wake County Register of Deeds and a copy thereof filed with the Department of Development Services.

7) The development shall construct and install a pedestrian crosswalk featuring a rapid beacon signals across Sportsmanship Way, such location shall be determined at the time of master plan submittal.

8) Developed open space areas within the proposed developments shall feature at least one of the following: hardscape areas; outdoor seating areas; public art; playground and pergolas/gazebos.

9) A minimum of one of the following types of Green Stormwater Infrastructure shall be used in connection with any development on the subject property: permeable pavement parking spaces or pervious pavers in pedestrian areas; or rainwater harvesting (cisterns); or bio-swales. Reclaimed water for commercial irrigation purposes whenever feasible shall be utilized.

10) Emphasis shall be placed on placemaking within the development. To ensure this occurs, the following landscaping practices shall be utilized:
   a. The use of vertical landscaping or public art shall be utilized adjacent to a minimum of two (2) commercial outdoor seating or gathering areas;
   b. To the greatest extent possible, street trees shall be installed in accordance with the Town of Holly Springs UDO requirements along the primary entrance driveway/street from Sportsmanship Way.
   c. Within the CB zoning district, the use of planters shall be positioned as to energize and identify pedestrian entrances, such entrances shall be flanked by at least one planter. Planters shall have a minimum height 24" and a minimum width of 18".

[end of Exhibit C]

Exhibit D

Company PSA

[Attached]

PURCHASE AND SALE AGREEMENT

THIS PURCHASE AND SALE AGREEMENT ("**Agreement**") is entered into on this _____ day of January, 2023, by and between TOWN OF HOLLY SPRINGS, a North Carolina municipal corporation (the "**Town**" or "**Seller**"), and CAPITAL ASSOCIATES MANAGEMENT, LLC, a North Carolina limited liability company, its successors and assigns (the "**Purchaser**").

WITNESSETH

WHEREAS, the Seller and Wake County, North Carolina, a political subdivision of the State of North Carolina (the "**County**") are working collaboratively towards the development of that certain real property comprised of 19.89 acres, more or less, located at 1317 N Main Street, Holly Springs, North Carolina, and identified as Wake County Tax Parcel Number 0649-89-4163 (the "**Master Parcel**").

WHEREAS, in response to an RFP soliciting offers for the sale of the Master Parcel, the Purchaser and DHIC, Inc. ("**DHIC**") submitted a joint proposal for the development of the Master Parcel, including the subdivision of the Master Parcel into two parcels for the construction of affordable housing and commercial development, respectively, such joint development being further evidenced in that certain Memorandum of Agreement among the Town, DHIC and Purchaser dated September 16, 2020 (as amended, the "**MOA**") which was approved by the governing boards of the County and the Town.

WHEREAS, pursuant to the terms of that certain Disposition Contract dated December 26, 2022 (the "**County Contract**"), the Seller and the County agreed to a donative conveyance of an approximate 10 acre, more or less, portion of the Master Parcel (such portion being referred to herein as the "Property" and further defined in Section 1.1) to the Seller for commercial development purposes under the Seller's economic development policy and in accordance with the MOA (the "**County Transaction**") which transaction was approved by the governing boards of the County and the Town.

WHEREAS, the County Contract and the County Transaction were ratified and reauthorized to the extent necessary by the Board of Commissioners of the County on November 9, 2022.

WHEREAS, under the terms of the County Contract and upon the consummation of the County Transaction, the Seller is permitted to convey the Property to a third party for commercial uses compatible with the proposed multifamily residential development planned for the remainder of the Master Parcel under the MOA.

WHEREAS, the Town, DHIC, and Capital Associates Management, LLC, are entering into a Development Agreement ("**DA**") on or about even date herewith, setting forth the requirements of the various parties with respect to the development of the Master Parcel.

WHEREAS, as of September 20, 2022, the governing board of the Town (i) determined that the Purchase Price to be paid by Purchaser, as set forth herein, meets or exceeds the appraised value of the Property as further described herein, and (ii) the Town approved entering into the DA and the EDA.

WHEREAS, upon the terms hereinafter set out and in accordance with Article 12 of Chapter 160A and Section § 158-7.1(d) of the North Carolina General Statutes ("**NCGS**"), the Seller hereby agrees to transfer, and the Purchaser hereby agrees to accept, fee simple ownership in the Property.

NOW, THEREFORE, in consideration of the mutual covenants and representations herein contained, Seller and Purchaser agree as follows:

1.
PURCHASE AND SALE

1.1 Purchase and Sale. Subject to the terms and conditions of this Agreement, Seller hereby agrees to sell and convey to Purchaser, and Purchaser hereby agrees to purchase from Seller, the following described property (herein collectively called the "**Property**"):

(a) Land. An approximately 10.81 acre, more or less, portion of the Master Parcel, depicted as Tract 1 on the site plan attached hereto Exhibit A (the "**Land**");

(b) Improvements. All improvements (the "**Improvements**"), if any, located on the Land, except as expressly provided otherwise herein;

(c) Easements. All easements, if any, benefiting the Land;

(d) Rights and Appurtenances. All rights and appurtenances pertaining to the Land, including any right, title and interest of Seller in and to adjacent streets, alleys or rights-of-way; and

(e) Tangible Personal Property. All of Seller's right, title and interest in all apparatus, fixtures, equipment, machinery and other personal property, if any, located on or about the Land (the "**Tangible Personal Property**"), to the extent not removed by Seller prior to the Closing Date.

2.
PURCHASE PRICE

2.1. Purchase Price. The purchase price (the "**Purchase Price**") for the Property shall be ONE MILLION TWENTY THOUSAND AND NO/100 DOLLARS ($1,020,000.00) and shall be paid by Purchaser to Seller at the Closing (as defined in Section 6.1). The Purchase Price shall be payable in United States currency by way of federal wire transfer, in accordance with wiring instructions provided by Seller or Escrow Agent, or other immediately available funds at Closing. The Purchase Price meets or exceeds the appraised value of the Property, as determined by Rich Kirkland, a licensed North Carolina MAI appraiser.

2.2. Private Sale. This Agreement is entered into by the Town pursuant to NCGS § 158-7.1(d), the requirements of which are satisfied in part by that Economic Development Agreement entered into by the Town, Purchaser and DHIC (the "**EDA**"), which sets forth additional requirements of the Purchaser for the construction and development of a business park on the Property (the date of Purchaser's execution of the EDA is to be hereinafter referred to as the "**Approval Date**").

3.
EARNEST MONEY

3.1. Earnest Money. Within five (5) business days after the Approval Date, Purchaser shall deliver to the Wyrick Robbins Yates & Ponton LLP ("**Closing Agent**" or "**Escrow Agent**") a deposit in the amount of Fifty Thousand and No/100 Dollars ($50,000.00) by wire transfer (the "**Earnest Money**"). If the sale of the Property is consummated pursuant to the terms of this Agreement, the Earnest Money

deposited hereunder shall be paid to Seller as a credit against the Purchase Price. In the event of a termination of this Agreement by Purchaser pursuant to any right of termination contained in this Agreement, then the Earnest Money shall be returned to Purchaser.

4.
TITLE; INSPECTIONS

4.1. Title Commitment and Survey.

(a) Title Commitment. Purchaser shall obtain a commitment for an owner's policy of title insurance (the "**Title Commitment**"). The title insurance policy, when issued pursuant to the Title Commitment (the "**Owner's Policy**"), shall name Purchaser or its assignee pursuant to Section 12.8 as insured, insuring that Purchaser owns good and indefeasible fee simple title to the Property subject only to the Permitted Exceptions (as defined in Section 4.1(c) below). Purchaser shall be responsible for working directly with its title company ("**Title Company**") to obtain any endorsements that Purchaser may desire, and Purchaser shall be solely responsible for the cost of the Owner's Policy and any endorsements requested by Purchaser.

(b) Survey. Purchaser shall, at its election, obtain a current survey (the "**Survey**"), of the Property, and further upon Purchaser's election, the legal description to be included in the Non-Warranty Deed from Seller shall be based upon the Survey.

(c) Title Review Period. Purchaser shall have until the date that is ninety (90) days after the Approval Date (the "**Title Review Period**") to approve or disapprove the Title Commitment and the Survey, including the information reflected therein, such approvals or disapprovals to be within Purchaser's sole discretion (any such disapproved item or matter is herein referred to as a "**Title Exception**"). If Purchaser fails to disapprove any item or information contained in the Title Commitment or Survey by written notice delivered to Seller of Purchaser's objection to such Title Exception(s) (a "**Title Objection Notice**") prior to the expiration of the Title Review Period, Purchaser shall be deemed to have approved such Title Exception(s) and shall accept title to the Property as reflected in the Title Commitment and Survey, subject to the Permitted Exceptions. If Purchaser delivers a Title Objection Notice to Seller prior to the expiration of the Title Review Period, Seller shall have the right (without any obligation to do so) to cure or attempt to cure the Title Exception(s) referenced in Purchaser's Title Objection Notice at or prior to Closing. However, if Seller is unable to cure or elects not to cure any one or more of the Title Exception(s) referenced in the Title Objection Notice, Seller shall notify Purchaser in writing of such inability or election (a "**Title Exception Election Notice**") within ten (10) days after Purchaser's delivery of the Title Objection Notice. In the event Seller fails to send Purchaser a Title Exception Election Notice within ten (10) days of Purchaser's delivery of the Title Objection Notice, then Seller shall be deemed to have elected not to cure any of the Title Exceptions and the Title Exception Election Notice shall be deemed given as of the tenth (10th) day after Purchaser's delivery of the Title Objection Notice. Purchaser shall then have five (5) business days following its receipt of the Title Exception Election Notice either to waive its objections to the Title Exception(s) which Seller expressly or impliedly is unable or unwilling to cure (the "**Incurable Exceptions**") and proceed to Closing, or to terminate this Agreement. If Purchaser fails to notify Seller of the termination of this Agreement within the aforementioned five (5) business day period, Purchaser shall be deemed to have waived its objections to the Incurable Title Exceptions and the parties shall proceed to close the transaction contemplated by this Agreement, with the Incurable Exception(s) appearing as Permitted Exceptions on the Owner's Policy and on the Deed. If Purchaser provides Seller notice that it wishes to terminate this Agreement, (i) this Agreement shall be terminated effective as of the date on which Seller receives such notice, the Earnest Money shall be returned to Purchaser and the parties shall have no further obligations under this Agreement except for the obligations specified in Sections 4.2 and 4.3 of this Agreement, and (ii) the EDA and the DA shall also be terminated and of no further force or effect. The term

"**Permitted Exceptions**" as used herein, shall mean the Title Exception(s) listed in Schedule B of the Title Commitment which Purchaser approves, waives or is deemed to have approved pursuant to this Section 4.1(c).

4.2. Inspection.

(a) Inspection Period. Purchaser, its agents and employees may inspect the Property at any reasonable time on or before the date that is ninety (90) days after the Approval Date (the "**Inspection Period**"), and Purchaser may terminate this Agreement because of any unacceptable fact or condition affecting or existing on the Property (an "**Unacceptable Condition**") or for any other reason in Purchaser's sole discretion by delivering written notice of termination to Seller prior to the expiration of the Inspection Period. The inspections under this Section 4.2(a) may include, without limitation, a Phase I environmental inspection of the Property.

(b) Review Documents. Within ten (10) business days of the Effective Date, Seller shall provide Purchaser with copies of any surveys, title insurance policies, environmental studies, soil reports, governmental correspondence, and any other information relating to the Property (collectively, the "**Review Documents**"), to the extent in possession or control of Seller.

(c) Condition of the Property. If Purchaser does not close on the purchase of the Property under this Agreement, it shall return the Property to substantially the same condition in which it existed prior to any investigations undertaken by Purchaser, its agents, employees and assigns pursuant to this Agreement. Notwithstanding anything to the contrary contained in this Agreement, the obligations of Purchaser set forth in this Section 4.2(c) shall survive the termination of this Agreement, as applicable.

(d) Seller's Cooperation. Seller agrees to cooperate with Purchaser as is reasonably necessary to Purchaser's efforts to inspect the Property, including, without limitation, coordinating with the County to obtain access to the Property for accomplishing any such inspections.

4.3. Termination. If this Agreement is terminated, then the Earnest Money shall be reimbursed or disbursed by the Escrow Agent in accordance with the specific terms of Section 3.1.

4.4. Cross Access Easement. During the Inspection Period, Purchaser and Seller, in collaboration with the County or any other owner of the Residential Parcel (defined herein), as applicable, shall in good faith negotiate, for the benefit of the future owners and permittees of the Master Parcel, as it is to be subdivided, a non-exclusive, perpetual right, privilege and easement of pedestrian and vehicular ingress, egress and regress over, upon, across and through the Master Parcel (the "**Cross Access Easement**"). Purchaser may, in its sole discretion, grant, for the benefit of the future owners and permittees of that certain 9 acre, more or less, portion of the Master Parcel to be used for residential purposes and acquired by DHIC, or another affordable housing developer, as further set forth in the MOA (the "**Residential Parcel**"), a non-exclusive, perpetual right, privilege and easement of vehicular parking with respect to parking spaces designated by the Purchaser, in its discretion, and located on the Property (the "**Parking Easement**").

5.
REPRESENTATIONS OR WARRANTIES BY SELLER

5.1. REPRESENTATIONS AND WARRANTIES. The following representations and warranties are made by Seller:

5.1.1. No Litigation. Seller has no knowledge of, and has not received any notice of any actual, pending or threatened violation, action or proceeding by any organization, person, individual or governmental agency against Seller with respect to the Property or against the Property (or any portion thereof), and there is no current threat of any litigation or other legal action being filed against Seller or the Property which would affect the Property or Seller's ability to perform its obligations hereunder.

5.1.2. Boundary Lines of Property. Seller has no knowledge of and has received no notice of any pending litigation or dispute with respect to the location of the boundaries and corners of the Land.

5.1.3. Authority. The execution, delivery and performance of this Agreement and the other agreements and instruments referred to herein and the consummation of the transactions contemplated hereby by Seller does not require the consent, approval or joinder by any party or entity which is not a party to this Agreement. This Agreement is the valid and legally binding obligation of Seller enforceable against Seller in accordance with its terms. The individuals executing this Agreement and other documents and instruments referenced herein or otherwise executed and delivered in connection herewith on behalf of Seller have the legal power, right and authority to bind Seller under the terms and conditions stated herein.

5.1.4. Title. Seller will have, at the Closing, good, insurable fee simple title to the Land, free and clear of all liens and encumbrances, other than the Permitted Exceptions and none of the Land will be subject to any prior conveyance or assignment to, or any superior possessory rights in, any third party.

5.1.5. Undisclosed Agreements and Liabilities. There are no undisclosed liabilities or agreements affecting the Property that will remain in effect after the Closing, and there are no liabilities or agreements impairing Seller's ability or capacity to sell the Property to Purchaser. Seller has not entered into any commission or brokerage agreements relating to the Property.

5.1.6. No Rights to Purchase. No person or entity, other than Purchaser and the County (with respect to the County's limited right of reversion provided by the County Contract), has any right, agreement, commitment, option, right of first refusal or any other agreement with respect to the purchase, assignment or transfer of all or any portion of the Property.

5.1.7. No Condemnation. Seller has no knowledge of and has not received notice of any pending or threatened condemnation, eminent domain, change in grade of public street or similar proceeding affecting all or any portion of the Property.

5.1.8. Leases, Occupancy. There are no tenants located on the Property, and no person or entity now has, or at the time of Closing will have, any possessory interest in the Property, under a lease or otherwise.

5.1.9. No Agreements. Other than as expressly set forth in this Agreement or otherwise disclosed in writing to Purchaser pursuant to this Agreement, there are no agreements in effect which will survive Closing hereunder, relating to the operation or maintenance of the Property.

5.1.10. Plan Approvals. The Master Plan and Site Plan have been approved by the Seller and will not be terminated and will remain valid for a period of 36 months after Closing.

5.1.11. Hazardous Material. Seller has no knowledge and has received no notice of: (i) any Hazardous Material contamination on the Land, or (ii) any investigation, administrative order, consent order, agreement, litigation, or settlement with respect to any Hazardous Material or Hazardous Material contamination that is in existence with respect to the Property, or (iii) any above ground or underground storage tank located on the Property or (iv) any violation or failure to comply with any environmental law

or laws regulating the storage, use or disposal of Hazardous Material. As used herein, "**Hazardous Material**" means hazardous, toxic or dangerous waste, substance, or material, as currently defined for purposes of (a) the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, or (b) any other federal, state or local law, ordinance, rule, or regulation applicable to the Property and establishing liability standards or required action as to reporting, discharge, spillage, storage, uncontrolled loss, seepage, filtration, disposal, removal, use or existence of a hazardous, toxic or dangerous waste, substance, or material. Seller has delivered to Purchaser all exiting environmental reports regarding the Property in Seller's possession or available to the Seller.

The foregoing representations are true and correct, and the foregoing warranties are in full force and effect and binding on Seller as of the date hereof, and shall be true and correct and in full force and effect, as the case may be, and deemed to have been reaffirmed and restated by Seller as of the date and time of Closing in the same manner as expressly set forth herein, shall survive Closing for a period of one year, shall not be deemed merged into any instrument of conveyance delivered at Closing, and shall inure to the benefit of and enforceable by Purchaser, its successors and assigns. If Seller shall acquire any information or knowledge between the Effective Date and the Closing Date which would make any of the foregoing representations and warranties untrue or incorrect, Seller shall immediately disclose such information or knowledge to Purchaser and the representation or warranty so affected shall be deemed amended thereby as of the Closing Date; provided, however, if Seller or Seller's actions cause such representation or warranty to be untrue or incorrect, and if Purchaser suffers actual damage as a result, Purchaser shall be entitled to the remedies provided to Purchaser in Section 9.1 hereof. Notwithstanding the foregoing, in the event any change in the representation or warranty is deemed by Purchaser to be material and if such change is not caused by Seller or Seller's actions, Purchaser shall have the right to terminate this Agreement in which event the Earnest Money shall be returned to Purchaser and the parties shall have no further rights or obligations hereunder except for the obligations of Purchaser under Section 4.2(c).

6.
CLOSING

6.1. Closing. The closing of the transaction contemplated by this Agreement ("**Closing**") shall be held on or before the date ("**Closing Date**") that is thirty (30) days after the later to occur of (i) expiration of the Inspection Period, or (ii) Purchaser's fulfillment of the closing conditions set forth in Sections 7.1.9 and 7.1.10 below; provided, however, in no event shall the Closing Date occur later than the third anniversary of the Company submitting for the last of the approvals described in Sections 7.1.9 and 7.1.10 below. Purchaser and Seller shall conduct an escrow-style closing through Closing Agent so that it will not be necessary for any party to attend the Closing. Purchaser and Seller shall finalize and deliver all Closing documents to the Closing Agent no later than 5:00 p.m., EST on the last business day prior to the Closing Date.

6.2. Seller's Obligations at Closing. At Closing, Seller shall deliver to Purchaser the following documents:

(a) Deed. Special warranty deed (the "**Deed**") executed by Seller conveying the Property to Purchaser in the form attached to this Agreement as Exhibit B, subject to no exceptions other than the Permitted Exceptions.

(b) Evidence of Authority. Copies of such documents and resolutions as may be required by and acceptable to the Title Company to evidence the authority of the person signing the Deed, the Non-Warranty Deed (if any), and other documents to be executed by Seller at the Closing, and the power and authority of Seller to convey the Property to Purchaser in accordance with this Agreement.

(c) Foreign Person. An affidavit of Seller certifying that Seller is not a "foreign person" as defined in the Federal Foreign Investment in Real Property Tax Act of 1980, and the 1984 Tax Reform Act, as amended.

(d) Owner's Affidavit. An affidavit of Seller, in form acceptable to the Title Company, certifying that there are no mechanics' or materialmen's liens against the Property.

(e) Closing Statement. A closing statement executed by Seller.

(f) Form 1099. Internal Revenue Service Form 1099, if required by Section 6045(d) of the Internal Revenue Code.

(g) Possession Affidavit. An affidavit of possession in a form satisfactory to the Title Company to remove any exception as to claims of parties in possession of the Property.

(h) Non-Warranty Deed. If requested by Purchaser, a non-warranty deed conveying all of Seller's right, title and interest in and to the Property in accordance with the legal description prepared from the Survey (the "**Non-Warranty Deed**").

(i) Cross Access Easement. A fully executed Cross Access Easement, which is to be recorded in the Wake County Register of Deeds Office at or prior to Closing.

(j) Other Documentation. Such other instruments or documents as may be reasonably requested by Purchaser or the Title Company, or reasonably necessary, to effect or carry out the purposes of this Agreement, subject to Seller's prior approval thereof, which approval shall not be unreasonably withheld, conditioned or delayed.

6.3. Purchaser's Obligations at Closing. At Closing, Purchaser shall deliver to Seller the following:

(a) Purchase Price. The Purchase Price, less the Earnest Money, by wire transfer or other immediately available funds. The Escrow Agent shall disburse the Earnest Money to the Town at Closing.

(b) Closing Statement. A closing statement executed by Purchaser.

6.4. Proration. Real estate taxes, if any shall be due and payable, shall be apportioned or adjusted between Seller and Purchaser. If any governmental assessments have been levied against the Property, all such assessments due prior to Closing shall be paid by Seller, provided that if any assessments are payable in installments, Seller shall pay all installments that are due prior to the Closing Date and Purchaser shall be responsible for all installments due subsequent to the Closing Date. Notwithstanding the timing of the assessment payments and the responsibility therefor as set forth in the immediately preceding sentence, all apportionments and adjustments shall be made as of 12:01 a.m. local (Eastern) time on the Closing Date, except those items that are not ascertainable on the Closing Date or that this Section 6.4 expressly provides are to be determined on a subsequent date, which shall be apportioned or adjusted after Closing, but computed as of 12:01 a.m. local (Eastern) time on the Closing Date.

Taxes for the year in which the Closing occurs, if any, shall be prorated on the basis of the most recent available tax bill and shall be apportioned on a calendar year basis at Closing. If the Closing shall occur before the tax rate or the assessed valuation of the Property is fixed for the then current year, the apportionment of taxes for the year in which the Closing occurs shall be calculated on the basis of the tax rate for the preceding year applied to the latest assessed valuation. Subsequent to the Closing, when the tax

rate and the assessed valuation of the property is fixed for the year in which the Closing occurs, the parties agree to adjust the proration of taxes and, if necessary, to refund or repay such sums as will be necessary.

The agreements of Seller and Purchaser set forth in this Section 6.4 shall survive the Closing.

6.5. Possession. Possession of the Property shall be delivered to Purchaser at Closing, free and clear of any claims of tenants and parties in possession.

6.6. Seller's Closing Costs. Except as otherwise expressly provided in this Agreement, Seller shall pay, at Closing: (a) the cost of the preparation of the Deed; (b) North Carolina transfer tax on the Deed, if any; (c) one-half (1/2) of all fees charged by the Escrow Agent, if any; and (d) the fees and expenses of Seller's attorney.

6.7. Purchaser's Closing Costs. Except as otherwise expressly provided herein, Purchaser shall pay, at Closing: (a) the premium and other costs of obtaining the Owner's Policy, any endorsements thereto requested by Purchaser, and any title searches or abstracts required by the Title Company to provide the final Owner's Policy; (b) the cost of the Survey; (c) the cost of any inspections or other due diligence conducted by Purchaser; (d) all lenders' fees related to any financing to be obtained by Purchaser; (e) the cost to record the Deed and any Non-Warranty Deed in Wake County; (f) all recording costs and documentary stamps or tax related to Purchaser's financing documents, including any deed of trust; (g) one-half (1/2) of all fees charged by the Escrow Agent, if any; and (h) the fees and expenses of Purchaser's attorney.

6.8. Other Closing Costs. Except as otherwise specifically provided for herein, all other Closing charges are to be allocated between Purchaser and Seller in accordance with the usual and customary practice for such transactions in the State of North Carolina.

7.
PURCHASER'S CONDITIONS PRECEDENT TO CLOSING

7.1. Purchaser's Conditions Precedent. The obligation of Purchaser to purchase the Property pursuant to this Agreement shall, at the option of Purchaser, be subject to the fulfillment, on or before the Closing Date, of all of the conditions set forth in this Section 7 (the "**Purchaser's Closing Conditions**"), any or all of which may be waived by Purchaser in Purchaser's sole discretion:

7.1.1. Representations, Warranties and Covenants. All of the representations and warranties of Seller set forth in this Agreement shall be true and correct in all material respects as of the Effective Date and, as of the Closing Date, and Seller shall have fully complied with all of Seller's duties and obligations contained in this Agreement.

7.1.2. Title. There shall be no material change in the matters reflected in the Title Commitment, except pursuant to Section 7.1.7 below, and there shall not exist any encumbrance or title defect affecting the Land not described in the Title Commitment except for the Permitted Exceptions or matters to be satisfied as of the Closing Date.

7.1.3. Title Policy. On the Closing Date, the Title Company shall be unconditionally obligated and prepared, subject to the payment of the applicable title insurance premium and other related charges, to issue to Purchaser the Owner's Policy in accordance with the requirements of Section 4.1.

7.1.4. Adverse Actions. No action or proceeding shall have been instituted or be threatened before any court or governmental authority (a) that relates to the Property and affects the Property after the

Closing Date, or (b) that seeks to restrain or prohibit, or to obtain substantial damages in respect of, or which is related to or arises out of, this Agreement or the consummation of the transactions contemplated herein.

7.1.5. Bankruptcy. As of the Closing Date, Seller shall not have commenced (within the meaning of any Bankruptcy Law) a voluntary case, nor shall there have been commenced against Seller an involuntary case, nor shall Seller have consented to the appointment of a Custodian of it or for all or any substantial part of its property, nor shall a court of competent jurisdiction have entered an order or decree under any Bankruptcy Law that is for relief against Seller, in an involuntary case or appoints a Custodian of Seller for all or any substantial part of its property. The term "Bankruptcy Law" means Title 11, U.S. Code, or any similar state law for the relief of debtors. The term "Custodian" means any receiver, trustee, assignee, liquidator or similar official under any Bankruptcy Law.

7.1.6. Agreements. Except as expressly permitted herein, Seller shall not have amended or terminated any agreements applicable to the Property after the Effective Date without Purchaser's prior written approval in each instance.

7.1.7. Consummation of the County Transaction. As of the Closing Date, Seller and the County shall have consummated the County Transaction—including but not limited to the recording of a plat of survey evidencing the subdivision, on the County's behalf, of the Master Parcel (including delineation of the Land as a separate legal lot), in accordance with the County Contract, which subdivision plat shall have been approved by the Seller and the Purchaser—such that Seller shall be able to convey fee simple title to the Property to the Purchaser, subject only to the Permitted Exceptions.

7.1.8. Rezoning. Purchaser shall have obtained rezoning of the Land to a commercial classification satisfactory to Purchaser, in its sole discretion. Any appeal periods as to such rezoning shall have expired.

7.1.9. Site Plan Approval. Purchaser shall have obtained, at Purchaser's sole cost and expense, unappealable site plan approval for the development of Purchaser's commercial project on the Land, such approval to be satisfactory to Purchaser in its sole discretion.

7.1.10. Permits. Purchaser shall be satisfied, in its sole discretion, that the Town's issuance to Purchaser of those building, grading and land disturbance permits necessary for the development of Purchaser's commercial project on the Land, is subject only to the Purchaser's acquisition of the Property.

7.2. Failure of Conditions. In the event of failure of any of the conditions in Section 7.1 and if Purchaser further elects to terminate this Agreement by notice to Seller on or before the Closing Date, the Earnest Money shall be returned to Purchaser and the parties shall have no further rights or obligations hereunder except for the obligations of Purchaser under Section 4.2(c).

8.
RISK OF LOSS

8.1. Condition of the Property. The Property shall be conveyed to Purchaser at Closing in substantially the same condition as on the date of this Agreement, ordinary wear and tear excepted, free of all tenancies or occupancies.

8.2. Condemnation. If, prior to Closing, action is initiated or threatened to take any of the Property by eminent domain proceedings or by deed in lieu thereof, Purchaser shall have twenty (20) days from receipt of written notice of such event from Seller to advise Seller that it intends to (i) terminate this

Agreement and thereupon shall be entitled to the immediate return of the Earnest Money (including accrued interest), and the parties shall have no further rights or obligations hereunder except for the obligations of Purchaser under Section 4.2(c), or (ii) consummate the Closing, in which event the award of the condemning authority shall be assigned to Purchaser at the Closing. If Seller does not receive any such notice from Purchaser within such twenty (20) day period, then Purchaser shall be deemed to have elected option (i) of this Section 8.2.

9.
DEFAULT

9.1. Breach by Seller. If Seller breaches this Agreement and fails to cure such breach within the applicable period set forth in Section 9.3, Purchaser may, as Purchaser's sole and exclusive remedy either (a) terminate this Agreement and receive the immediate return of the Earnest Money, together with all accrued interest; or (b) pursue the remedy of specific performance. In no event shall Seller be liable to Purchaser for any actual, punitive, speculative, consequential, or other damages, except to the extent provided above for out-of-pocket expenses.

9.2. Breach by Purchaser. If Purchaser breaches this Agreement and fails to cure such breach within the applicable period set forth in Section 9.3, Seller may, as Seller's sole and exclusive remedy and relief hereunder, terminate this Agreement and thereupon be entitled to the Earnest Money together with all interest accrued thereon, if any, as liquidated damages (and not as a penalty). Seller and Purchaser have made this provision for liquidated damages because they acknowledge and agree that it would be difficult to calculate on the date hereof the amount of actual damages for such breach, and that retention of the Earnest Money represents reasonable compensation to Seller for such breach.

9.3. Notice and Cure. In the event of a default by either party, the non-defaulting party shall provide the defaulting party with written notice of such event of default and: (i) as to the failure to close, a period of ten (10) days in which to cure such default; or (ii) as to any other default, a period of twenty (20) days to cure such default, provided that if such default cannot be cured within twenty (20) days, then such additional time as is required to cure the default, provided that the defaulting party promptly commences and diligently pursues such cure, but in no event shall such additional time to cure default(s) exceed forty-five (45) days.

9.4. Return/Delivery of Earnest Money. In the event the Earnest Money is returned to Purchaser as provided in Section 9.1 above, or delivered to the Seller as provided in Section 9.2 above, upon the return or delivery of the same, the parties hereto shall have no further rights, obligations or liabilities with respect to each other hereunder, except for the obligations of Purchaser under Section 4.2(c) hereof and all of Purchaser's obligations under the DA and EDA would terminate and be of no further force or effect.

10.
FUTURE OPERATIONS

10.1. Future Operations. From the Effective Date until the Closing or earlier termination of this Agreement:

(a) Except for condemnation, which is provided for in Section 8, Seller (i) will keep and maintain the Property in its condition as of the Effective Date (reasonable wear and tear excepted), and (ii) will use reasonable efforts promptly to advise Purchaser of any litigation, arbitration, or administrative hearing concerning the Property arising or threatened after the Effective Date.

(b) Seller will not, without the prior written consent of Purchaser, enter into, modify, or renew any contract or lease affecting the Property which cannot be cancelled upon thirty (30) days' prior written notice.

(c) Seller will not take any action to amend or modify the current zoning for the Property without the written consent of Purchaser which may be withheld in Purchaser's sole discretion.

11.
MISCELLANEOUS

11.1. Notice. Whenever this Agreement requires or permits any consent, approval, notice, request, or demand from one party to the other (collectively "**Notice**"), such Notice must be in writing to be effective and shall be effective on the date of actual receipt of such Notice by the addressee, or on the date the attempted initial delivery is refused or cannot be made because of a change of address of which the sending party has not been notified. The following shall, without limitation, be prima facia evidence of actual receipt of Notice by the addressee: (a) if mailed, by a United States certified mail return receipt, signed by the addressee or the addressee's agent; (b) if hand-delivered, by a delivery receipt, signed by the addressee or the addressee's agent; or (c) if via nationally recognized overnight carrier (e.g., UPS, Federal Express), by a delivery receipt, signed by the addressee or the addressee's agent. The parties' respective addresses for delivery of any Notice are set forth below unless another address within the United States is designated in writing by any party to the other.

SELLER:	Town of Holly Springs 128 S. Main St. Holly Springs, North Carolina 27540 Attention: Randy J. Harrington, Town Manager Telephone: (919) 557-3924
WITH COPIES TO:	Town Attorney's Office 128 S. Main St. Holly Springs, North Carolina 27540 Attention: John Schifano, Town Attorney Telephone: (919) 557-2917
PURCHASER:	Capital Associates Management, LLC 1501 Sunrise Avenue, Suite 100 Raleigh NC, 27608 Attention: Frank P Baird Telephone: (919) 233-9901
WITH COPIES TO:	Wyrick Robbins Yates & Ponton LLP 4101 Lake Boone Trail, Suite 300 Raleigh, North Carolina 27607 Attention: Anna McLamb Telephone: (919) 861-0482
TITLE COMPANY:	Title Insurance Company of North Carolina, Inc. 434 Fayetteville Street, Suite 2340 Raleigh, North Carolina 27601 Attention: Alice Bracey

Telephone: (919) 832-0252

11.2. Real Estate Commissions. Seller and Purchaser acknowledge that neither Seller nor Purchaser has contacted any real estate broker, finder or similar person in connection with the transaction contemplated hereby. To the actual knowledge of Seller and Purchaser, no Acquisition Fees (as hereafter defined) have been paid or are due and owing to any person or entity. As used herein, "**Acquisition Fees**" shall mean all fees paid to any person or entity in connection with the selection and purchase of the Property, including real estate commissions, selection fees, and nonrecurring management and start-up fees, development fees or any other fee of similar nature.

11.3. Entire Agreement. This Agreement embodies the entire agreement between the parties relative to the subject matter hereof, and there are no oral or written agreements between the parties nor any representations made by either party relative to the subject matter hereof which are not expressly set forth herein.

11.4. Amendment. This Agreement may be amended only by a written instrument executed by the party or parties to be bound thereby.

11.5. Headings. The captions and headings used in this Agreement are for convenience only and do not in any way limit, amplify, or otherwise modify the provisions of this Agreement.

11.6. Time of Essence. Time is of the essence of this Agreement. However, if the final date of any period which is not set out in any provision of this Agreement falls on a Saturday, Sunday or legal holiday under the law of the United States or the State of North Carolina, then in such event, the time of such period shall be extended to the next day which is not a Saturday, Sunday or legal holiday.

11.7. Governing Law. This Agreement shall be governed by the laws of the State of North Carolina and the applicable federal laws of the United States. All of the parties to this Agreement have participated freely in the negotiation and preparation hereof; accordingly, this Agreement shall not be more strictly construed against any one of the parties hereto.

11.8. Successors and Assigns. This Agreement shall bind and inure to the benefit of Seller and Purchaser and their respective successors and assigns. Purchaser may assign its rights under this Agreement, without Seller's consent, to any affiliated entity which directly or indirectly controls, is controlled by or is under common control with Capital Associates Management, LLC or to any special purpose entity created by Capital Associates Management, LLC so long as the assignee adopts the obligations under the DA and EDA and assumes the obligation hereunder to take title to the Property (any such assignment being a "**Permitted Assignment**"). Upon the occurrence of a Permitted Assignment, the assigning Purchaser shall have no further rights or obligations under this Agreement. The Town shall receive written notice of any Permitted Assignment, including a fully executed assignment and assumption agreement. Any assignment other than a Permitted Assignment shall require the prior written consent of Seller, not to be unreasonably withheld, conditioned or delayed.

11.9. Invalid Provision. If any provision of this Agreement is held to be illegal, invalid or unenforceable under present or future laws, such provision shall be fully severable; this Agreement shall be construed and enforced as if such illegal, invalid or unenforceable provisions had never comprised a part of this Agreement, and the remaining provisions of this Agreement shall remain in full force and effect and shall not be affected by the illegal, invalid, or unenforceable provision or by its severance from this Agreement.

11.10. Multiple Counterparts. This Agreement may be executed in a number of identical counterparts, each of which for all purposes is deemed an original, and all of which constitute collectively one (1) agreement.

11.11. Date of This Agreement. As used in this Agreement, the term "**Effective Date**" shall mean and refer to the date of full execution and delivery of this Agreement by Seller and Purchaser, which delivery may be accomplished via an electronic copy of this Agreement sent by e-mail.

11.12. Exhibits. The following exhibits are attached to this Agreement and are incorporated into this Agreement and made a part hereof:

(a) Exhibit A - Depiction of the Land;

(b) Exhibit B - Form of Special Warranty Deed.

11.13. Authority. Each party hereto represents and warrants to the other that the execution of this Agreement and any other documents required or necessary to be executed pursuant to the provisions hereof are valid, binding obligations and are enforceable in accordance with their terms.

11.14. Recordation. Neither this Agreement nor any memorandum or other summary of this Agreement shall be placed of public record under any circumstances except with the prior written consent of the Seller and the Purchaser.

11.15. Digital Images. Seller and Purchaser agree to accept a digital image of this Agreement, and all subsequent amendments hereto, as executed, as true and correct originals and admissible as best evidence for the purposes of State law, Federal Rule of Evidence 1002, and like statutes and regulations.

11.16. Seller's Cooperation. Seller agrees to cooperate with Purchaser as is reasonably necessary to Purchaser's efforts to obtain governmental approvals including, without limitation, rezoning and site plan approval, and permits. In no event will Seller be obligated to incur any cost by virtue of its cooperation. If required by the relevant governing authority, Seller shall join in the execution of any applications for governmental approval.

[SIGNATURES FOLLOW ON NEXT PAGE]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed under seal by persons duly empowered to bind the parties to perform their respective obligations hereunder the day and year set forth below.

SELLER:

TOWN OF HOLLY SPRINGS,
a North Carolina municipal corporation

By: _____
Name: Randy J. Harrington
Title: Town Manager

By: _____
Name: Linda McKinney
Title: Town Clerk

Approved as to form:

By: _____
Name: John Schifano
Title: Town Attorney

PURCHASER:

CAPITAL ASSOCIATES MANAGEMENT, LLC,
a North Carolina limited liability company

By: _____
Name: Frank P. Baird
Title: CEO, Manager

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

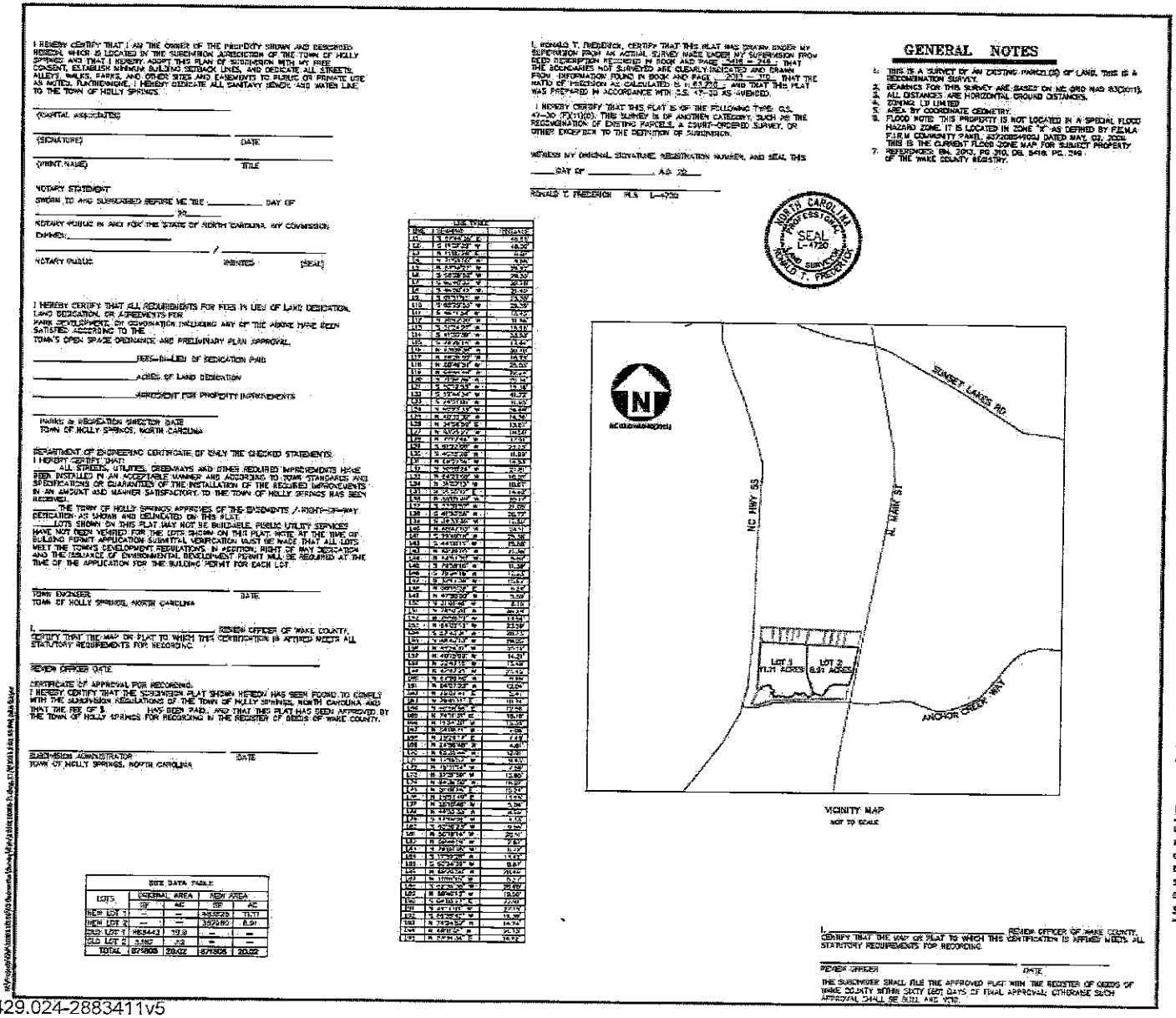
By: _____
Name: _____
Title: Town Finance Director, or designee

EXHIBIT A TO PURCHASE AND SALE AGREEMENT

DEPICTION OF THE LAND

EXHIBIT A TO PURCHASE AND SALE AGREEMENT

DEPICTION OF THE LAND



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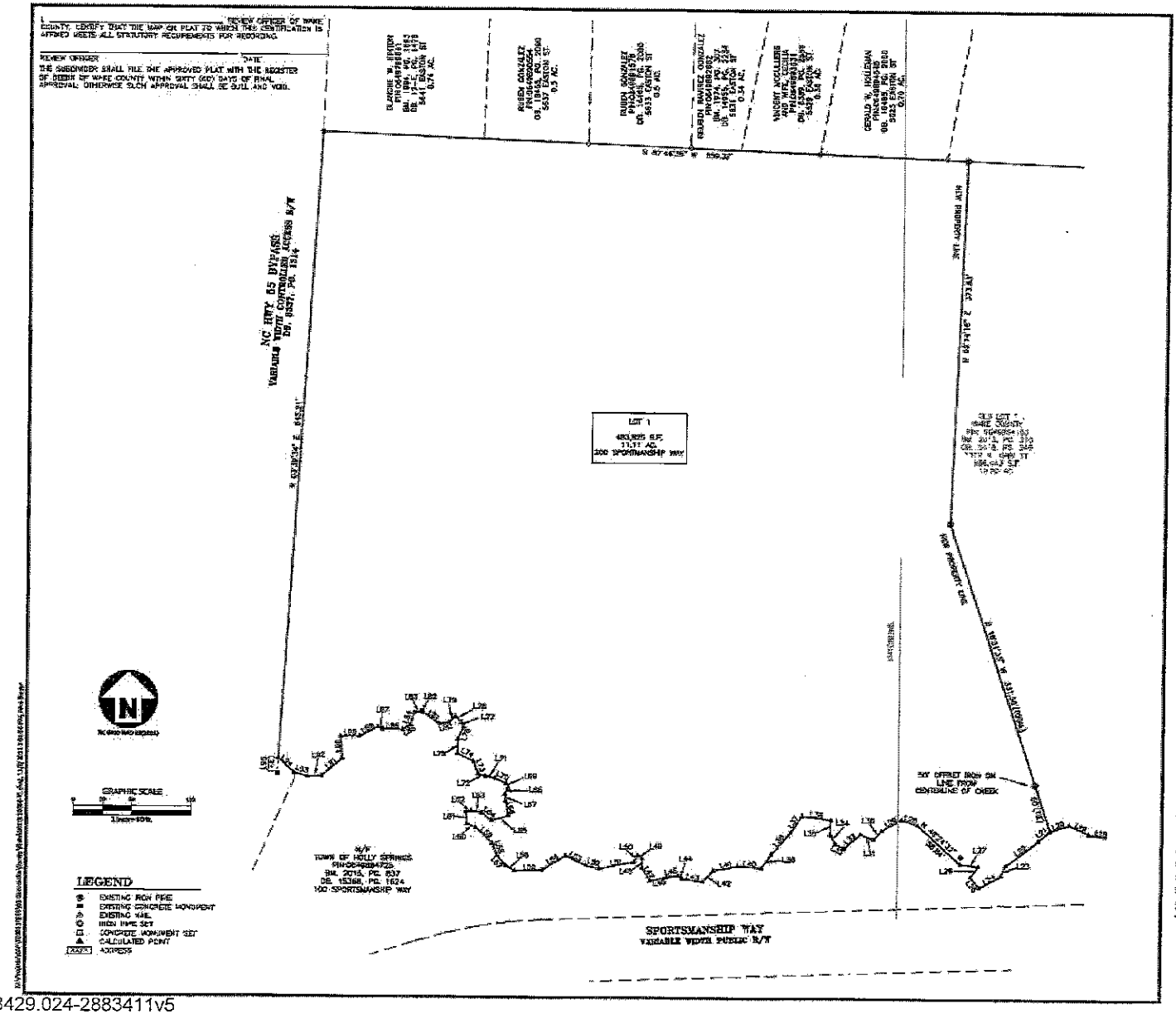


EXHIBIT B TO PURCHASE AND SALE AGREEMENT

FORM OF SPECIAL WARRANTY DEED

NORTH CAROLINA SPECIAL WARRANTY DEED

Excise Tax: Parcel Identifier No.:
Tax ID No.:

Mail after recording to Grantee

This instrument was prepared by:

Brief Description for the Index:

THIS DEED made this _____ day of _____, 202__, by and between:

GRANTOR	GRANTEE	

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH, that Grantor, for a valuable consideration paid by Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto Grantee in fee simple, all that certain lot or parcel of land situated in Wake County, North Carolina and more particularly described as follows:

See Exhibit A which is attached hereto and incorporated herein by reference.

All or a portion of the property herein conveyed does not include the primary residence of Grantor.

The property hereinabove described was acquired by Grantor by instrument recorded in Book _____, Page(s) _____, Wake County Registry.

A map showing the above-described property is recorded in Book _____, Page _____, Wake County Registry.

TO HAVE AND TO HOLD the aforesaid lot or parcel of land and all privileges and appurtenances thereto belonging to Grantee in fee simple.

And Grantor covenants with Grantee that Grantor has done nothing to impair such title as Grantor received, and Grantor will warrant and defend the title against the lawful claims of all persons claiming by, under or through Grantor, other than the following exceptions:

1. Ad Valorem taxes for the year 202__ and subsequent years taxes, not yet due and payable; and
2. All restrictions, easements and rights-of-way of record; and
3. Those covenants and conditions contained in a Development Agreement recorded at Book ____, Page____, Wake County Registry.

IN WITNESS WHEREOF, Grantor has executed this instrument as of the day and year first above written.

[*ADD SIGNATURE BLOCK(S) AND NOTARY ACKNOWLEDGEMENT(S)*]

EXHIBIT A to Special Warranty Deed

[INSERT LEGAL DESCRIPTION BASED ON SUBDIVISION PLAT IN SEC. 7.1.7]

THE TOWN OF

Holly Springs

Ordinance No.: RZ21-01
Date Adopted:
Effective Date:

AN ORDINANCE TO AMEND SECTIONS OF THE CODE OF ORDINANCES TO MODIFY APPENDIX A: UNIFIED DEVELOPMENT ORDINANCE: OFFICIAL ZONING MAP AND ADOPT THE COMPATIBILITY STATEMENT REQUIRED BY NORTH CAROLINA GENERAL STATUTES 160A-383

WHEREAS, the Town of Holly Springs Town Council adopted *Vision Holly Springs: Town of Holly Springs Comprehensive Plan* in November 2007 and updated the plan in 2019; and

WHEREAS, the Town of Holly Springs has received a request to modify the Official Zoning Map for 20.01 acres of Wake County PIN 649894163 & 649991395 from LB: Local Business Limited to CB CU: Community Business Conditional Use and R-MF-15 CU: High-Density Multifamily Residential Conditional Use; and

WHEREAS, the *Vision Holly Springs: Town of Holly Springs Comprehensive Plan* designates said parcels on the *Future Land Use Map* as Mixed-Use Center; and

WHEREAS, the requested Official Zoning Map Change proposes land uses that are consistent with the adopted *Vision Holly Springs: Town of Holly Springs Comprehensive Plan Future Land Use Map,* and

WHEREAS, the Holly Springs Planning Board reviewed this request at a Public Meeting on February 23, 2021 and recommended approval by a vote of 6-2-1; and

WHEREAS, an opportunity for public input into the suggested amendment has been offered in a public hearing before the Town Council; and

WHEREAS, after considering the recommendation of the Holly Springs Planning Board and the public input offered in a public hearing before the Town Council, the Town Council finds amending the Official Zoning Map from LB: Local Business Limited to CB CU: Community Business Conditional Use and R-MF-15 CU: High-Density Multifamily Residential Conditional Use is consistent with the Vision Holly Springs Comprehensive Plan since the Land Use & Character Plan Future Land Use Map designates this property as Mixed-Use Center and the CB CU: Community Business Conditional Use and R-MF-15 CU: High-Density Multifamily Residential Conditional Use districts, with the conditions offered by the applicant, will serve the broader economic, entertainment, and housing needs of the community and will provide for a compact, walkable environment and mix of residential and non-residential uses.; and

WHEREAS, the Town Council finds the proposed amendment to the Official Zoning Map is reasonable and in the public interest by providing opportunities to expand the nonresidential tax base, generate economic activity for the community, and provide for affordable housing; and

THEREFORE, BE IT ORDAINED by the Holly Springs Town Council of the Town of Holly Springs, North Carolina, that the Unified Development Ordinance of the Town is amended as follows:

Part 1: **Amend Unified Development Ordinance** Section 1.20, C. Official Zoning Map with the following rezoning request: #20-REZ-03 to change the zoning of PINs 649894163 & 649991395 from LB: Local Business Limited to CB CU: Community Business Conditional Use and R-MF-15 CU: High-Density Multifamily Residential Conditional Use, as further described below, the the following conditions:

1) The following uses shall be prohibited uses within the CB zoning district: Automotive Sales & Service: Automobile Parts Sales (new); Quick Oil Change Facility; Car Wash (automatic or self); Gasoline Service Station without repair; Motor Cycle/Scooter Sales; Automotive Sales & Service: Automotive Repair – Minor; Gasoline Service Station with minor repair (not to exceed two (2) accessory indoor service bays); Kennels (with outdoor runs); Food Sales and Service: Restaurant – Drive Through, Stand Alone; Public Facilities: Neighborhood Recycling Collection Point; Communications/Utilities: Electricity Relay Station; Retail: Satellite Dish Sales and Service (outdoor display).

2) The CB zoning district shall contain a Class A commercial office building with a minimum square footage of 70,000 Square Feet with a minimum building height of 2 stories.

3) The following uses shall be permitted uses within the R-MF-15 zoning district: Residential: Multifamily dwellings. The allowed residential uses must meet the requirements of Section 42 of the Internal Revenue Code or a substantially equivalent form of affordable rental housing. 100% of the dwelling units developed on the property must meet this requirement. Accordingly, rents shall be set at a price that on average is affordable to a household with an annual income that is no greater than 60% of the Area Median Income for the respectively-sized household in the Raleigh, NC MSA, as determined by the United States Department of Housing and Urban Development.

4) The CB and R-MF-15 parcels will have both vehicular and pedestrian connectivity so that the two zoning parcels that make up this request will be interconnected and function as a horizontal mixed use development. Each parcel shall record an easement in a form approvable by the Town allowing cross access.

5) The CB zoned parcel shall provide a primary entrance driveway/street from Sportsmanship Way. To create a walkable street scape along this primary driveway/street, a minimum and maximum building setback will be established by the project master plan. To establish the intent of commercial building placement, no more than one bay of off-street parking spaces shall be constructed between the building and primary driveway/street. This is more particularly illustrated below:



Note: The above illustration is conceptual in nature and meant to illustrate desired building placement only. Final design will be determined at the time of development plan(s) submittal(s).

6) Off-street parking within the CB zoning district shall utilize shared parking. This shared parking shall be memorialized within a shared parking agreement. The property owners involved in the joint use of off-street parking areas shall submit a legal agreement approved by the town attorney as to form and content guaranteeing that said required off-street parking shall be maintained so long as the use requiring off-street parking is in existence or unless the required off-street parking is provided elsewhere in accordance with the provisions of this Section. Such instrument, when approved as conforming to the provisions of this section, shall be recorded by the property owner with the Wake County Register of Deeds and a copy thereof filed with the Department of Development Services.

7) The development shall construct and install a pedestrian crosswalk featuring a rapid beacon signals across Sportsmanship Way, such location shall be determined at the time of master plan submittal.

8) Developed open space areas within the proposed developments shall feature at least one of the following: hardscape areas; outdoor seating areas; public art; playground and pergolas/gazebos.

9) A minimum of one of the following types of Green Stormwater Infrastructure shall be used in connection with any development on the subject property: permeable pavement parking spaces or pervious pavers in pedestrian areas; or rainwater harvesting (cisterns); or bio-swales. Reclaimed water for commercial irrigation purposes whenever feasible shall be utilized.

10) Emphasis shall be placed on placemaking within the development. To ensure this occurs, the following landscaping practices shall be utilized:
    a. The use of vertical landscaping or public art shall be utilized adjacent to a minimum of two (2) commercial outdoor seating or gathering areas;
    b. To the greatest extent possible, street trees shall be installed in accordance with the Town of Holly Springs UDO requirements along the primary entrance driveway/street from Sportsmanship Way.
    c. Within the CB zoning district, the use of planters shall be positioned as to energize and identify pedestrian entrances, such entrances shall be flanked by at least one planter. Planters shall have a minimum height 24” and a minimum width of 18”.

11) The Town requires certain fees to be paid upon development of land and for the granting of a building permit. Said fees are listed in the Town’s annual budget, and with this rezoning the Developer agrees he/she (i) is familiar with these fees, (ii) does not dispute the reasonableness of these fees as set forth in the Town’s annual budget; and (iii) notwithstanding any reimbursements discussed at this time through an Infrastructure Reimbursement Agreement, hereby agrees to timely pay all normal and customary fees applicable to Developer in connection with Non-Residential and Residential Projects. Such fees are listed in the current year annual budget of fees at the time the fee is due under the ordinary course of development.
    ***This condition shall apply to this zoning district unless otherwise modified by a Developer Agreement*.**

12) The Town requires, pursuant to N.C.G.S. § 160A-372, the dedication and construction of streets and rights of way, as shown in the approved Comprehensive Transportation Plan and the approved Transportation Impact Analysis, to create conditions essential to public health, safety, and the general welfare. A rezoning may be delayed until such time as necessary transportation improvements (to include offsite improvements) may be made, unless the Town and the

Developer can enter into agreements to accelerate the time for completion of these needed improvements. ***This condition shall apply to this zoning district unless otherwise modified by a Developer Agreement*.**

13) The proposed development associated with this rezoning will be served by public sewer. The developer acknowledges that there are significant downstream gravity sewer and pump station improvements that are needed to accommodate the demand from this project. The developer has submitted a sewer and pump station evaluation report to meet the Town of Holly Springs standards. The developer is responsible to continue coordination with the Town to determine the cost sharing partnership that will facilitate the necessary sewer infrastructure improvements proportionate to the project's impact. ***This condition shall apply to this zoning district unless otherwise modified by a Developer Agreement.***

14) TRANSPORTATION IMPROVEMENTS: The developer shall contribute, design, construct or permit the following Public Infrastructure relating to Transportation:
    a. Pay fee-in-lieu or construct northbound right turn lane at N. Main Street / Old Smithfield Road / Sunset Lake Road as required by the NCDOT.
    b. Contribute a fee-in-lieu for design and construction of future traffic signalization at the intersection of N. Main Street / Katha Drive / Arbor Creek Drive proportionate to project impact.

This condition shall apply to this zoning district unless otherwise modified by a Developer Agreement.

TRACT A – LB: Local Business Limited to CB CU: Community Business Conditional Use
Beginning at an Existing Concrete Monument located at the Northwest Corner of "Tract 2" as shown in BM. 2013, PG.313 recorded among the Wake County Register of Deeds. Thence South 87°44'35" East a distance of 659.37 feet to a point; thence South 02°14'16" West a distance of 373.83 feet to a point; thence South 18°31'33" East a distance of 331.56 feet to a point along the centerline of creek; thence South 50°12'53" West a distance of 15.20 feet to a point; thence South 52°44'34" West a distance of 41.72 feet to a point; thence South 24°51'08" West a distance of 11.95 feet to a point; thence South 60°23'33" West a distance of 24.69 feet to a point; thence North 40°39'32" West a distance of 14.36 feet to a point; thence North 34°58'59" East a distance of 13.67 feet to a point; thence North 83°25'27" West a distance of 18.50 feet to a point; thence North 48°24'32" West a distance of 58.84 feet to a point; thence North 71°17'44" West a distance of 17.51 feet to a point; thence South 61°27'00" West a distance of 23.23 feet to a point; thence South 40°15'20" West a distance of 11.99 feet to a point; thence North 69°22'16" West a distance of 14.53 feet to a point; thence South 50°20'24" West a distance of 21.81 feet to a point; thence North 64°29'08" West a distance of 10.07 feet to a point; thence North 31°02'13" West a distance of 10.67 feet to a point; thence North 01°55'12" East a distance of 14.92 feet to a point; thence North 82°09'49" West a distance of 30.17 feet to a point; thence South 33°31'57" West a distance of 21.05 feet to a point; thence South 41°50'56" West a distance of 28.77 feet to a point; thence South 34°33'30" West a distance of 17.50 feet to a point; thence North 85°47'03" West a distance of 24.11 feet to a point; thence South 79°49'18" West a distance of 25.38 feet to a point; thence South 44°00'11" West a distance of 15.88 feet to a point; thence North 82°28'05" West a distance of 21.38 feet to a point; thence North 54°57'20" West a distance of 5.87 feet to a point; thence South 79°59'16" West a distance of 11.39 feet to a point; thence South 78°24'16" West a distance of 17.23 feet to a point; thence North 32°17'36" West a distance of 15.67 feet to a point; thence North 00°15'28" East a distance of 9.29 feet to a point; thence North 47°50'03" West a distance of 5.59 feet to a point; thence South 31°01'48" West a distance of 8.18 feet to a point; thence South 78°10'20" West a distance of 36.29 feet to a point; thence North 75°58'19" West a distance of 13.54 feet to a point; thence North 64°05'13" West a distance of 23.59 feet to a point; thence South 57°43'31" West a distance of 28.73 feet to a point; thence South 88°43'13" West a distance of 28.05 feet to a point; thence North 61°24'41" West a distance of 10.17 feet to a point; thence North 40°15'09" West a distance of 14.21 feet to a point; thence North 22°42'15" West a distance of 13.48 feet to a point; thence North 47°42'21" West a distance of 23.45 feet to a point; thence

North 67°20'50" West a distance of 9.68 feet to a point; thence North 04°07'23" West a distance of 12.04 feet to a point; thence North 79°07'41" East a distance of 5.47 feet to a point; thence South 79°41'11" East a distance of 10.74 feet to a point; thence South 50°58'56" East a distance of 12.86 feet to a point; thence North 74°11'31" East a distance of 18.18 feet to a point; thence North 11°54'30" West a distance of 15.35 feet to a point; thence North 04°08'11" West a distance of 7.06 feet to a point; thence North 25°24'17" East a distance of 7.49 feet to a point; thence North 24°56'46" West a distance of 4.81 feet to a point; thence North 65°35'44" West a distance of 12.91 feet to a point; thence North 77°16'57" West a distance of 9.93 feet to a point; thence North 76°31'14" West a distance of 7.59 feet to a point; thence North 21°31'59" West a distance of 13.85 feet to a point; thence North 64°36'50" West a distance of 18.07 feet to a point; thence North 01°19'28" East a distance of 15.24 feet to a point; thence North 25°03'49" East a distance of 13.65 feet to a point; thence North 26°10'46" West a distance of 5.04 feet to a point; thence North 44°55'33" West a distance of 8.69 feet to a point; thence South 47°46'02" West a distance of 9.13 feet to a point; thence South 80°30'23" West a distance of 9.55 feet to a point; thence North 56°19'14" West a distance of 20.11 feet to a point; thence North 59°44'19" West a distance of 2.87 feet to a point; thence South 79°00'05" West a distance of 6.72 feet to a point; thence South 17°59'28" West a distance of 13.42 feet to a point; thence South 60°34'39" West a distance of 8.87 feet to a point; thence North 89°20'50" West a distance of 20.49 feet to a point; thence North 70°01'15" West a distance of 5.27 feet to a point; thence South 62°34'35" West a distance of 20.90 feet to a point; thence North 89°40'12" West a distance of 19.09 feet to a point; thence South 04°03'27" East a distance of 22.91 feet to a point; thence South 49°11'05" West a distance of 27.15 feet to a point; thence South 86°35'42" West a distance of 14.39 feet to a point; thence North 74°24'52" West a distance of 14.74 feet to a point; thence North 48°11'01" West a distance of 21.73 feet to a point along NC Hwy 55 Bypass; thence North 03°39'34" East a distance of 645.21 feet to the Point of Beginning. Having an area of 483,825 square feet, 11.11 acres

TRACT B - LB: Local Business Limited to R-MF-15 CU: High Density Multifamily Residential Conditional Use

Beginning at an Existing Concrete Monument located at the Northwest Corner of “Tract 2” as shown in BM. 2013, PG.313 recorded among the Wake County Register of Deeds. Thence South 11°13'38" West a distance of 232.68 feet to a point; thence South 11°16'12" West a distance of 88.65 feet to a point; thence South 11°07'29" West a distance of 48.02 feet to a point; thence South 17°58'03" West a distance of 176.23 feet to a point; thence South 11°05'28" West a distance of 6.07 feet to a point; thence North 88°36'57" West a distance of 189.00 feet to a point in the centerline of creek; thence South 71°55'55" West a distance of 4.56 feet to a point; thence North 87°14'27" West a distance of 24.92 feet to a point; thence South 68°26'52" West a distance of 29.33 feet to a point; thence South 60°40'32" West a distance of 32.78 feet to a point; thence South 46°30'42" West a distance of 21.40 feet to a point; thence South 01°51'53" West a distance of 23.35 feet to a point; thence South 65°29'53" West a distance of 29.39 feet to a point; thence South 46°11'58" West a distance of 13.45 feet to a point; thence South 20°42'00" West a distance of 31.56 feet to a point; thence South 31°24'27" West a distance of 16.96 feet to a point; thence South 41°30'39" West a distance of 33.53 feet to a point;thence South 78°26'14" West a distance of 17.44 feet to a point; thence North 63°00'38" West a distance of 30.70 feet to a point; thence North 58°26'59" West a distance of 18.73 feet to a point; thence North 80°49'51" West a distance of 25.03 feet to a point; thence North 64°44'49" West a distance of 22.24 feet to a point; thence South 71°28'36" West a distance of 20.34 feet to a point; thence South 50°12'53" West a distance of 0.17 feet to a point; thence North 18°31'33" West a distance of 331.56 feet to a point; thence North 02°14'16" East a distance of 373.83 feet to a point; thence South 87°44'35" East a distance of 665.69 feet to an Iron Pipe; thence South 87°44'35" East a distance of 46.66 feet to a the Point of Beginning. Having an area of 387,980 square feet, 8.91 acres

Part 2:

REPEAL OF CONFLICTING ORDINANCES

All ordinances or parts of the Unified Development Ordinance of the Town of Holly Springs conflicting or inconsistent with the provisions of this rezoning ordinance are hereby repealed.

Part 3:
SEVERABILITY
If any section, part of a section, paragraph, sentence, clause, phrase, or word of this Ordinance is for any reason held or declared to be unconstitutional, inoperative or void, such holdings shall not affect the remaining portion of this Ordinance and it shall be construed to have been the legislative intent to pass the Ordinance without such unconstitutional, invalid or inoperative part therein, and the remainder of this Ordinance after the exclusion of such part or parts shall be deemed to be held valid as if such part or parts had not been included therein, or if this Ordinance or any of the provisions thereof shall be held inapplicable to any person, group of persons, property, kind of property, circumstances, or set of circumstances, such holdings shall not affect the applicability thereof to any other person, property or circumstances.

Part 4:
INCLUSION IN UDO
It is the intention of the Town Council entered as hereby ordained, that the provisions of this Ordinance shall become and be made part of the Unified Development Ordinance of the Town of Holly Springs, North Carolina; that the Section(s) of this Ordinance may be renumbered or relettered to accomplish such intention, and that the word “Ordinance” may be changed to “Section, or “Article” or other word.

Part 5:
EFFECTIVE DATE
The provisions of this ordinance shall become effective April 6, 2021 in accordance with the laws of the State of North Carolina.

Adopted this, the 6th day of April, 2021.

Town of Holly Springs by **ATTEST**:

Dick Sears, Mayor

Linda McKinney, Town Clerk

DEVELOPMENT PLAN PETITION

Major Subdivision, Development Plan

DPM Appendix #A.04 Supplement 20 October 2023

PETITION CONTACT INFORMATION *(Attach additional sheets if needed)* Applicant and Financially Responsible Party will need to register for an account on the Portal.	
Project Applicant Check One: ☐ Owner ☐ Owner's Agent ☑ Design Professional ☐ Developer ☐ Other	
Name: Adam Pike, PE	Company: McAdams
Mailing Address: 621 Hillsborough Street, Suite 500	
City, State, Zip: Raleigh, NC 27603	
Telephone: 919-361-5000	E-Mail: pike@mcadamsco.com
Design Professional	
Name: Adam Pike, PE	Company: McAdams
Mailing Address: 621 Hillsborough Street, Suite 500	
City, State, Zip: Raleigh, NC 27603	
Telephone: 919-361-5000	E-Mail: pike@mcadamsco.com
Developer	
Name: Frank Baird	Company: Capital & Associates
Mailing Address: 1501 Sunrise Avenue, Suite 100	
City, State, Zip: Raleigh, NC 27608	
Telephone: 919-233-9901	E-Mail: fbaird@capitalassociates.com
Architect	
Name:	Company: 310 Architecture + Interiors
Mailing Address: 302 Jefferson Street, Suite 250	
City, State, Zip: Raleigh, NC 27605	
Telephone: 919-426-6345	E-Mail:
Landscape Architect	
Name: Sara Donohoe	Company: McAdams
Mailing Address: 621 Hillsborough Street, Suite 500	
City, State, Zip: Raleigh, NC 27603	
Telephone: 919-361-5000	E-Mail: donohoe@mcadamsco.com
Financially Responsible Party (REQUIRED)	
Name: Frank Baird	Company: Capital & Associates
Mailing Address: 1501 Sunrise Avenue, Suite 100	
City, State, Zip: Raleigh, NC 27608	
Telephone: 919-233-9901	E-Mail: fbaird@capitalassociates.com
Property Owner (REQUIRED)	
Name: Mark Edmondson	Company: Wake County Attorney's Office
Mailing Address: PO Box 550	
City, State, Zip: Raleigh, NC 27602	
Telephone: 919-856-6176	E-Mail: Mark.Edmondson@wakegov.com

DEVELOPMENT PLAN PETITION

Major Subdivision, Development Plan

DPM Appendix #A.04 Supplement 20 October 2023

PROJECT INFORMATION	
Project Name	1317 N Main Commercial Tract 1
PUD/Master Plan or Subdivision	Sportsmanship
Shopping Center or Lot #	N/A
Project Location *Use street address. If none, use closest intersection*	1317 N Main Street
	☑ Within Corporate Limits ☐ Within Holly Springs ETJ ☐ Pending Annexation
PIN(s)	0649894163
Real Estate ID	0414978 (portion of)
Project Acreage	10.81 Partial Parcel? ☑ Yes ☐ No
Current Zoning	CB-CU
Proposed Use	Professional Office, Retail
Open Space	☐ Dedication ☐ Fee-in-lieu ☐ Combination ☐ N/A
Waivers Requested	☐ No ☐ Yes: Specify UDO Section Number(s):
Special Study Scoping Meeting Dates	
Sketch Plan Review (pre-submittal) Meeting Date:	5/27/2021
Water Resource Management Program (WRMP)	WRMP Priority Level ☐ 1 ☐ 2 ☐ 3 Allocation Request Required

CERTIFICATE OF COMPLETION
I certify that all information presented in this petition is accurate to the best of my knowledge and belief. Signature of Applicant: Date: 3/7/2025

DEVELOPMENT PLAN & MAJOR SUBDIVISION FINDINGS OF FACT A petition for Development Plan or Major Subdivision may only be approved upon the presentation of the following:
1. The land uses and development intensity of the proposed project will not have significant adverse impacts on adjacent properties and are consistent with the character of the Zoning District and the land uses authorized therein:
2. The proposed project provides for the preservation, improvement, and/or enhancement of open spaces and provides sufficient land dedicated for public park space or an equivalent fee-in-lieu:
3. The proposed layout of streets, lots, utilities, water metering, and public improvements, and their relation to the topography of the land, reflect a design which can be economically served by the Town with public services and facilitates the use and future development of adjacent properties:
4. The proposed building or site design enhances the public realm, maximize natural surveillance and visibility, facilitates pedestrian access and circulation, and reinforces the Town's character:
5. The design of the project furthers the goals and policies of the Comprehensive Plan:

April 15, 2025

Ting Commercial Major Amendment Development Plan Findings of Fact

The land uses and development intensity of the proposed project will not have significant adverse impacts on adjacent properties and are consistent with the character of the Zoning District and the land uses authorized therein:

RESPONSE

- The subject property is zoned Community Business Conditional Use, which allows for a wide variety of uses, including the proposed use, professional office.
- Additionally, the approved zoning conditions assure there are no adverse impacts to adjacent properties. The proposed perimeter buffer to Easton Acres will be undisturbed, which means existing plant material will remain and shall be supplemented to achieve a C-150 planting standard.
- The major amendment also drops down the height of the building from 4-story to 3-story, which was appreciated by the neighbors in attendance at the neighborhood meeting.
- Greenway connections are also proposed to nearby Ting Park, which will allow safe pedestrian connections to this wonderful community amenity.

The proposed project provides for the preservation, improvement, and/or enhancement of open spaces and provides sufficient land dedicated for public park space or an equivalent fee-in-lieu:

RESPONSE

- The subject site is located adjacent to Ting Park, so no public park dedication was required. However, the project will be installing greenway to Ting Park as well as a rapidly flashing beacon crosswalk across Sportsmanship Way, allowing for safe pedestrian access to the wonderful open space that is the nearby town park.
- Additionally, as part of the original rezoning approval, the overall project (combined with the affordable housing development), is also required to pay a parks & recreation fee in-lieu payment to the Town.

The proposed layout of streets, lots, utilities, water metering, and public improvements, and their relation to the topography of the land, reflect a design which can be economically served by the Town with public services and facilities the use and future development of adjacent properties:

RESPONSE

- The proposed project layout will ensure that streets, lots, utilities and public improvements are served by town services in an economical way. The proposed development will extend public utilities to the site. The developer agrees to design and construct the mitigation improvements set forth in the sewer study. Additionally, the developer will be constructing a vital stream crossing across town owned property adjacent to Sportsmanship Way, allowing access to the property, all on the developer's dime.

The proposed building or site design enhances the public realm, maximize natural surveillance and visibility, facilitates pedestrian access and circulation, and reinforces the Town's character:

RESPONSE

- As noted elsewhere, the project will be saving existing trees in the perimeter buffer adjacent to Easton Acres, as well as the buffer along the Highway 55 bypass. Additionally, there is an existing environmental protection area along Sportsmanship Way. All these contribute to maximizing a natural surveillance surrounding the property on all sides.
- The extension and construction of the planned greenway as well as the crosswalk across Sportsmanship Way, work well to facilitate pedestrian access and circulation, as well as sidewalks throughout the development.

The design of the project furthers the goals and policies of the Comprehensive Plan:

RESPONSE

- This project is designed to utilize the acreage to the greatest extent possible whilst being a good neighbor, exactly what the Comprehensive Plan designation of Mixed-Use Center envisions. The entrance road into the site will feature sidewalk, as well as street trees, elsewhere the greenway along NC 55 bypass will be extended, ensuring pedestrian access will be enhanced – another key goal of the Comprehensive Plan. More importantly, the overall development, will provide a mix of uses that will improve and enhance the community - professional office and affordable housing – the first mix of this kind in Holly Springs!

NEIGHBORHOOD MEETING REPORT

A Neighborhood Meeting is required to occur prior to your submittal. The requirements for this meeting can be found in section 11.5 of the Unified Development Ordinance (UDO). The Neighborhood Meeting shall take place no more than 12 weeks prior to the application date and can be held virtually. A copy of the Neighborhood Meeting Notice must be sent to DSIntake@hollyspringsnc.gov prior to mailing for review and approval along with a copy of the mailing list.

Notification of Owners:

1. The Petitioner (or agent) shall prepare a Neighborhood Meeting Notification to be sent via first class mail to the owner(s) of the land specified on the petition within a 500' radius of the subject property. Mailing notices shall include surrounding property owners and property owner's association (or equivalent), and the Town of Holly Springs (Attn: Development Services). Where the tax records reflect a mailing address for an owner of property to be different than the address of the property owned, notification shall also be mailed to all addresses of the property itself, including apartment or suite addresses.
2. The notice shall include the date, time and location of the Neighborhood Meeting, the name of the Petitioner and the location of the proposed request (address, tax property, identification number or metes and bounds description), and an explanation of the nature of the request.
3. The notice shall be mailed not less than ten (10) days nor more than twenty-five (25) days before the date of the Neighborhood Meeting.

NEIGHBORHOOD MEETING INFORMATION	
Meeting Date:	04 14 2025
Meeting Time:	5:30 - 6:30 p.m.
Meeting Location:	Virtual - Zoom platform

CONDUCT OF MEETINGS *(Attach additional sheets if needed)*

At the Neighborhood Meeting, the Petitioner shall explain the proposal and petition, answer any questions, respond to concerns neighbors have about the petition and proposed resolutions to these concerns. Town Staff will not attend the Neighborhood Meeting.

Summary of Issues:

See attached

Changes made to the Petition as a result of the meeting:

N/A

Additional attachments required:

- A listing of those persons and organizations that were sent notification about the Neighborhood Meeting.
- A copy of the signed attendance list that includes the names and addresses of those in attendance.
- A copy of the mailed notice.

Preparer's Signature: Laura Hall Date: 4/14/25

April 2, 2025

RE: Neighborhood Meeting – Ting Commercial Plan Amendment

Dear Property Owner,

On behalf of the owner of the property located at 1317 N. Main Street (Parcels 0649891181 and 0649898125), you are invited to attend a neighborhood information meeting concerning the development of said property. The developer, Capital Associates, has submitted a site plan amendment, which proposes a change to the previously approved development plan associated with the commercial portion of the project only. This neighborhood meeting is the next step in the process of developing these parcels. The meeting will be held virtually via Zoom; details are as follows:

April 14, 2025
5:30-6:30PM
Zoom: https://mcadamsco.zoom.us/j/85645238568?pwd=3zchnMRdF5juMfgAJI2aoobDHOkLSe.1
Meeting ID: 856 4523 8568
Passcode: 805165

Join by mobile
+13017158592,,85645238568#,,,,*805165# US (Washington DC)
+13052241968,,85645238568#,,,,*805165# US

Per Town of Holly Springs ordinance requirements, we are notifying you of this meeting because your property is located within the written notification area for public hearings. While this meeting is not a public hearing, it is an opportunity for you to meet with the applicant to hear about their intention to develop the land and understand what changes are being proposed to the previously approved plans. You are encouraged to ask questions and express concerns so that we may help you to more fully understand the proposed project changes.

Town Planning staff will not be in attendance at this meeting. Property owners within the notification area will receive a separate notice from Town Planning staff when a public hearing is scheduled before the Holly Springs Town Council.

If you have any questions about this neighborhood information meeting, or if you are unable to attend and would like to speak with someone regarding the proposal, please feel free to contact me at 919-610-7377 or holloman@mcadamsco.com. We look forward to seeing you at the meeting.

Sincerely,

MCADAMS

Laura Holloman, AICP
Director, Development Entitlements

Ting Commercial Development Plan Neighborhood Meeting Report

April 14, 2025

The applicant provided a reminder of the project and approved rezoning and development plan but explained that the Development Plan Major Amendment was to the commercial portion of the property only. The applicant then explained the differences between the approved development plan and proposed development plan and opened up the meeting to any questions.

1) Will access off of Sportsmanship Way be paved?
   Response: Yes, will be paved, built with curb and gutter and sidewalk as well.

2) Will the access onto Sportsmanship Way and N. Main Street be full movement?
   Response: Yes, both access points will be unrestricted, full-movement access points.

3) What is the project timeframe?
   Response: If this major amendment were to be approved, we hope to have Construction Drawings approved by the end of this year, and construction to begin in Spring of 2026. Project will take approximately a year to complete so looking at a mid-2027 opening of the office building.

4) Is Holly Springs asking for hospitality and entertainment development on this side of the street?
   Response: The Town has visions of master planning this area and that could include visions of entertainment and hospitality. However, the reality is this site is currently zoned for the proposed use of office. In the future, someone could choose to remove the proposed above ground SCM for a hotel use or something else. However, this would be very expensive and would also require structured parking.

5) Is it true that the Town does not like affordable housing?
   Response: No matter the current thought of the Town, there is an approved DHIC affordable housing project here. The commercial portion needs the affordable housing project to be able to move forward and vice versa, from a development cost sharing perspective as well as to balance earthworks.

   The applicant thanks all the attendees (2) for their contributions and closed the meeting.

Ting Commercial Development Plan Amendment Neighborhood Meeting Attendees	
Neighbor	Address
Claudia Cofield	5636 Easton Street
Bill Rousseau	6236 Lake Terrace Drive

1317 N MAIN COMMERCIAL TRACT TRACT 1 - LOT 1 & LOT 2

1317 N MAIN STREET

HOLLY SPRINGS, NORTH CAROLINA, 27540

DEVELOPMENT PLAN AMENDMENT

ToHS PROJECT NUMBER: 21-DP-06-A02 / PLDP202500067

MASTER PLAN NUMBER: 21-MAS-03-A01 / PLDMP202300156

PROJECT NUMBER: CAP-22003

DATE: JUNE 16, 2023

REVISED: JULY 21, 2023

REVISED: AUGUST 18, 2023

REVISED: SEPTEMBER 11, 2023

REVISED: MARCH 07, 2025

REVISED: APRIL 24, 2025

REVISED: MAY 22, 2025 (2)

SITE DATA:

SITE ADDRESS:	1317 N MAIN STREET HOLLY SPRINGS, NORTH CAROLINA 27540
OWNER:	WAKE COUNTY PO BOX 550 RALEIGH, NC 27602
DEVELOPER:	CAPITAL ASSOCIATES 1501 SUNRISE AVENUE, SUITE 100 RALEIGH, NC 27608
PIN (& DEEDED ACREAGE):	0649894163 (19.89 AC.)
REAL ESTATE ID:	0414978
PROJECT AREA (TRACT 1 AREA):	470,884 SF (10.81 AC.)
ZONING:	COMMUNITY BUSINESS - CONDITIONAL USE
EXISTING USE:	VACANT
PROPOSED USE:	LOT 1 / BLDG. A : OFFICE LOT 2: PARKING
RIVER BASIN:	CAPE FEAR RIVER BASIN
WATERSHED:	SHEARON HARRIS RESERVIOR
AREA IN FLOODWAY/FLOODPLAIN:	NONE
FEMA FIRM MAP	3720064900J PANEL 0649 DATED MAY 2, 2006
MIN BUILDING HEIGHT	25 FT
MAX BUILDING HEIGHT	75 FT
IMPERVIOUS SUMMARY:	EXISTING IMPERVIOUS: 0 AC. PROPOSED IMPERVIOUS: 4.62 AC. (201,072 SF)
VEHICULAR PARKING SUMMARY:	REQUIRED PARKING MEDICAL OFFICE MIN: (4 SPACES / 1,000 SF) X 75,871 SF = 304 SPACES MAX:(6 SPACES / 1,000 SF) X 75,871 SF = 456 SPACES PROVIDED PARKING WITH THE APPROVED DEVELOPMENT PLAN (21-DP-06): 407 PARKING SPACES APPROVED TOTAL PROVIDED: 372 SPACES (91%) *NO WAIVER REQUIRED*
ACCESSIBLE PARKING SUMMARY:	REQUIRED ACCESSIBLE PARKING: 8 SPACES (2% OF TOTAL) PROVIDED ACCESSIBLE PARKING: 9 SPACES (3 VAN ACCESSIBLE)
BICYCLE PARKING SUMMARY:	REQUIRED BICYCLE PARKING OFFICE: 1 RACK (12 SPACES) PROVIDED BICYCLE PARKING OFFICE: 1 RACK (12 SPACES)
PROPOSED LOT SUMMARY:	LOT 1: LOT SIZE: 9.01 AC. MINIMUM LOT WIDTH: 150 LF MINIMUM LOT DEPTH: 50 LF LOT 2: LOT SIZE: 1.59 AC. MINIMUM LOT WIDTH: 74 LF. MINIMUM LOT DEPTH: 360 LF
OPEN SPACE SUMMARY:	REQUIRED OPEN SPACE: 0.500% X 470,884 SF = 2,355 SF PROVIDED OPEN SPACE: 2,443 SF (0.518%) (2)

SEWER FLOW CALCULATIONS

1. TOTAL PROPOSED SEWER FLOW IS 13,125 GPD.

   75,000 SF OFFICE W/ 525 EMPLOYEES/DAY @ 25 GPD/EMPL = 13,125 GPD

2. ALL FLOWS ARE ESTIMATES AND ARE SUBJECT TO CHANGE AS PLANS ARE AMENDED AND DEVELOPED.

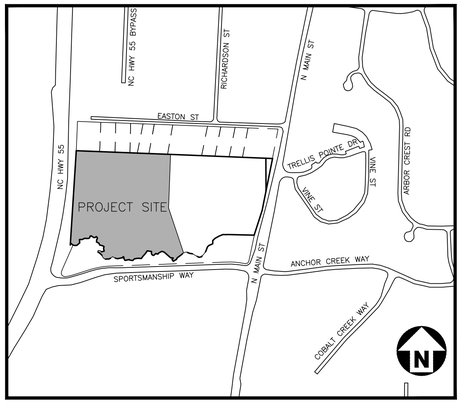
3. METHODOLOGY DERIVED FROM NCDEQ 2T RULES AND TOWN OF HOLLY SPRINGS PUBLIC UTILITIES HANDBOOK.FLOWS MEET OR EXCEED 2T RULE

PREVIOUS APPROVALS:

REZONING 20-REZ-03
DEVELOPMENT PLAN 21-DP-06
MASTER PLAN 21-MAS-03

MONUMENT CONTROL POINT

NCGS MONUMENT
"HOLLY SPRINGS"
N : 692052.70
E : 2049732.38
Z : 448.93



VICINITY MAP

1" = 500'

ZONING CONDITIONS (20-REZ-03):

1) THE FOLLOWING USES SHALL BE PROHIBITED USES WITHIN THE CB ZONING DISTRICT: AUTOMOTIVE SALES & SERVICE: AUTOMOBILE PARTS SALES (NEW); QUICK OIL CHANGE FACILITY; CAR WASH (AUTOMATIC OR SELF); GASOLINE SERVICE STATION WITHOUT REPAIR; MOTOR CYCLE/SCOOTER SALES; AUTOMOTIVE SALES & SERVICE: AUTOMOTIVE REPAIR - MINOR; GASOLINE SERVICE STATION WITH MINOR REPAIR (NOT TO EXCEED TWO (2) ACCESSORY INDOOR SERVICE BAYS); KENNELS (WITH OUTDOOR RUNS); FOOD SALES AND SERVICE: RESTAURANT - DRIVE THROUGH, STAND ALONE; PUBLIC FACILITIES: NEIGHBORHOOD RECYCLING COLLECTION POINT; COMMUNICATIONS/UTILITIES: ELECTRICITY RELAY STATION; RETAIL: SATELLITE DISH SALES AND SERVICE (OUTDOOR DISPLAY).

2) THE CB ZONING DISTRICT SHALL CONTAIN A CLASS A COMMERCIAL OFFICE BUILDING WITH A MINIMUM SQUARE FOOTAGE OF 70,000 SQUARE FEET WITH A MINIMUM BUILDING HEIGHT OF 2 STORIES.

3) THE FOLLOWING USES SHALL BE PERMITTED USES WITHIN THE R-MF-15 ZONING DISTRICT: RESIDENTIAL: MULTIFAMILY DWELLINGS. THE ALLOWED RESIDENTIAL USES MUST MEET THE REQUIREMENTS OF SECTION 42 OF THE INTERNAL REVENUE CODE OR A SUBSTANTIALLY EQUIVALENT FORM OF AFFORDABLE RENTAL HOUSING. 100% OF THE DWELLING UNITS DEVELOPED ON THE PROPERTY MUST MEET THIS REQUIREMENT. ACCORDINGLY, RENTS SHALL BE SET AT A PRICE THAT ON AVERAGE IS AFFORDABLE TO A HOUSEHOLD WITH AN ANNUAL INCOME THAT IS NO GREATER THAN 60% OF THE AREA MEDIAN INCOME FOR THE RESPECTIVELY-SIZED HOUSEHOLD IN THE RALEIGH, NC MSA, AS DETERMINED BY THE UNITED STATES DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.

4) THE CB AND R-MF-15 PARCELS WILL HAVE BOTH VEHICULAR AND PEDESTRIAN CONNECTIVITY SO THAT THE TWO ZONING PARCELS THAT MAKE UP THIS REQUEST WILL BE INTERCONNECTED AND FUNCTION AS A HORIZONTAL MIXED USE DEVELOPMENT. EACH PARCEL SHALL RECORD AN EASEMENT IN A FORM APPROVABLE BY THE TOWN ALLOWING CROSS ACCESS.

5) THE CB ZONED PARCEL SHALL PROVIDE A PRIMARY ENTRANCE DRIVEWAY/STREET FROM SPORTSMANSHIP WAY. TO CREATE A WALKABLE STREET SCAPE ALONG THIS PRIMARY DRIVEWAY/STREET, A MINIMUM AND MAXIMUM BUILDING SETBACK WILL BE ESTABLISHED BY THE PROJECT MASTER PLAN. TO ESTABLISH THE INTENT OF COMMERCIAL BUILDING PLACEMENT, NO MORE THAN ONE BAY OF OFF-STREET PARKING SPACES SHALL BE CONSTRUCTED BETWEEN THE BUILDING AND PRIMARY DRIVEWAY/STREET.

6) OFF-STREET PARKING WITHIN THE CB ZONING DISTRICT SHALL UTILIZE SHARED PARKING. THIS SHARED PARKING SHALL BE MEMORIALIZED WITHIN A SHARED PARKING AGREEMENT. THE PROPERTY OWNERS INVOLVED IN THE JOINT USE OF OFF-STREET PARKING AREAS SHALL SUBMIT A LEGAL AGREEMENT APPROVED BY THE TOWN ATTORNEY AS TO FORM AND CONTENT GUARANTEEING THAT SAID REQUIRED OFF-STREET PARKING SHALL BE MAINTAINED SO LONG AS THE USE REQUIRING OFF-STREET PARKING IS IN EXISTENCE OR UNLESS THE REQUIRED OFF-STREET PARKING IS PROVIDED ELSEWHERE IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION. SUCH INSTRUMENT, WHEN APPROVED AS CONFORMING TO THE PROVISIONS OF THIS SECTION, SHALL BE RECORDED BY THE PROPERTY OWNER WITH THE WAKE COUNTY REGISTER OF DEEDS AND A COPY THEREOF FILED WITH THE DEPARTMENT OF DEVELOPMENT SERVICES.

7) THE DEVELOPMENT SHALL CONSTRUCT AND INSTALL A PEDESTRIAN CROSSWALK FEATURING A RAPID BEACON SIGNALS ACROSS SPORTSMANSHIP WAY, SUCH LOCATION SHALL BE DETERMINED AT THE TIME OF MASTER PLAN SUBMITTAL.

8) DEVELOPED OPEN SPACE AREAS WITHIN THE PROPOSED DEVELOPMENTS SHALL FEATURE AT LEAST ONE OF THE FOLLOWING: HARDSCAPE AREAS; OUTDOOR SEATING AREAS; PUBLIC ART; PLAYGROUND AND PERGOLAS/GAZEBOS.

9) A MINIMUM OF ONE OF THE FOLLOWING TYPES OF GREEN STORMWATER INFRASTRUCTURE SHALL BE USED IN CONNECTION WITH ANY DEVELOPMENT ON THE SUBJECT PROPERTY: PERMEABLE PAVEMENT PARKING SPACES OR PERVIOUS PAVERS IN PEDESTRIAN AREAS; OR RAINWATER HARVESTING (CISTERNS); OR BIO-SWALES. RECLAIMED WATER FOR COMMERCIAL IRRIGATION PURPOSES WHENEVER FEASIBLE SHALL BE UTILIZED.

10) EMPHASIS SHALL BE PLACED ON PLACEMAKING WITHIN THE DEVELOPMENT. TO ENSURE THIS OCCURS, THE

FOLLOWING LANDSCAPING PRACTICES SHALL BE UTILIZED:

a. THE USE OF VERTICAL LANDSCAPING OR PUBLIC ART SHALL BE UTILIZED ADJACENT TO A MINIMUM OF TWO (2) COMMERCIAL OUTDOOR SEATING OR GATHERING AREAS;

b. TO THE GREATEST EXTENT POSSIBLE, STREET TREES SHALL BE INSTALLED IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS UDO REQUIREMENTS ALONG THE PRIMARY ENTRANCE DRIVEWAY/STREET FROM SPORTSMANSHIP WAY.

c. WITHIN THE CB ZONING DISTRICT, THE USE OF PLANTERS SHALL BE POSITIONED AS TO ENERGIZE AND IDENTIFY PEDESTRIAN ENTRANCES, SUCH ENTRANCES SHALL BE FLANKED BY AT LEAST ONE PLANTER. PLANTERS SHALL HAVE A MINIMUM HEIGHT 24" AND A MINIMUM WIDTH OF 18".

11) THE TOWN REQUIRES CERTAIN FEES TO BE PAID UPON DEVELOPMENT OF LAND AND FOR THE GRANTING OF A BUILDING PERMIT. SAID FEES ARE LISTED IN THE TOWN'S ANNUAL BUDGET, AND WITH THIS REZONING THE DEVELOPER AGREES HE/SHE (I) IS FAMILIAR WITH THESE FEES, (II) DOES NOT DISPUTE THE REASONABLENESS OF THESE FEES AS SET FORTH IN THE TOWN'S ANNUAL BUDGET; AND (III) NOTWITHSTANDING ANY REIMBURSEMENTS DISCUSSED AT THIS TIME THROUGH AN INFRASTRUCTURE REIMBURSEMENT AGREEMENT, HE/SHE AGREES TO TIMELY PAY ALL NORMAL AND CUSTOMARY FEES APPLICABLE TO DEVELOPER IN CONNECTION WITH NON-RESIDENTIAL AND RESIDENTIAL PROJECTS. SUCH FEES ARE LISTED IN THE CURRENT YEAR ANNUAL BUDGET OF FEES AT THE TIME THE FEE IS DUE UNDER THE ORDINARY COURSE OF DEVELOPMENT. ***THIS CONDITION SHALL APPLY TO THIS ZONING DISTRICT UNLESS OTHERWISE MODIFIED BY A DEVELOPER AGREEMENT.***

12) THE TOWN REQUIRES, PURSUANT TO N.C.G.S. § 160A-372, THE DEDICATION AND CONSTRUCTION OF STREETS AND RIGHTS OF WAY, AS SHOWN IN THE APPROVED COMPREHENSIVE TRANSPORTATION PLAN AND THE APPROVED TRANSPORTATION IMPACT ANALYSIS, TO CREATE CONDITIONS ESSENTIAL TO PUBLIC HEALTH, SAFETY, AND THE GENERAL WELFARE. A REZONING MAY BE DELAYED UNTIL SUCH TIME AS NECESSARY TRANSPORTATION IMPROVEMENTS (TO INCLUDE OFFSITE IMPROVEMENTS) MAY BE MADE, UNLESS THE TOWN AND THE DEVELOPER CAN ENTER INTO AGREEMENTS TO ACCELERATE THE TIME FOR COMPLETION OF THESE NEEDED IMPROVEMENTS. ***THIS CONDITION SHALL APPLY TO THIS ZONING DISTRICT UNLESS OTHERWISE MODIFIED BY A DEVELOPER AGREEMENT.***

13) THE PROPOSED DEVELOPMENT ASSOCIATED WITH THIS REZONING WILL BE SERVED BY PUBLIC SEWER. THE DEVELOPER ACKNOWLEDGES THAT THERE ARE SIGNIFICANT DOWNSTREAM GRAVITY SEWER AND PUMP STATION IMPROVEMENTS THAT ARE NEEDED TO ACCOMMODATE THE DEMAND FROM THIS PROJECT. THE DEVELOPER HAS SUBMITTED A SEWER AND PUMP STATION EVALUATION REPORT TO MEET THE TOWN OF HOLLY SPRINGS STANDARDS. THE DEVELOPER IS RESPONSIBLE TO CONTINUE COORDINATION WITH THE TOWN TO DETERMINE THE COST SHARING PARTNERSHIP THAT WILL FACILITATE THE NECESSARY SEWER INFRASTRUCTURE IMPROVEMENTS PROPORTIONATE TO THE PROJECT'S IMPACT. ***THIS CONDITION SHALL APPLY TO THIS ZONING DISTRICT UNLESS OTHERWISE MODIFIED BY A DEVELOPER AGREEMENT.***

14) TRANSPORTATION IMPROVEMENTS: THE DEVELOPER SHALL CONTRIBUTE, DESIGN, CONSTRUCT OR PERMIT THE FOLLOWING PUBLIC INFRASTRUCTURE RELATING TO TRANSPORTATION:

a) PAY FEE-IN-LIEU OR CONSTRUCT NORTHBOUND RIGHT TURN LANE AT N. MAIN STREET / OLD SMITHFIELD ROAD / SUNSET LAKE ROAD AS REQUIRED BY THE NCDOT.

b) CONTRIBUTE A FEE-IN-LIEU FOR DESIGN AND CONSTRUCTION OF FUTURE TRAFFIC SIGNALIZATION AT THE INTERSECTION OF N. MAIN STREET / KATHA DRIVE / ARBOR CREEK DRIVE PROPORTIONATE TO PROJECT IMPACT.

ZONING RELATED TERMS (FROM DEVELOPER AGREEMENT):

1) DESIGN AND CONSTRUCT HALF OF THE RECOMMENDED 86-FOOT, 4-LANE MEDIAN THOROUGHFARE WITH BIKE LANES ON N. MAIN STREET FROM THE NORTHERN PROPERTY LINE OF THE PROPERTY TO SPORTSMANSHIP WAY

2) DESIGN AND CONSTRUCT A NORTHBOUND LEFT TURN LANE (APPROXIMATELY 100 FEET IN LENGTH) ON N. MAIN STREET AT THE ACCESS POINT ON MAIN STREET NORTH OF SPORTSMANSHIP WAY, OPPOSITE TRELLIS POINTE DRIVE.

3) DEVELOPER WILL PROVIDE A FEE-IN-LIEU ("FIL") PAYMENT IN THE AMOUNTS SET FORTH BELOW FOR ITS PROPORTIONATE SHARE OF THE FOLLOWING PROJECTS AS REQUIRED BY THE TOWN, AND SUCH PAYMENT SHALL BE MADE UPON THE APPROVAL OF CIVIL CONSTRUCTION DRAWINGS:

4) FIL OF DESIGN AND CONSTRUCTION OF NORTHBOUND RIGHT TURN LANE ON N. MAIN STREET AT OLD SMITHFIELD ROAD / SUNSET LAKE ROAD, IN AN AMOUNT TO BE DETERMINED PRIOR TO MASTER PLAN APPROVAL, AS CALCULATED BY AN OPINION OF PROBABLY COST BY A LICENSED PROFESSIONAL ENGINEER THE SELECTION OF WHICH IS MUTUALLY AGREEABLE BY THE PARTIES

5) FIL OF DESIGN AND CONSTRUCTION OF FUTURE TRAFFIC SIGNAL ON N. MAIN STREET AT KATHA DRIVE / ARBOR CREEK DRIVE IN THE AMOUNT OF $12,995

6) FIL OF HALF A 20-FOOT MEDIAN FROM THE TERMINUS OF THE EXISTING MEDIAN ON N. MAIN STREET [TRELLIS POINTE DRIVE] TO THE NORTHERN PROPERTY LINE OF THE PROPERTY, IN THE AMOUNT OF $10,325.

7) THE DEVELOPMENT SHALL CONSTRUCT AND INSTALL A PEDESTRIAN CROSSWALK FEATURING A RAPID BEACON SIGNALS ACROSS SPORTSMANSHIP WAY, SUCH LOCATION SHALL BE DETERMINED AT THE TIME OF MASTER PLAN SUBMITTAL.

8) CONSTRUCTION OF APPROXIMATELY 510 LINEAR FEET OF PEDESTRIAN SIDEWALK ALONG THE EASTERN BORDER OF THE PROPERTY ADJACENT TO AND RUNNING PARALLEL WITH MAIN STREET. IN THE EVENT THE PEDESTRIAN SIDEWALK SHALL CROSS ONTO PROPERTY OWNED BY THE TOWN THE TOWN WILL PROVIDE THE NECESSARY EASEMENTS TO CONSTRUCT THE PEDESTRIAN SIDEWALK ON ITS PROPERTY

9) CONSTRUCTION OF APPROXIMATELY 500 LINEAR FEET OF A PEDESTRIAN GREENWAY BEGINNING AT THE END OF THE EXISTING GREENWAY PATH JUST TO THE NORTH OF SPORTSMANSHIP WAY AND CONTINUING NORTH ALONG THE WESTERN BOUNDARY OF THE PROPERTY ENDING AT THE UNDERPASS BENEATH NORTH CAROLINA HIGHWAY 55. IN THE EVENT THE PEDESTRIAN GREENWAY SHALL CROSS ONTO PROPERTY OWNED BY THE TOWN THE TOWN WILL PROVIDE THE NECESSARY EASEMENTS TO CONSTRUCT THE PEDESTRIAN GREENWAY ON ITS PROPERTY

10) DEVELOPERS SHALL DEDICATE 20 FEET WIDTH OF RIGHT OF WAY TO THE TOWN FOR A FIL OF UPGRADES TO NC 55 ALONG THE WESTERN-MOST EDGE OF THE PROPERTY.

11) DEVELOPER SHALL DEDICATE 10+/- FEET WIDTH OF RIGHT OF WAY TO THE TOWN ON N. MAIN STREET FROM THE NORTHERN PROPERTY LINE OF THE PROPERTY TO SPORTSMANSHIP WAY (INCLUDED IN SUBPARAGRAPH 5(A) ABOVE.

12) DEVELOPERS SHALL BE ALLOWED TO CONSTRUCT A ROADWAY ACROSS THE LAND CURRENTLY OWNED BY THE TOWN ADJACENT SPORTSMANSHIP WAY IN ORDER TO PROVIDE VEHICULAR AND PEDESTRIAN ACCESS TO THE COMMERCIAL PROPERTY. SUCH ROADWAY SHALL BE A PUBLIC STREET FOR THE LENGTH OF THE EXISTING TOWN PROPERTY.

13) EACH DEVELOPER SHALL RECORD RECIPROCAL CROSS-ACCESS EASEMENTS FOR ALL INTERNAL DRIVE ACCESS AREAS, IN A FORM SUBJECT TO APPROVAL BY THE TOWN.

14) BUILDING HEIGHT: UNDER THE PROPOSED CB ZONING A MAXIMUM BUILDING HEIGHT OF FIFTY-FIVE (55) FEET IS STATED. THE OFFICE BUILDING IS ANTICIPATED ON BEING FOUR (4) STORIES WITH AN ANTICIPATED HEIGHT OF APPROXIMATELY SEVENTY-FIVE (75) FEET. DEVELOPERS ARE HEREBY APPROVED BY THE TOWN TO INCREASE THE BUILDING HEIGHT TO SEVENTY-FIVE (75) FEET FOR THE COMMERCIAL PORTION OF THE PROPERTY, SO LONG AS ANY SUCH BUILDING IS AT LEAST 50 FEET SET BACK FROM THE NORTHERN PROPERTY LINE ABUTTING EASTON ACRES RESIDENTIAL PROPERTIES. ADDITIONALLY, IN THIS NORTHERN BOUNDARY, THE DEVELOPER SHALL PROVIDE A 30 FOOT WIDE UNDISTURBED BUFFERYARD AND SUPPLEMENT THE UNDISTURBED BUFFERYARD WITH ADDITIONAL EVERGREEN TREE PLANTINGS TO ACHIEVE THE MINIMUM TYPE C-150 PLANT UNIT VALUE (AS DESCRIBED IN UDO § 7.01(K)). THE OWNER SHALL MAINTAIN THE BUFFERYARD IN PERPETUITY.

15) PARCEL SUBDIVISION: DEVELOPERS SHALL BE ALLOWED TO SUBDIVIDE THE PROPERTY AND RECORD ONE SUBDIVISION PLAT INTO THE TRACTS DESCRIBED HEREIN PRIOR TO THE COMPLETION OF ANY OFFSITE IMPROVEMENTS. DEVELOPERS SHALL COMPLETE ALL WORK DESCRIBED HEREIN PRIOR TO THE APPROVAL OF ANY SUBSEQUENT PLATS. FOLLOWING COMPLETION OF ANY OFFSITE IMPROVEMENTS ALONG WITH PAYMENT OF ANY FIL OBLIGATIONS FURTHER SUBDIVISION OF THE COMMERCIAL PARCEL SHALL BE PERMISSIBLE BY THE TOWN IF REQUESTED BY THE DEVELOPER AND CONSISTENT WITH THE APPROVED MASTER PLAN

16) PARKS AND RECREATION LAND DEDICATION. THE TOWN AS PART OF ITS UDO REQUIRES LAND DEDICATION FOR PARKS AND RECREATION PURPOSES, OR A FEE IN LIEU OF SUCH DEDICATION AT THE DISCRETION OF THE TOWN COUNCIL. THE TOWN AGREES TO ACCEPT A FEE IN LIEU OF LAND DEDICATION IN AN AMOUNT COMMENSURATE WITH THE VALUE OF THE LAND AT THE TIME OF SUBDIVISION. THE PARTIES CURRENTLY STIPULATE THAT THIS RESULTS IN A FEE IN LIEU AMOUNT AS CALCULATED OF $726,465, BASED ON THE MOST CURRENT APPRAISAL OBTAINED BY THE TOWN. AT ANY TIME PRIOR TO SUCH TIME AS THE DHIC DEVELOPER OBTAINS ITS FIRST CERTIFICATE OF OCCUPANCY, AS SUCH TIME THE FEE IS DUE, THE DEVELOPER MAY:

a. SUBMIT A MORE RECENT APPRAISAL, IF OBTAINED BY THE DEVELOPER AND OTHERWISE SATISFACTORY TO THE TOWN, AND RECALCULATE THE FEE ACCORDING TO THE NEW APPRAISAL.

b. PROVIDE ANY OFF-SITE PARKS AND RECREATION AMENITY FOR DEDICATION TO THE TOWN, IN THE SOLE DISCRETION OF THE TOWN, SUCH AS A DEDICATED GREENWAY ON THE WESTERN SIDE OF NC 55 BY-PASS, ON PROPERTY OWNED BY WAKE COUNTY.

SHEET INDEX

C0.00	DEVELOPER'S AGREEMENT
C0.01	PROJECT NOTES
C1.00	EXISTING CONDITIONS
C2.00	OVERALL SITE PLAN
C2.01	SITE PLAN
C2.02	TURN TEMPLATES 1 OF 2
C2.03	TURN TEMPLATES 2 OF 2
C3.00	OVERALL GRADING PLAN
C4.00	OVERALL UTILITY PLAN
C8.00	SITE DETAILS
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C8.04	SEWER DETAILS
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21-0171B	SITE LIGHTING PLAN (BY DUKE ENERGY)
A-101	FIRST FLOOR PLAN (BY HAGER SMITH)
A-102	UPPER FLOOR PLANS (BY HAGER SMITH)
A-201	EXTERIOR ELEVATIONS (BY HAGER SMITH)
A-202	EXTERIOR ELEVATIONS (BY HAGER SMITH)

ALL CONSTRUCTION SHALL CONFORM TO TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS

PLAN IS SUBJECT TO CHANGES DURING CONSTRUCTION DRAWING APPROVAL PROCESS

SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES.

I CERTIFY THAT THESE PLANS WERE PREPARED AND THAT THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING PLANS, THE LATEST EDITION OF THE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS OF THE TOWN OF HOLLY SPRINGS AND OTHER APPLICABLE TOWN ORDINANCES AND POLICIES. THE ENGINEER WHOSE SEAL AND SIGNATURE APPEAR BELOW CERTIFIES THAT THE TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS HAVE BEEN THOROUGHLY REVIEWED FOR APPLICABILITY TO THIS PARTICULAR PROJECT. ANY PROPOSED EXCEPTIONS OR DEVIATIONS FROM THE STANDARDS ARE LISTED SPECIFICALLY ON SHEET _____ OF THESE DRAWINGS. FURTHERMORE, THESE PLANS WERE PREPARED IN CONFORMANCE WITH THE APPROVED PRELIMINARY PLAN FOR THIS PROJECT.

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CONTACT
ADAM PIKE
pike@mcadamsco.com
PHONE: 919. 823. 4300

CLIENT
CAPITAL ASSOCIATES (MCC)
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

PROJECT DIRECTORY
DEVELOPER
CAPITAL ASSOCIATES 1501
SUNRISE AVE, SUITE 100
RALEIGH, NC, 27608
PHONE: 919. 233. 9901

ARCHITECT
HAGER SMITH
300 S. DAWSON STREET
RALEIGH, NC 27601
PHONE: 919. 821. 5547

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 ADAM C. PIKE — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

DEVELOPMENT PLAN AMENDMENT FOR:
1317 N MAIN COMMERCIAL TRACT
TRACT 1 - LOT 1 AND LOT 2
1317 NORTH MAIN STREET
HOLLY SPRINGS, NC, 27540
PROJECT NUMBER: CAP-22003

M:\Projects\CAP\CAP22003\04-Production\Engineering\Current Drawing\Development Plan Amendment\20201102R6-CS1.dwg, 5/23/2025 11:47:45 AM, Adam Pike

DocuSign Envelope ID: F513D2C8-E523-4980-90CE-7A7EB8698F9A

PREPARED BY/RETURN TO: JOHN SCHIFANO, ROD BOX 105

STATE OF NORTH CAROLINA
COUNTY OF WAKE

DEVELOPMENT AGREEMENT REGARDING INFRASTRUCTURE CONSTRUCTION AND FEE REIMBURSEMENT
(N.C. GEN. STAT. § 160A-420.20 et seq.)

BY AND BETWEEN

THE TOWN OF HOLLY SPRINGS

and

CAPITAL ASSOCIATES MANAGEMENT LLC
& DHIC, INC

THIS AGREEMENT, made and entered into this _____ day of APRIL 2021, by and between the **TOWN OF HOLLY SPRINGS**, a North Carolina Municipal corporation, hereafter referred to as the "Town" and **CAPITAL ASSOCIATES MANAGEMENT, LLC, a North Carolina Limited Liability Company**, and **DHIC, Inc a North Carolina Corporation** and their successors and assigns, hereafter referred to collectively as the "Developers." The Town and the Developers are collectively referred to herein as the "Parties."

WITNESSETH:

WHEREAS, the Developers are the fee simple owner or contract purchasers of two tracts of land held in common for development, the total of which are approximately 19 acres in size with a current mailing address of 1317 N. Main Street, Holly Springs, NC which is more specifically detailed on Exhibit A, attached hereto and incorporated herein by reference (the "Property"), and the Developers, or their successors or assigns, will be requesting approval of a development plan for these tracts for a mixed use commercial development, in a manner consistent with the sketch plans prepared by the Developer attached hereto as Exhibit B and the terms of this agreement; and,

WHEREAS, the Property is currently located within the corporate limits of the Town and is currently served by the Town potable water and sewer service.

WHEREAS, the Developers desire careful integration between public and private capital facilities planning, financing and construction, and further desires sufficient assurances that development

standards, ordinances, policies and procedures remain stable throughout the extended period of development; and,

WHEREAS, it is beneficial to both the Town and Developers to construct certain on-site and off-site Infrastructure improvements relative to the Project to enable the safe and responsible treatment of wastewater by the Town and to provide potable drinking water to the ultimate users of the Property, as well as other Infrastructure; and,

WHEREAS, the Town requires, pursuant to N.C.G.S. § 160A-372 and its Unified Development Ordinance ("UDO"), the dedication and construction of streets and rights of way and other Infrastructure and for the distribution of population and traffic in such a manner that it will avoid congestion and overcrowding and will provide conditions essential to public health, safety, and the general welfare; which may be accomplished through private drives and cross access easements across the property and,

WHEREAS, the Town has enacted a subdivision control ordinance, pursuant to N.C.G.S. §160A-372 which provides for the orderly control of growth and development in the Town in general and on the Developer's parcel; and,

WHEREAS, the Town is authorized pursuant to N.C.G.S § 160A-311 et. seq. to operate and does in fact operate a water and sewer treatment enterprise and requires, pursuant to N.C.G.S. § 160A-317, the connection to the system by owners of developed lands located within the Town, for a cost set forth in the Town's annual budget or as amended hereto; and,

WHEREAS, the Developers is authorized to enter into this contract pursuant to N.C.G.S. §§ 160A-16, 160A-420.20 et seq. and may contract with the Developers to carry out the public purposes set forth herein pursuant to N.C.G.S. §160A-20. A public hearing on this Agreement was held on _____; and after consideration of the facts brought forth during the hearing, together with the promises and inducements contained herein, Town Council of Holly Springs has determined that it is in the best interests of its citizens to enter into this Agreement; and,

WHEREAS, the Town requires certain fees to be paid upon development of land and for the granting of a building permit, said fees being listed in the Town's annual budget and as listed as Exhibit D ,and the Developer, in consideration of the foregoing benefits enjoyed by this Agreement hereby agrees that it (i) is familiar with these fees as currently listed on the Town's website pursuant to its annual adopted budget ordinance, (ii) does not dispute the reasonableness of these fees as currently listed, and (iii) notwithstanding any reimbursements discussed below or any fees reduced or waived via an economic development agreement between the Town and the Developer, hereby agrees to timely pay all normal and customary fees to the extent applicable to the Developer in connection with its development of the Residential Project at such time as the applicable fee becomes due to the Town in the ordinary course of development unless otherwise provided for herein; and,

WHEREAS, the Town considers the Project favorable to the Town because of the retention of and expansion of local employment in the Town, the significant amount of non-residential (commercial, office, and retail) uses, and the addition of affordable housing to the community which is a condition placed upon the land by the previous owner, Wake County, and is consistent with the Town's strategic planning initiative. Further, the Developers have agreed to incorporate several needed public infrastructure

improvements ("Public improvements," as described below) in the vicinity of the Property which will serve the Development, other adjoining properties, and generally benefit the town as a whole; and,

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein the Town and the Developer agree as follows:

ARTICLE I

1. **Definitions**: The terms below shall have the following meanings as used herein:

a. Actual Costs: The amount of true costs actually incurred for construction of a certain project described herein upon final completion and approved by the Town, inclusive of the cost of acquiring easements or rights of way from those not party to this agreement, but exclusive of any administrative costs (i.e., profit and overhead) of the Developers, or any project construction contingency. Any such costs which herein after are agreed to be reimbursed or otherwise paid by the Town shall be audited by the Town under generally accepted accounting principles. Due governments for a period of three (3) years after the last act under this Agreement. The Developers' right of reimbursement for Actual Costs pursuant to the Town's annual budget or as amended hereto. The Developers agrees that the Town may have advance written consent to the expected cost of an applicable transaction before the cost is incurred, provided, that such consent shall not be unreasonably withheld or delayed by the Town.

b. Affordable Housing: 124 residential units built and professionally managed by the DHIC Developer where rents are set at a price that on average is affordable to a household with an annual income that is no greater than 60% of the Area Median Income for the respectively-sized household in the Raleigh, NC MSA, as determined by the United States Department of Housing and Urban Development

c. Development: Generally defined as the planning for or carrying out of a building activity, the making of a material change in the use or appearance of any structure or property, or the dividing of land into two or more parcels. "development," as designated in a law or development permit, includes the planning for and all other activity customarily associated with it unless otherwise specified. When appropriate to the context, "Development" refers to the planning for or the act of developing or to the result of development. Specifically, in this Agreement, the term "Development" refers to the construction by the Developers of all building activities associated with the Concept Plans.

d. Development Permit: A building permit, zoning permit, subdivision approval, special exception or conditional use permit, variance, or any other official action of the Town having the effect of permitting the development of land.

e. Land Development Regulations: Ordinances and regulations enacted by the Town for the regulation of any aspect of development and includes zoning, subdivision, or any other land development ordinances, including but not limited the Town of Holly Springs Unified Development Ordinance ("UDO").

f. Laws: All ordinances, resolutions, regulations, comprehensive plans, land development regulations, policies, and rules adopted by the Town affecting the development of property, and includes laws governing permitted uses of the property, density, design, and improvements.

g. Master Plan: The plan described in Section 3.01 of the Town's Development Procedures Manual.

h. NCDOT: the North Carolina Department of Transportation.

i. Offsite Infrastructure: The public sanitary sewer gravity line, all potable waterlines, and other Town-owned equipment or facilities not located on the Property.

j. Person: An individual, corporation, business or land trust, estate, trust, partnership, association, two or more persons having a joint or common interest, State agency, or any legal entity.

k. Concept Plans: The plans described in Section 1.01 of the Town's Development Procedures Manual. Concept Plans in this Agreement refers to the sketch plans for the Development previously submitted by Developers to the Town and attached hereto as Exhibit B.

l. Public Infrastructure: The public sanitary sewer gravity line, all potable waterlines, and other Town-owned equipment or facilities, and road improvements or fees in lieu required by the Town or NCDOT, either located on the Property, in an easement, or not located on the property for the Public's good.

m. Public Benefit: The construction and dedication of the Public Infrastructure by the Developer, the retention and addition of local jobs, an increase in commercial and retail uses as well as Affordable Housing which furthers the Town's strategic planning efforts, and in the case of the commercial portion of the Property, the additional financial revenue of the Town brought to the incremental ad valorem tax value of the Property.

n. Property: All real property shown or described in Exhibit A, which is subject to land-use regulation of the Town and includes any improvements, fixtures, or structures customarily regarded as a part of real property.

o. Project: The Developers' plan to develop the Property in the manner described in Concept Plans, and as approved by the Town Council of Holly Springs through its normal development process. Specifically this Project consists of Affordable Housing units together with a corporate headquarters for MyComputerCarrer, Inc.

ARTICLE II
DESCRIPTION OF DEVELOPMENT AGREEMENT

1. SCOPE: The legal description of the Property subject to this agreement and the names of its legal and equitable property owners are contained in Exhibit A.

2. TERM: The duration of the agreement is for ten (10) years. The parties are not precluded from entering into subsequent development agreements that may extend the original duration period. Condition precedent to this Agreement are: (1) that the Town approves the petition for rezoning, and the Master Plan; (2) that Wake County transfers ownership of the property that is the subject of the Property to the respective grantees; and (3) that Developers acquire the Property within ninety (90) days of approval of the Master Plan or the Site Plan, and (4) Developers have received construction loan financing needed to acquire the property, whichever is sooner.

3. DEVELOPMENT PERMITTED USES: The development uses permitted on the Property are shown on the Concept Plans. The proposed uses are as follows, and are subject to the Zoning Conditions as listed in Exhibit C . In summary, the Property shall be zoned separately as follows: The western 10 acre (approximately) site shall be zoned CB and the eastern 10 acre tract shall be zoned RMF-15.

a. The Project generally and initially shall consist of the Development of two (2) tracts:

(i) Tract 1 is an approximate 10 acre tract on the western half of the parcel currently owned by Wake County, and shall be comprised of one or more office buildings to serve as corporate headquarters for MyComputer Career, Inc. (which the parties contemplate shall be employing at least 525 full time equivalent jobs however this is not a condition of this Agreement), retail facilities, a parking lots, and a performing arts theatre.

(ii) Tract 2 shall be comprised of 124 residential rental dwelling units in buildings of 3 to 3 1/2 stories, including a playground, community building, and outside picnic areas, owned and actively managed by DHIC (or an affiliate of DHIC) as Affordable Housing units.

b. The Town hereby agrees that the land use described herein and shown on Exhibit B is in the interest of the Town, is consistent with the land use plan, and approves, subject to statutory requirements, to rezone the Property in conformance with this Agreement.

c. The Developers voluntarily offers certain zoning conditions ("Zoning Conditions") as a part of this Agreement and any subsequent rezoning requests for the Property. These Zoning Conditions shall apply to the Property, and are listed in Exhibit C.

4. SEWER IMPROVEMENTS: The Town and Developers have evaluated whether the existing gravity and force-main lines, together with the existing Twelve Oaks Pump Station ("Existing Sewer Infrastructure") have the capacity to support the proposed developments on the Property or if improvements need to be made to the Existing Sewer Infrastructure. The parties have determined that the Existing Sewer Infrastructure is adequate to support the proposed developments and therefore Developer has been allocated in the Town's annual budget ordinance for water and sewer System Development Ordinance and otherwise shown on Exhibit D) required for this Project and the early payment of such fees by the Developers, the Town agrees to undertake the construction upgrades

required to the Existing Sewer Infrastructure which the Town agrees to complete prior to September 1, 2022. Notwithstanding, in no event shall a delay associated with the completion of the construction upgrades to the Existing Sewer Infrastructure be cause for a delay in Developers' receipt of a Certificate of Occupancy.

a. Developers shall pay the sum of all System Development Fees ("SDF") for water and sewer at such time as the Developer(s) receives construction drawing approval subsequent to all fees being paid and a pre-construction meeting is held with the Town. The DHIC Developer shall be allowed a modified approach regarding the installation of metered water connections as follows: For residential units, the DHIC Developer shall be allowed a single metered connection for each building (as opposed to individual metered connection for each unit) and pay the SDF accordingly. For purpose of clarity the following table describes the difference:

		Residential (Normal)			
	Units	type	Cost	Total	Notes
SDF - Water	124	3/4" <3000 SF	$ 3,741.00	$ 463,884.00	per unit 3/4" charge
SDF - Sewer	124	3/4" <3000 SF	$ 4,054.00	$ 502,696.00	per unit 3/4" charge
SDF - Water	1	1 1/2" 3000-20,000 SF	$ 6,890.00	$ 6,890.00	Club house
SDF - Sewer	1	1 1/2" 3000-20,000 SF	$ 7,467.00	$ 7,467.00	Club house
			Total SDF	$ 980,937.00	

Residential (Modified approach for Affordable Housing)					
Units	Type	Cost	Total	Notes	
5	3" >20,000 SF	$ 12,010.00	$ 60,050.00		
5	3" >20,000 SF	$ 13,015.00	$ 65,075.00		
1	1 1/2" 3000-20,000 SF	$ 6,890.00	$ 6,890.00	Club house	
1	1 1/2" 3000-20,000 SF	$ 7,467.00	$ 7,467.00	Club house	
		Total SDF	$ 139,482.00		

Note: the above fees are the SDF fees for the 2021 budget year. These fees will be applicable to the Project if applied for and paid within 1 year of this agreement. The parties acknowledge that the fee is dependent on the type and number of meters used, construction drawing approval is required prior to application for water service, and that payment of the fees are required prior to final construction drawing approval.

5. TRANSPORTATION IMPROVEMENTS: The Developers shall design, permit and construct the following Public Infrastructure improvements relating to Transportation:

a. Design and construct half of the recommended 86-foot, 4-lane median Homesthrive with bike lanes on N. Main Street from the northern property line of the Property to Sportsmanship Way.

b. Design and construct a northbound left turn lane (approximately 100 feet in length) on N. Main Street at the access point on Main Street north of Sportsmanship way, opposite Trellis Pointe Drive.

c. Developer will provide a Fee-in-Lieu ("FIL") payment in the amounts set forth below for its proportionate share of the following projects as required by the Town, and such payment shall be made upon the approval of civil construction drawings:

- FIL of design and construction of northbound right turn lane on N. Main Street at Old Smithfield Road / Sunset Lake Road, in an amount to be determined prior to Master Plan approval, as calculated by an opinion of probable cost by a licensed professional engineer the selection of which is mutually agreeable by the parties
- FIL of design and construction of future traffic signal at N. Main Street at Kattia Drive / Arbor Creek Drive in the amount of $12,995
- FIL of half a 20-foot median from the terminus of the existing median on N. Main Street (Trellis Pointe Drive) to the Northern property line of the property, in the amount of $10,325.

d. The development shall construct and install a pedestrian crosswalk featuring a rapid beacon signals across Sportsmanship Way, such location shall be determined at the time of master plan submittal.

f. Construction of Approximately 320 linear feet of pedestrian sidewalk along the eastern border of the Property adjacent to and running parallel with Main Street. In the event the pedestrian sidewalk shall cross onto property owned by the Town the Town will provide the necessary easements to construct the pedestrian sidewalk on its property

g. Construction of Approximately 500 linear feet of a pedestrian greenway beginning at the end of the existing greenway and by the north of Sportsmanship Way and continuing north along the western boundary of the Property ending at the underpass beneath North Carolina Highway 55. In the event the pedestrian greenway shall cross onto property owned by the Town the Town will provide the necessary easements to construct the pedestrian greenway on its property

g. Developers shall dedicate 20 feet width of right of way to the Town for a FIL of upgrades to NC 55 along the western-most edge of the Property.

g. Developer shall dedicate 30+/- feet width of right of way to the Town on N. Main Street from the northern property line of the property to Sportsmanship Way (included in subparagraph 5(a) above.

h. Developers shall be allowed to construct a roadway across the land currently owned by the Town adjacent Sportsmanship Way in order to provide vehicular and pedestrian

access to the Commercial Property. Such roadway shall be a public street for the length of the existing Town property. , ,,

j. Each Developer shall record reciprocal cross-access easements for all internal drive aisle access areas, in form subject to approval by the Town.

6. BUILDING HEIGHT: Under the proposed CB zoning a maximum building height of fifty-five (55) feet is stated. The Office building is anticipated on being four (4) stories with an anticipated height of approximately seventy-five (75) feet. Developers are hereby approved by the Town to increase the building height to seventy-five (75) feet for the commercial portion of the Property, so long as any such building is at least 50 feet set back from the northern property line abutting Easton Acres residential properties. Additionally, in this northern boundary, the Developer shall provide a 30-foot wide undisturbed bufferyard and supplement the undisturbed bufferyard with additional evergreen tree plantings to achieve the minimum type C-150 plant unit value (as described in UDO § 7.01(K)). The owner shall maintain the bufferyard in perpetuity.

7. PARCEL SUBDIVISION: Developers shall be allowed to subdivide the Property and record one subdivision plat into the Tracts described herein prior to the completion of any offsite Improvements. Developers shall complete all work described herein prior to the approval of any subsequent plats. Following completion of any offsite improvements, and the payment of any FIL obligations further subdivision of the commercial parcel shall be permissible by the Town if requested by the Developer and consistent with the approved Master Plan

8. REZONING/MASTER PLAN: The Parties agree that the Property shall be rezoned through the approval of a petition for rezoning prior to the commencement of Town sewer service to the Property. The Developers have submitted a petition for rezoning. The Town will schedule for approval the rezoning, Master Plan, and Site Plan petitions so that the Town Council hearings for these matters will occur within 120 days of the earlier of submittal by the Developers of the Master Plan or execution of this Agreement. The Property shall at all times be subject to the Zoning Conditions, as shown on Exhibit C and incorporated by reference.

9. REQUIRED PERMITS: A description of all development permits approved or needed:

a. Developers shall secure all construction drawing approval, erosion and sedimentation control, grading approval, and building permits as necessary under the land development regulations in existence of the time of such permit application. Town shall aid Developers in securing all necessary permits from Wake County, the City of Raleigh, Department of Environmental Quality, or other state or federal agencies, as required for roads, sewer, and water. The failure of this Agreement to address a particular permit, condition, term, or restriction does not relieve the Developers of the necessity of complying with the law governing their permitting requirements, conditions, terms, or restrictions.

10. Parks and Recreation Land Dedication. The Town as part of its UDO requires land dedication for parks and recreation purposes, or a fee in lieu of such dedication at the discretion of the Town Council. The Town agrees to accept a fee in lieu of land dedication in an amount commensurate with the value of the land at the time of subdivision. The parties currently stipulate that this results in a fee in lieu amount as calculated of $726,465, based on the most current appraisal obtained by the Town. At any time prior to

such time as the DHIC Developer obtains its first certificate of occupancy, as such time the fee is due, the Developer may:

a. Submit a more recent appraisal, if obtained by the Developer and otherwise satisfactory to the Town, and recalculate the fee according to the new appraisal.

b. Provide any off-site parks and recreation amenity for dedication to the Town, in the sole discretion of the Town, such as a dedicated greenway on the western side of NC 55 by-pass, on property owned by Wake County.

11. TERMS REQUIRED FOR PUBLIC SAFETY: Description of any conditions, terms, restrictions, or other requirements determined to be necessary by the Town for the public health, safety, or welfare of its citizens.

a. All zoning conditions shall be satisfied.

12. HISTORIC STRUCTURES: None exist on the property.

a. None

13. DEVELOPMENT SCHEDULE

a. The Developers, in consideration of the covenants contained herein, shall be allowed the following expedited review considerations: (i) Developer shall be allowed a concurrent review of a master plan and a development plan; (ii) Developer shall be allowed a concurrent review of construction drawings (civil) and building permit review; (iii) Developer shall be allowed to submit the items in (i) for review to the Town staff prior to Town Council approval of a development or master plan, so long as a favorable recommendation has been achieved from the Town's Planning Board.

ARTICLE III
DEVELOPER'S DUTIES

1. For any offsite infrastructure constructed by the Developers, the Developers shall design, permit, and construct the infrastructure in accordance with the plans and specifications as shown on plans (to be submitted), according to engineering best practices, requirements of the Town, and requirements of the North Carolina Department of Environmental Quality (NCDEQ) and any other regulatory agency. For any land owned or controlled by the Developers, the Developers shall secure and dedicate to the Town all necessary easements for the construction and perpetual maintenance of the infrastructure referenced. For any land not owned by or controlled by the Developers, the Town shall convey such land owned by the Town to the Developers or secure all necessary easements on land owned by third parties for the construction and perpetual maintenance of the infrastructure referenced in a timely manner so as not to delay the completion of the Developers' Duties.

2. The Developers shall construct in a workmanlike manner the Onsite Public Infrastructure according to the design specifications and criteria of the Town which are existing at the time of this agreement, as well as full compliance with any NCDEQ requirements. Said infrastructure, together with any and all appurtenances, easements, and equipment associated with the project required for public dedication shall be dedicated to the Town in a manner consistent with the development plan and in a manner in accordance with the Town's standards.

3. The Developers shall construct the public infrastructure according to the plans and specifications submitted in a manner consistent with the standards of the Town which are in effect at the time of this Agreement.

4. The Developers (or their successors, and/or assigns) shall pay all development fees for the development at the time they would otherwise ordinarily be due (or as otherwise amended pursuant to 11(b) above) and in an amount that is determined by the fee schedule approved in the annual budget which is in effect at the time of this Agreement. Notwithstanding, in the event said fees are waived via an Economic Development Agreement this provision shall not be applicable.

ARTICLE V
GENERAL TERMS

1. All of the Developers' obligations under this Agreement, including but not limited to the obligations under Articles II and III of this Agreement, are contingent upon the Town's approval of the Developers' petition for rezoning, Master Plan and Site Plan for the Property and a Site Plan for Building Permits.

2. All reimbursements, if any, for this project shall be provided on the basis of final documented Actual Costs, as approved by the Director of Engineering, in accordance with this agreement. Any opinions of project cost included in this agreement are based upon preliminary designs and are approximate.

3. The Developers shall be responsible for the complete design and construction of each project, including all surveying, design, permitting, plat preparation and recordation, testing, engineering, bidding, construction, inspection, acceptance, easement maps and documents, construction management, construction administration, and all other necessary functions to ensure complete-in-place, fully functional projects built and operational in accordance with Town and State standards and approved plans for the project. The Actual Cost of these items shall be borne by the Developers and shall not be subject to reimbursement or participation by the Town, except as specifically described herein.

4. In the course of installing the sewer line or any other work on easements obtained by the Town and under the Town's ownership, the Developers shall operate under permission to encroach onto a Town easement and shall hold the Town harmless.

5. The Developers agrees to protect, defend, indemnify and hold the Town of Holly Springs and its officers, employees and agents free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees, or other expenses or liabilities of every kind in character and arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings, or causes of actions of every kind and character in connection with or arising directly out of the entry onto and performance of work on the easements of the Town.

6. The Town agrees to protect, defend, indemnify and hold the Developers and its officers, employees and agents free and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees, or other expenses or liabilities of every kind in character and arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings, or causes of actions of every kind and character in connection with or arising directly out of the performance of work on the easements of the Town.

7. All projects shall be subject to the Town's policies and procedures regarding Town acceptance and warranty on infrastructure.

8. It shall be the responsibility of the Developers to ensure that all regulatory approvals for each project are in place before beginning construction.

9. The Town Manager is authorized to make decisions in regard to approvals, including changes to this Agreement in order to complete the scope of work required, within his authority granted by the Town Council, except as otherwise stated herein or required by Town ordinance.

10. The Town shall secure all necessary easements for the infrastructure projects that are the subject of this Agreement.

ARTICLE VI
OTHER

1. All projects shall be subject to the Town's policies and procedures regarding Town acceptance and warranty on Offsite Infrastructure. This Agreement shall not modify the warranty and acceptance procedures established by the Town through the Engineering Standards in place at the time of this agreement. It shall be the responsibility of the Developers to ensure that all regulatory approvals for each project are in place before beginning construction.

2. All notices, reports, and other communications given pursuant to this Agreement shall be in writing and shall either be mailed by first class mail, postage prepaid, certified or registered with return receipt requested, or delivered in person to the intended addressee. Notice sent by certified or registered mail shall be effective upon the date of delivery indicated on the return receipt. Notice given in any other manner shall be effective upon actual receipt by the addressee.

3. This development agreement does not provide for the application of subsequently enacted Laws, ordinances, development policies, practices, procedures or standards. The Laws, ordinances, development policies, practices, procedures and standards applicable to the development of the Project are those in force at the time of the execution of this Agreement, in the manner prescribed by Holly Springs Ordinance 14-164.

4. Notices under this agreement shall be to the following:

FOR THE TOWN:

Randy J. Harrington
Town Manager
PO Box 8
Holly Springs, NC 27540
Reference:

FOR THE DEVELOPERS:

Frank Baird
Capital Associates Management or its Assigns.
1501 Sunrise Ave, Suite 100
Raleigh, NC 27608

Natalie Britt
DHIC, Inc
Vice President, Real Estate Development
113 S Wilmington Street
Raleigh, NC 27601

5. This Agreement shall be governed by and construed in accordance with the law of the State of North Carolina. The Parties consent to the jurisdiction of Superior Court Division of the General Court of Justice located in Wake County, North Carolina in the event a dispute arises between them regarding the terms of this Agreement.

6. If any paragraph or part of this Agreement is found void or unenforceable, the remainder of this Agreement shall continue in full force and effect.

7. This Agreement shall be binding upon and inure to the benefit of the Parties hereto, their heirs, successors and assigns.

8. This Agreement contains the entire agreement of the parties and there are no representations, inducements or other provisions other than those expressed in writing.

9. Exhibit List: The following exhibits are hereby incorporated by reference:

EXHIBIT A: Map of the Property
EXHIBIT B: Concept Plan
EXHIBIT C: Zoning Conditions
EXHIBIT D: Development Fee Schedule

IN WITNESS WHEREOF, the parties have executed this Agreement the day and year first above written.

TOWN OF HOLLY SPRINGS

(Town Seal) By: _____
Randy J. Harrington, Town Manager

ATTEST:

_____
Linda McKinney, Town Clerk
Kathy White, Deputy Town Clerk

This document is sufficient as to form.

_____
John P. Schifano, Town Attorney

This instrument has been pre-audited in the manner prescribed by the Local Government Finance Act.

_____
Antwan Morrison
Director of Finance

NORTH CAROLINA
WAKE COUNTY

I, a Notary Public of the County and State aforesaid, certify that _____ personally came before me this day and acknowledged that she is the Town Clerk/Deputy Town Clerk of the Town of Holly Springs, and that the seal affixed to the foregoing instrument in writing is the corporate seal of said Town, and that said writing was signed and sealed by her in behalf of said corporation by its authority duly given and the said person acknowledged this writing to be he act a deed of said corporation.

WITNESS my hand and official stamp (or seal), this the _____ day of _____

_____
Notary Public

My Commission Expires:_____

CAPITAL ASSOCIATES MANAGEMENT, LLC

(Seal) By: _____
Name: Frank P Baird
Title: CEO, Manager

I, a Notary Public, certify that Frank P Baird personally came before me this day and acknowledged that he is the CEO, Manager of Capital Associates Management, LLC, a North Carolina limited liability company, and that he, at such officers; being authorized to do so, executed the foregoing on behalf of the limited liability company.

WITNESS my hand and official stamp (or seal), this the 26th day of July, 2021

Melissa A. DeVito
Notary Public

Melissa A. DeVita, Notary Public
Typed/Printed Name

[Official Seal] My Commission expires: November 5, 2025

DocuSign Envelope ID: F513D2C8-E523-4980-90CE-7A7EB8698F9A

DOWNTOWN HOUSING IMPROVEMENT CORPORATION aka DHIC, Inc

By: _____
Name: Natalie Britt
Title: VP

(Seal)

I, a Notary Public, certify that _____, personally came before me this day and acknowledged that she is the _____ of Downtown Housing Improvement Corporation aka DHIC, Inc, a _____ Corporation , and that she, as such officer, being authorized to do so, executed the foregoing on behalf of the limited liability company.

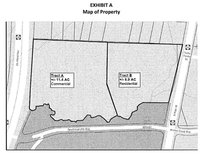
WITNESS my hand and official stamp (or seal), this the _____ day of _____, 2021

_____
Notary Public

_____, Notary Public
Typed/Printed Name

[Official Seal] My Commission expires:_____

EXHIBIT A
Map of Property


Tract 1
10.0 ac
Commercial
Tract 2
10.0 ac
Residential
Old Smithfield Rd
Sunset Lake Rd
N Main St
Kattia Dr
Arbor Creek Dr
Trellis Pointe Dr
Sportsmanship Way
Future Extension
Existing N Main St
Future Extension
Future Extension
Wake County Property
Wake County Property
Future Extension
Future Extension
Future Extension

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS.
2. CONSTRUCTION DRAWING APPROVAL IS REQUIRED PRIOR TO BEGINNING CONSTRUCTION. DEVELOPMENT FEES (ACREAGE, FEE IN LIEU OF ASSESSMENT AND INSPECTION FEES AND OTHERS AS REQUIRED MAY BE APPLICABLE) ARE DUE BEFORE CONSTRUCTION DRAWING APPROVAL.
3. THE PLAN IS SUBJECT TO REVISIONS DURING CONSTRUCTION DRAWING APPROVAL.
4. ALL JURISDICTIONAL STREAMS AND WETLANDS DELINEATED AND LOCATED BY MCADAMS CO.
5. BOUNDARY INFORMATION TAKEN FROM A SURVEY BY MCADAMS CO.
6. TOPOGRAPHIC DATA TAKEN FROM A SURVEY BY MCADAMS CO.
7. ALL LOTS ADJACENT TO COMMON OPEN SPACE AND SIDE FACADES THAT FACE RIGHTS-OF-WAYS WILL BE REQUIRED TO MEET THE SIDE AND REAR DESIGN FEATURES TABLE (TABLE 2.09 C-5 IN THE TOWN OF HOLLY SPRINGS UNIFIED DEVELOPMENT ORDINANCE. THIS TABLE IS ON THE COVER SHEET).
8. ALL INTERNAL STREETS MUST BE LIGHTED PRIOR TO THE FIRST CERTIFICATE OF OCCUPANCY. ALL ADJACENT ROADS WILL BE LIGHTED PRIOR TO STREET ACCEPTANCE FOR 1 YEAR WARRANTY.
9. ZONE 1 OF THE CAPE FEAR BUFFER MUST BE LEFT COMPLETELY UNDISTURBED.
10. NO FILL MATERIAL IS TO BE BROUGHT INTO ZONE 1 OF THE CAPE FEAR BUFFER.
11. NO STRUCTURES ARE ALLOWED WITHIN ANY OF THE CAPE FEAR BUFFER AREAS.
12. ALL PARKING LOT IMPROVEMENTS SHOWN ARE PRIVATE.
13. ALL RETAINING WALLS ARE DESIGNED BY OTHERS.
14. LOCATIONS OF STREET TREES AND STREET LIGHTING WILL BE FIELD COORDINATED BY THE DEVELOPER TO ELIMINATE CONFLICTS.
15. ALL BOARDWALKS ARE REQUIRED TO BE DESIGNED AND SEALED BY A P.E. PER THE TOWN OF HOLLY SPRINGS CONSTRUCTION DESIGN STANDARDS AND SPECIFICATION (PRIOR TO CD APPROVAL) AND WILL REQUIRE A PERMIT FROM THE CODE ENFORCEMENT DEPARTMENT.
16. A PRE-CONSTRUCTION MEETING WITH THE TOWN CONSTRUCTION INSPECTOR AND ENVIRONMENTAL ENGINEER (TELEPHONE 919-557-3938) WILL BE REQUIRED BEFORE BEGINNING ANY CONSTRUCTION.
17. ROOT GUARD (DETAIL HS816) REQUIRED FOR ALL STREET TREES.

SITE NOTES

1. ALL LANDSCAPING HAS BEEN PROVIDED AS CONSISTENT WITH THE APPROVED DEVELOPMENT OPTIONS PLAN REQUIREMENTS. SEE THE LANDSCAPE PLAN FOR FURTHER INFORMATION.
2. NO SIGHT OBSTRUCTING OR PARTIALLY OBSTRUCTING WALL, FENCE, VEGETATION, BERM, SIGN, PARKED VEHICLE OR OTHER OBJECTS BETWEEN THE HEIGHTS OF TWO FEET AND EIGHT INCHES ABOVE THE CURB LINE ELEVATION (OR THE EDGE OF PAVEMENT IF NO CURB EXISTS) SHALL BE PLACED WITHIN SIGHT DISTANCE TRIANGLES.
3. WHERE A FEE IN LIEU IS REQUIRED, PAYMENT WILL BE MADE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS PARKS AND RECREATION LAND DEDICATION REQUIREMENTS.
4. ZONE CFB1 OF THE BUFFER MUST BE COMPLETELY UNDISTURBED, NO FILL MATERIAL IS TO BE BROUGHT INTO THE CFB1 BUFFERS, AND NO STRUCTURES ARE ALLOWED WITHIN THE BUFFER AREAS UNLESS SPECIFIC APPROVAL FOR IMPACTS IS OBTAINED FROM THE TOWN. GRADING AND OTHER LAND DISTURBING ACTIVITIES ARE ALLOWED IN CFB2, HOWEVER THESE ACTIVITIES MUST BE PERFORMED IN SUCH A MANNER AS TO PREVENT DAMAGE TO ROOTS OF REMAINING TREES, TO MAINTAIN THE FUNCTION OF THE BUFFER IN ACCORDANCE WITH STATE AND TOWN REGULATIONS.
5. ALL PARKING LOT STRIPING SHALL BE WHITE. ALL FIRE LANE STRIPING SHALL BE YELLOW.
6. ALL CURB AND GUTTER DIMENSIONS ON THESE PLANS ARE TO THE FACE OF CURB UNLESS NOTED OTHERWISE.
7. EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED/RESTORED TO THEIR ORIGINAL CONDITION OR BETTER, AND TO THE SATISFACTION OF THE OWNER, BY THE CONTRACTOR RESPONSIBLE FOR THE DAMAGE.
8. THE CONTRACTOR SHALL NOTE THAT THE DRAWINGS MAY NOT SHOW EVERY OFFSET, TRANSITION, FITTING, ETC. THAT MAY BE REQUIRED. THE CONTRACTOR SHALL INSTALL SUCH STANDARD APPURTENANCES AS REQUIRED TO CLOSELY FOLLOW THE GRADES AND ALIGNMENTS DEPICTED ON THE PLANS.
9. CONTRACTOR SHALL NOTIFY "NC811" (811) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
10. CONTRACTOR IS RESPONSIBLE FOR COORDINATING CONSTRUCTION ACTIVITIES WITH THE APPROPRIATE UTILITY COMPANIES FOR ANY REQUIRED RELOCATIONS (I.E. POWER POLES, TELEPHONE PEDESTALS, WATER METERS, ETC.).
11. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION, FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
12. TYPICAL PAVEMENT SECTION DETAILS ARE SHOWN WITHIN THIS SET AND INTENDED TO BE A MINIMUM PAVEMENT SECTION REQUIREMENT. THE CURRENT GEOTECHNICAL REPORT SHALL OVER-RIDE ALL TYPICAL PAVEMENT SECTIONS SHOWN, IF THE GEOTECHNICAL ENGINEER DEEMS A HEAVIER SECTION IS REQUIRED.
13. EQUIPMENT AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED PROVIDED APPROVAL HAS BEEN OBTAINED FROM THE OWNER IN WRITING PRIOR TO ORDERING OR INSTALLATION. THE CONTRACTOR SHALL WAIVE ANY CLAIM FOR ADDITIONAL COST RELATED TO SUBSTITUTION OF ALTERNATE EQUIPMENT.

TRIASSIC SOIL REGION NOTES

1. PRE-QUALIFIED GEO-TECHNICAL FIRM APPROVED BY THE TOWN MUST BE ON SITE FULL TIME WHILE THE UTILITIES AND ROADWAYS ARE BEING CONSTRUCTED.
2. DOCUMENTATION OF MOISTURE CONTENT, COMPACTION, DENSITY, GEOGRID DESIGN CRITERIA, ETC. MUST BE PROVIDED TO TOWN INSPECTOR.
3. ALL ROADWAYS WILL HAVE TO BE PROOF-ROLLED AT BOTH SUBGRADE AND STONE GRADE BY TOWN INSPECTOR AS WELL.
4. THE STANDARDS ROADWAY PAVEMENT SECTION WILL BE WOVEN GEO-FABRIC DESIGN CRITERIA HP 270 OR EQUAL ON ENTIRE ROAD (AND MUST BE APPROVED BY THE TOWN OF HOLLY SPRINGS), 7" ABC STONE, WITH ASPHALT COMPLETED IN STAGED CONSTRUCTION OF 2.5" I-19 ASPHALT AND 1.5" IN STAGE 1 AND 1.5" S9.5B FINAL OVERLAY. INITIAL ONE-YEAR WARRANTY WITH AN ADDITIONAL YEAR EXTENSION STARTING AFTER FINAL OVERLAY-SHALL BE REQUIRED FOR ROADWAYS. FOR THE EXTENDED WARRANTY PERIOD, IT WILL BE REQUIRED TO POST A BOND, LOC, OR CASH FOR 50% OF ACTUAL COST OF ROADWAY (STORM DRAINAGE, CURB & GUTTER, SIDEWALK AND PAVEMENT). THE PAVEMENT SECTION LIST ABOVE IS THE TOWN OF HOLLY SPRINGS MINIMUM STANDARDS FOR THE TRIASIC SOILS REGION. CONTRACTOR TO VERIFY PAVEMENT SECTIONS WITH THE GEOTECHNICAL REPORT. IF PAVEMENT SECTIONS IN THE GEOTECHNICAL REPORT DIFFER FROM THE TOWN OF HOLLY SPRINGS, CONTRACTOR TO USE THE GREATER SECTION OF THE TWO.
5. WHERE MANHOLES ARE LOCATED IN STREETS IT WILL BE REQUIRED TO HAVE SUITABLE OFF-SITE STRUCTURAL MATERIAL OR ABC STONE TO BACKFILL AROUND EXCAVATION OF MANHOLES UP TO SUBGRADE.
6. AN ADDITIONAL FOOT OF STONE WILL BE REQUIRED 10' EITHER SIDE OF MANHOLE FOR ENTIRE WIDTH OF ROADWAY.

RETAINING WALL NOTES

1. THE RETAINING WALL ALIGNMENT SHOWN ON THESE PLANS DEPICTS THE LOCATION OF THE FRONT FACE OF THE RETAINING WALL AT THE TOP OF THE WALL. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING RETAINING WALLS ARE NOT LOCATED IN ANY STREAM BUFFERS, AND THEIR CONSTRUCTION DOES NOT ENCROACH INTO ANY ADJACENT PROPERTIES DUE TO ANY BATTER INCORPORATED IN THE DESIGN OF THE WALLS.
2. RETAINING WALLS ARE TO BE DESIGN-BUILD PROJECTS BY THE CONTRACTOR. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN FINAL CONSTRUCTION DRAWINGS FROM A REGISTERED ENGINEER AND GAIN ALL REQUIRED PERMITS NECESSARY FOR THE CONSTRUCTION OF THE RETAINING WALLS.
3. RETAINING WALLS WILL REQUIRE CONSTRUCTION DRAWING APPROVAL AND A BUILDING PERMIT FROM THE CODE ENFORCEMENT DEPARTMENT (TOWN OF HOLLY SPRINGS) TO ENSURE NO UTILITIES CONFLICT WITH THE STRUCTURAL REINFORCEMENT OF THE WALLS (TIE BACK SYSTEMS ARE NOT ALLOWED TO ENCROACH INTO EASEMENTS AND/OR R/W'S).
4. AT ALL AREAS WHERE THE RETAINING WALLS ARE BEING CONSTRUCTED THE REINFORCING NEEDED FOR TIE-BACKS CANNOT BE LOCATED WITHIN 5 FEET OF PROPOSED UTILITY LINES.
5. RETAINING WALLS SHALL BE ASSUMED TO BE BACKFILLED WITH OFF-SITE BORROW MATERIAL OR PROCESSED FILL, UNLESS THE CONTRACTOR CAN PROVIDE TO THE OWNER WITH CONFIRMATION FROM THE GEOTECHNICAL ENGINEER AND THE RETAINING WALL DESIGNER, THAT READILY AVAILABLE ON-SITE SOILS CAN BE USED.
6. THE TOP AND BOTTOM OF WALL ELEVATIONS SHOWN ON THESE PLANS IDENTIFY FINISHED GRADE ELEVATIONS ONLY. THE EXTENT THAT THE RETAINING WALL WILL BE EXTENDED BELOW GRADE TO THE FOOTING OR ABOVE GRADE TO THE TOP OF THE CAP BLOCK COURSE SHALL BE IDENTIFIED ON THE RETAINING WALL CONSTRUCTION DRAWINGS.
7. ALL RETAINING WALLS OVER 30" HIGH SHALL HAVE A SAFETY RAIL OR FENCE (DESIGN BY OTHERS).
8. ANY PART OF ANY RETAINING WALL THAT EXTENDS INTO THE RIGHT-OF-WAY WILL REQUIRE AN ENCROACHMENT AGREEMENT. ENCROACHMENT AGREEMENTS FOR RETAINING WALLS SHALL BE APPROVED PRIOR TO CONSTRUCTION DRAWING APPROVAL.
9. ANY TIEBACK SYSTEMS FOR THE RETAINING WALLS SHALL NOT BE ALLOWED WITHIN PUBLIC RIGHT-OF-WAY OR UTILITY EASEMENTS.
10. STORMWATER RUN-OFF SHALL BE DIRECTED AWAY FROM RETAINING WALLS. ANY RUN-OFF FLOWING TO AND OVER A RETAINING WALL SHALL BE KEPT TO AN ABSOLUTE MINIMUM AND BROUGHT TO THE ATTENTION OF THE WALL DESIGNER PRIOR TO THEIR DESIGN.

GRADING NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS.
2. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS FOR EXCAVATIONS; FINAL RULE 29CFR PART 1926, SUBPART "P" APPLIES TO ALL EXCAVATIONS EXCEEDING FIVE (5) FEET IN DEPTH. EXCAVATION EXCEEDING TWENTY (20) FEET IN DEPTH REQUIRES THE DESIGN OF A TRENCH SAFETY SYSTEM BY A REGISTERED PROFESSIONAL ENGINEER.
3. SOIL UNDER BUILDINGS AND PAVED AREAS SHALL BE APPROVED, PLACED AND COMPACTED AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
4. GRADING IN AREAS DESIGNATED AS "ACCESSIBLE" SHALL COMPLY WITH ALL FEDERAL AND LOCAL ACCESSIBILITY RULES AND GUIDELINES. EVEN THOUGH PLANS MAY NOT SHOW ALL SPOT ELEVATIONS IN THESE REGIONS, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ASSURE THAT THE AREAS ARE GRADED TO AMERICAN DISABILITY ACT (ADA) COMPLIANT SPECIFICATIONS AND NC BUILDING CODE.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY AREAS WHERE SPILL CURB IS NECESSARY TO CONVEY RUNOFF TO THE NEAREST CATCH BASIN OR DROP INLET. THE OWNER AND/OR ENGINEER SHALL NOT BE HELD RESPONSIBLE FOR CURBING INSTALLED THAT DOES NOT DRAIN PROPERLY.
6. ALL PROPOSED INLETS, CATCH BASINS, AND DROP INLETS SHALL BE PROTECTED BY EROSION CONTROL MEASURES AS SHOWN AND SPECIFIED ON THE EROSION CONTROL PLAN. APPROVED EROSION CONTROL PLAN MUST REMAIN ON-SITE AT ALL TIMES DURING CONSTRUCTION.
7. THE CURB INLETS AND YARD INLETS SHALL BE CONSTRUCTED IN THE LOCATIONS SHOWN UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR REPORTING ANY DISCREPANCIES IN THE CATCH BASIN ELEVATIONS OR THE PROPOSED PIPE SLOPES TO THE ENGINEER. THE CONTRACTOR IS ALSO RESPONSIBLE TO REPORT ANY CONFLICTS BETWEEN ANY UTILITY, STORM DRAIN LINE, WATER LINE, SEWER LINE OR ANY OTHER PROPOSED OR EXISTING STRUCTURE TO THE ENGINEER.
8. THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS. THE CONTRACTOR SHALL FIELD VERIFY GRADES SURROUNDING ALL BUILDINGS PRIOR TO GRADING ACTIVITIES AND REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
9. IF DEPARTURES FROM THE SPECIFICATIONS OR DRAWINGS ARE DEEMED NECESSARY BY THE CONTRACTOR, DETAILS OF SUCH DEPARTURES AND REASONS THEREFORE SHALL BE SUBMITTED TO THE OWNER/ENGINEER FOR REVIEW. NO DEPARTURES FROM CONTRACT DOCUMENTS SHALL BE MADE WITHOUT THE WRITTEN PERMISSION OF THE OWNER/ENGINEER.
10. ALL REQUIRED PERMITS AND APPROVALS FROM AGENCIES GOVERNING THIS WORK SHALL BE SECURED PRIOR TO BEGINNING CONSTRUCTION.
11. EXISTING UTILITIES SHOWN ARE BASED ON FIELD SURVEYS AND THE BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE PLANS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
12. ALL PROPOSED GRADING IS TO BE COMPLETED AT A SLOPE OF 3:1 OR FLATTER.

UTILITY NOTES

1. CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
2. ALL WATER AND SEWER MAINS WITHIN PUBLIC EASEMENTS AND RIGHT-OF-WAYS TO BE OWNED, OPERATED AND MAINTAINED BY THE TOWN OF HOLLY SPRINGS.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARDS AND SPECIFICATIONS.
4. ALL EXISTING UNDERGROUND UTILITIES ARE APPROXIMATELY LOCATED. ACTUAL LOCATION AND DEPTH SHALL BE CONFIRMED IN THE FIELD PRIOR TO CONSTRUCTION BY THE CONTRACTOR.
5. BEFORE STARTING ANY CONSTRUCTION OF IMPROVEMENTS WITHIN ANY TOWN OR N.C.D.O.T. STREET OR HIGHWAY RIGHT-OF-WAY THE FOLLOWING PROCEDURES SHOULD BE UNDERTAKEN; TOWN RIGHT-OF-WAY: CONTACT LOCAL AUTHORITIES' ENGINEERING DEPT. FOR INFORMATION ON DETOURS, OPEN CUTTING OF STREETS OR FOR ANY CONSTRUCTION WITHIN RIGHT-OF-WAY. N.C.D.O.T. RIGHT-OF-WAY: CONTACT PROJECT ENGINEERS AND OBTAIN ALL PERMITS AND ENCROACHMENTS (KEEP COPIES ON CONSTRUCTION SITE, ALSO CONTACT N.C.D.O.T. DISTRICT OFFICE 24 HOURS IN ADVANCE BEFORE PLACING CURB AND GUTTER).
6. ALL PROPOSED ELECTRIC, PHONE AND CABLE SERVICES SHALL BE UNDERGROUND AND ARE NOT A PART OF THESE PLANS.
7. EXISTING UTILITIES AND STRUCTURES SHOWN, BOTH UNDERGROUND AND ABOVE GROUND, ARE BASED ON A FIELD SURVEY AND THE BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS PRIOR TO BEGINNING RELATED CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND/OR RELOCATION OF ALL EXISTING UTILITIES IN COORDINATION WITH THE APPROPRIATE UTILITY, AGENCY, OR COMPANY. CONTRACTOR TO COORDINATE ACTIVITIES WITH UTILITY COMPANIES INVOLVED IN ANY RELATED RELOCATION (I.E. POWER POLES, TELEPHONE PEDESTALS, WATER METERS, ETC.).
9. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE WITH THE TOWN PUBLIC WORKS DEPARTMENT AND INSTALL ALL METERS, APPURTENANCES AND SERVICE LINES AS SHOWN ON THE PLAN PER STANDARDS AND SPECIFICATIONS. NOT ALL SUCH APPURTENANCES ARE SHOWN AS ARE REQUIRED TO PROPERLY INSTALL UTILITIES IN THE FIELD. CHANGES NECESSARY TO INSTALL DEVICES SHALL BE APPROVED BY ENGINEER OR OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION. IF NOTIFICATION IS NOT PROVIDED IN ADVANCE, CONTRACTOR MAY NOT RECEIVE REIMBURSEMENT FOR CHANGES/MODIFICATIONS.
10. ANY ON-SITE IRRIGATION SYSTEMS SHALL BE DESIGNED BY OTHERS. CONTRACTOR SHALL PROVIDE DETAILED PLANS TO ENGINEER OR OWNER'S REPRESENTATIVE.
11. ALL APPURTENANCES INSTALLED SHALL BE LEAD FREE PER CURRENT EPA LAW. THIS INCLUDES ALL BACKFLOW PREVENTERS.
12. ALL NEW UTILITY (POWER, CABLE, ETC.) LINES MUST BE UNDERGROUND.

STORM DRAINAGE NOTES

1. ALL STORM DRAINAGE PIPES SHOWN ARE TO BE CLASS III REINFORCED CONCRETE (RCP) UNLESS NOTED OTHERWISE.
2. ALL STORM DRAINAGE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST TOWN OF HOLLY SPRINGS CONSTRUCTION STANDARDS.
3. ALL CONCRETE SHALL MEET A MINIMUM 3000 PSI COMPRESSIVE STRENGTH.
4. ALL PIPE IN STORM DRAIN STRUCTURES SHALL BE STRUCK EVEN WITH INSIDE WALL.
5. ALL PIPE JOINTS SHALL BE MADE WITH PREFORMED JOINT SEALER, WHICH CONFORMS TO AASHTO SPECIFICATION M-198 FOR TYPE B FLEXIBLE PLASTIC GASKETS UNLESS OTHERWISE NOTED.
6. THE INTERIOR SURFACES OF ALL STORM DRAINAGE STRUCTURES SHALL BE POINTED UP AND SMOOTHED TO AN ACCEPTABLE STANDARD USING MORTAR MIXED TO MANUFACTURER'S SPECIFICATIONS.
7. ALL BACKFILL SHALL BE NON-PLASTIC IN NATURE, FREE FROM ROOTS, VEGETATION MATTER, WASTE CONSTRUCTION MATERIAL OR OTHER OBJECTIONABLE MATERIAL. SAID MATERIAL SHALL BE CAPABLE OF BEING COMPACTED BY MECHANICAL MEANS AND SHALL HAVE NO TENDENCY TO FLOW OR BEHAVE IN A PLASTIC MANNER UNDER THE TAMPING BLOWS OR PROOF ROLLING.
8. MATERIALS DEEMED BY THE OWNER'S REPRESENTATIVE AS UNSUITABLE FOR BACKFILL PURPOSES SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL.
9. BACKFILLING OF TRENCHES SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PIPE IS LAID. THE FILL AROUND THE PIPE SHALL BE THOROUGHLY COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST. THE TOP EIGHT (8) INCHES SHALL BE COMPACTED TO 100 PERCENT STANDARD PROCTOR.
10. UNDER NO CIRCUMSTANCES SHALL WATER BE ALLOWED TO RISE IN UNBACKFILLED TRENCHES AFTER PIPE HAS BEEN PLACED.

WATER NOTES

1. A PUBLIC WATER EXTENSION PERMIT WILL BE REQUIRED FROM NCDEQ PRIOR TO ANY OFF-SITE WATER LINE INSTALLATION.
2. WATER MAINS TO BE INSTALLED AT A DEPTH WITH A MINIMUM COVER OF 48 INCHES FROM EXISTING GRADE (36" FROM TOP OF PIPE TO FINISHED ROAD SUBGRADE IF UNDER PAVEMENT), WITH 18 INCHES VERTICAL CLEARANCE MINIMUM FROM OTHER UNDERGROUND UTILITIES AND 10 FEET HORIZONTAL CLEARANCE FROM ALL OTHER UTILITIES.
3. PRESSURE REDUCING VALVES SHALL BE PROVIDED FOR SERVICES IF PRESSURE IS IN EXCESS OF 80 PSI.
4. ALL WATER MAINS SHALL BE DUCTILE IRON PIPE IN ACCORDANCE WITH AWWA C150 OR C151 FOR A LAYING CONDITION TYPE 2.
5. PIPE JOINTS SHALL BE OF THE PUSH-ON TYPE AS PER AWWA C111.
6. TEST PORTS SHALL BE INCLUDED ON ALL WATER METERS 2" AND LARGER.
7. ALL DOMESTIC WATER SERVICE LINES SHALL BE TYPE K SOFT COPPER IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS CONSTRUCTION STANDARDS.
8. HYDRANTS SHALL CONFORM TO AWWA C502 WITH A MINIMUM VALVE OPENING OF 4.5-INCHES. ALL HYDRANTS SHALL INCLUDE A 5-INCH STORZ/QUICK CONNECT COUPLING ON THE STEAMER OUTLET WITH A CHAINED CAP.
9. BLOWOFF ASSEMBLIES SHALL BE A MINIMUM OF 2-INCHES AND INSTALLED AT THE END OF ALL DEAD END WATERLINES.
10. COMBINATION AIR RELEASE VALVES SHALL BE INSTALLED AT HIGH POINTS OF WATERLINES 12-INCHES IN DIAMETER OR LARGER.
11. NEW AIR RELEASE VALVES SHALL BE INSTALLED IN PRECAST CONCRETE MANHOLES.
12. ALL GATE VALVES GREATER THAN 2-INCHES SHALL MEET ALL REQUIREMENTS OF AWWA C500 FOR A WORKING PRESSURE OF 150 PSI.
13. BUTTERFLY VALVES SHALL BE INSTALLED ON WATERLINES 16-INCHES IN DIAMETER OR GREATER. ALL SHALL MEET THE REQUIREMENTS OF AWWA C504.
14. PIPE FITTINGS SHALL BE COMPACT FITTINGS IN ACCORDANCE WITH AWWA C153.
15. CORPORATION STOPS SHALL BE BRASS, COMPLETE WITH A FLARED COUPLING AND AWWA STANDARD THREADS AS PER AWWA C800. TAPS SHALL BE LOCATED AT 10 OR 2 O'CLOCK ON THE CIRCUMFERENCE OF THE PIPE. SERVICE TAPS SHALL BE STAGGERED ALTERNATING FROM ONE SIDE OF THE WATER MAIN TO THE OTHER, AND AT LEAST 12 INCHES APART. THE TAPS MUST BE A MINIMUM OF 24 INCHES APART IF THEY ARE ON THE SAME SIDE OF THE PIPE.
16. ALL WATER LINE CONSTRUCTION WITHIN CASS HOLT ROAD RIGHT-OF-WAY SHALL BE COORDINATED AND SEQUENCED WITH CASS HOLT ROAD CONSTRUCTION PLANS AND FIELD CONSTRUCTION.

SANITARY SEWER NOTES

1. A PUBLIC SANITARY SEWER EXTENSION PERMIT WILL BE REQUIRED FROM NCDEQ PRIOR TO SEWER PIPE INSTALLATION.
2. THE MINIMUM SIZE OF PUBLIC GRAVITY SANITARY SEWER MAINS SHALL BE 8-INCHES.
3. THE CONSTRUCTION OF ALL SANITARY SEWER LINES WHICH WILL BE MAINTAINED BY THE TOWN MUST BE PERFORMED BY A CONTRACTOR LICENSED IN NORTH CAROLINA.
4. SEWER MAINS FROM 14 TO 20 FEET DEEP SHALL REQUIRE SPECIAL BEDDING IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARD DETAILS.
5. SEWERS OVER 20 FEET DEEP SHALL REQUIRE DUCTILE IRON FOR THE ENTIRE RUN BETWEEN MANHOLES.
6. TRANSITIONS OF PIPE MATERIAL SHALL OCCUR ONLY AT MANHOLES.
7. SEWER LINE EASEMENTS SHALL BE COMPLETELY CLEARED OF ALL VEGETATION, GRADED SMOOTH, FREE FROM ROCKS, BOULDERS, ROOTS, STUMPS, AND OTHER DEBRIS, FREE FROM PONDED WATER, AND SEEDED AND MULCHED UPON THE COMPLETION OF CONSTRUCTION.
8. ALL MANHOLE CONE SECTIONS SHALL BE THE ECCENTRIC TYPE MEETING THE REQUIREMENTS OF ASTM C478.
9. MANHOLES FOR SEWERS UNDER 21 INCHES IN DIAMETER SHALL BE A MINIMUM OF 4 FEET IN DIAMETER. MANHOLES FOR SEWERS 21 INCHES IN DIAMETER OR GREATER SHALL BE 5 FEET IN DIAMETER. MANHOLES REQUIRING INSIDE DROPS SHALL BE A MINIMUM OF 5 FEET IN DIAMETER. WHEN 2 OR MORE INSIDE DROPS OCCUR AT ONE MANHOLE, A MINIMUM 6-FOOT DIAMETER MANHOLE SHALL BE USED. ALL MANHOLES THAT ARE OVER 20 FEET DEEP SHALL BE 5 FEET IN DIAMETER.
10. INSIDE DROPS SHALL BE USED WHEN FREE DROPS EXCEED 12 INCHES. FOR INSIDE DROP MANHOLES, THE ENTIRE UPSTREAM LEG OF SEWER MUST BE DUCTILE IRON. FOR INSIDE DROP MANHOLES, SEE THE TOWN OF HOLLY SPRINGS STANDARD DETAILS. OUTSIDE DROPS SHALL NOT BE PERMITTED EXCEPT WHEN NECESSARY TO CONNECT TO EXISTING MANHOLES.
11. MANHOLES NOT LOCATED IN ROADWAYS SHALL HAVE A TOP ELEVATION A MINIMUM OF 12 INCHES ABOVE FINISHED GRADE. MANHOLES LOCATED ALONG OUTFALLS SHALL HAVE A TOP ELEVATION A MINIMUM OF 24 INCHES ABOVE FINISHED GRADE OR 100 YEAR FLOOD PLAIN, OR 12 INCHES ABOVE 500 YEAR FLOOD PLAIN, WHICHEVER IS HIGHER.
12. BACKWATER VALVES SHALL BE PROVIDED FOR ALL UNITS WITH FINAL FLOOR ELEVATIONS OF BUILDINGS LESS THAN 1'-0" ABOVE UPSTREAM MANHOLE.
13. MINIMUM COVER OF 4.5 FEET FROM THE TOP OF PIPE TO FINISHED SUBGRADE WHEN UNDER A ROADWAY AND 4.5 FEET FROM TOP OF PIPE TO FINISHED GRADE IN ALL OTHER AREAS. WHERE THESE STANDARDS CANNOT BE MET DUCTILE IRON PIPE SHALL BE INSTALLED.
14. MINIMUM SLOPE FOR 4 INCH & 6 INCH SANITARY SEWER COLLECTION LINES SHALL BE NO LESS THAN 1.0% WITH CLEANOUTS EVERY 75 LINEAL FEET FOR 4-INCH LINES AND EVERY 100 LINEAL FEET FOR 6-INCH LINES.
15. ALL SANITARY SEWER MAINS SHALL BE PVC SDR-35 EXCEPT WHERE CONDITIONS WARRANT DUCTILE IRON PIPE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS.

DEMOLITION NOTES

1. ALL VISIBLE EXISTING UTILITIES ARE SHOWN AT APPROXIMATE LOCATIONS. ACTUAL LOCATION AND DEPTH TO BE CONFIRMED BY CONTRACTOR IN THE FIELD PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL NOTIFY "NC811" (811) OR (1-800-632-4949) AT LEAST 3 FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NC811". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
3. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO CONSTRUCTION AND SHALL NOTIFY THE ENGINEER IF THERE ARE ANY DISCREPANCIES.
4. ALL DEMOLITION SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL LAWS.
5. ALL MATERIAL DEMOLISHED ON THIS SITE MUST BE REMOVED FROM THE SITE AND DISPOSED OF IN A PERMITTED LOCATION.
6. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND CONDUIT AND PROTECT ACCORDINGLY.

EASEMENTS

1. WATER AND SANITARY SEWER MAINS SHALL BE LOCATED IN A 20' WIDE PUBLIC UTILITY EASEMENT UNLESS NOTED OTHERWISE. IN THE CASE OF UTILITIES EXTENDING ADJACENT TO EACH OTHER THE EASEMENT MAY BE A VARIABLE WIDTH EASEMENT BUT NO LESS THAN 10' FROM EACH UTILITY LINE. WATER SERVICES UP TO THE METER AND FIRE HYDRANT ASSEMBLIES SHALL BE LOCATED IN A 10' WIDE PUBLIC UTILITY EASEMENT. SEE UTILITY PLANS FOR LOCATIONS OF EASEMENTS.
2. ANY STORM DRAINAGE PIPE EXTENDING FROM A PUBLIC RIGHT-OF-WAY INTO THE SITE SHALL BE LOCATED IN A 20' PUBLIC STORM DRAINAGE EASEMENT.

EROSION CONTROL NOTES

1. GRADING AND EROSION CONTROL METHODS SHALL ADHERE TO THE TOWN OF HOLLY SPRINGS SOIL EROSION AND SEDIMENTATION CONTROL STANDARDS AND SPECIFICATIONS.
2. GRADING AND EROSION CONTROL METHODS SHALL ADHERE TO THE NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES DIVISION OF WATER QUALITY (DWQ) STANDARDS AND SPECIFICATIONS. WHERE DIFFERENT FROM TOWN OF HOLLY SPRINGS STANDARDS, THE MORE STRINGENT METHOD SHALL BE APPLIED.
3. FAILURE TO FOLLOW THE APPROVED PLAN SEQUENCE AND DETAILS COULD SUBJECT THE CONTRACTOR TO FINES AND PENALTIES ISSUED BY EITHER THE TOWN OF HOLLY SPRINGS EROSION CONTROL DEPARTMENT OR THE DWQ.
4. CONTRACTOR SHALL SEED AND STABILIZE ALL STE

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 87°44'35" E	46.66'
L2	S 11°07'29" W	48.02'
L3	N 11°05'28" E	6.07'
L4	S 71°55'55" W	4.56'
L5	N 87°14'27" W	24.92'
L6	S 68°26'52" W	29.33'
L7	S 60°40'32" W	32.78'
L8	S 46°30'42" W	21.40'
L9	S 01°51'53" W	23.35'
L10	S 65°29'53" W	29.39'
L11	S 46°11'58" W	13.45'
L12	S 20°42'09" W	31.56'
L13	S 31°24'27" W	16.96'
L14	S 41°30'39" W	33.53'
L15	S 78°26'14" W	17.44'
L16	N 63°00'38" W	30.70'
L17	N 58°26'59" W	18.73'
L18	N 80°49'51" W	25.03'
L19	N 64°44'49" W	22.24'
L20	S 71°28'56" W	20.34'
L21	S 50°12'53" W	15.36'
L22	S 52°44'34" W	41.72'
L23	S 24°51'08" W	11.95'
L24	S 60°23'33" W	24.69'
L25	N 40°39'32" W	14.36'
L26	N 34°58'59" E	13.67'
L27	N 83°25'27" W	18.50'
L28	N 71°17'44" W	17.51'
L29	S 61°27'00" W	23.23'
L30	S 40°15'20" W	11.99'
L31	N 69°22'16" W	14.53'
L32	S 50°20'24" W	21.81'
L33	N 64°29'08" W	10.07'
L34	N 31°07'13" W	10.67'
L35	N 01°55'12" E	14.92'
L36	N 82°09'49" W	30.17'
L37	S 33°31'57" W	21.05'
L38	S 41°50'56" W	28.77'
L39	S 34°33'30" W	17.50'
L40	N 85°47'03" W	24.11'
L41	S 79°49'18" W	25.38'
L42	S 44°00'11" W	15.88'
L43	N 82°28'05" W	21.38'
L44	N 54°57'20" W	5.87'
L45	S 79°59'16" W	11.39'
L46	S 78°24'16" W	17.23'
L47	N 32°17'36" W	15.67'
L48	N 00°15'28" E	9.29'
L49	N 47°50'03" W	5.59'
L50	S 31°01'48" W	8.18'
L51	S 78°10'20" W	36.29'
L52	N 75°58'19" W	13.54'
L53	N 64°05'13" W	23.59'
L54	S 57°43'31" W	28.73'
L55	S 88°43'13" W	28.05'
L56	N 61°24'41" W	10.17'
L57	N 40°15'09" W	14.21'
L58	N 22°42'15" W	13.48'
L59	N 47°42'21" W	23.45'
L60	N 67°20'50" W	9.68'
L61	N 04°07'23" W	12.04'
L62	N 79°07'41" E	5.47'
L63	S 79°41'11" E	10.74'
L64	S 50°58'56" E	12.86'
L65	N 74°11'31" E	18.18'
L66	N 11°54'30" W	15.35'
L67	N 04°08'11" W	7.06'
L68	N 25°24'17" E	7.49'
L69	N 24°56'46" W	4.81'
L70	N 65°35'44" W	12.91'
L71	N 77°16'57" W	9.93'
L72	N 76°31'14" W	7.59'
L73	N 21°31'59" W	13.85'
L74	N 64°36'50" W	18.07'
L75	N 01°19'28" E	15.24'
L76	N 25°03'49" E	13.65'
L77	N 26°10'46" W	5.04'
L78	N 44°55'33" W	8.69'
L79	S 47°46'02" W	9.13'
L80	S 80°30'23" W	9.55'
L81	N 56°19'14" W	20.11'
L82	N 59°44'19" W	2.87'
L83	S 79°00'05" W	6.72'
L84	S 17°59'28" W	13.42'
L85	S 60°34'39" W	8.87'
L86	N 89°20'50" W	20.49'
L87	N 70°01'15" W	5.27'
L88	S 67°34'35" W	20.90'
L89	N 89°40'12" W	19.09'
L90	S 04°03'27" E	22.91'
L91	S 49°11'05" W	27.15'
L92	S 86°35'42" W	14.39'
L93	N 74°24'52" W	14.74'
L94	N 48°11'01" W	21.73'
L95	N 03°39'34" E	14.82'

LEGEND

- EXISTING IRON PIPE
- IRON PIPE SET
- CALCULATED POINT
- EXISTING CONCRETE MONUMENT
- BORE HOLE
- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEANOUT
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- TELEPHONE PEDESTAL
- BICYCLE RACK
- ELECTRIC BOX
- LIGHT POLE
- POWER POLE
- GUY WIRE
- CURB INLET
- STORM DRAINAGE MANHOLE
- YARD INLET
- TRANSFORMER
- FIBER OPTIC VAULT
- SIGN
- BOLLARD
- SD — STORM DRAIN PIPE
- OU — OVERHEAD UTILITY LINES
- W — WATER LINE
- SS — SANITARY SEWER LINE
- T — TELEPHONE LINE
- G — GAS LINE
- UE — UNDERGROUND ELECTRIC
- UT — UNDERGROUND TELEPHONE
- X — X — FENCE LINE
- TREE LINE
- PROPERTY BOUNDARY LINE
- EASEMENT LINE
- SETBACK LINE

TREE LEGEND

- (8) CM — CRAPE MYRTLE
- (3) O — OAK
- (3) E — ELM
- (4) G — GUM
- (5) DG — DOGWOOD

DOUBLE AND TRIPLE TRUNKS

- 2⊙-0 — DOUBLE OAK
- 3⊙-T-0 — TRIPLE OAK
- CALIPER INCH SIZE OF TREE
- TYPE OF TREE
- D FOR DOUBLE, T FOR TRIPLE

STORM DRAIN INVERTS
SD1 18"RCP
INV OUT(W)=336.25'

SD2 TOP=351.08'
INV IN(N)=337.60' 18"RCP
INV OUT(W)=337.58' 18"RCP

SD3 18"FES
INV IN(N)=337.68'

SD4 30"FES
INV IN(NE)=337.50'

SD5 TOP=347.90'
INV IN(NE)=376.32' 30"RCP
INV IN(E)=344.40' 18"RCP
INV OUT(S)=336.29' 30"RCP

SD6 TOP=350.92'
INV OUT(W)=346.32' 18"RCP

SD7 TOP=341.61'
INV IN(N)=334.59' 30"RCP
INV IN(E)=335.30' 36"RCP

INV IN(S)=334.96' 30"RCP
INV OUT(W)=334.27' 36"RCP

SD8 36"FES
INV IN(E)=334.96'

SD9 TOP=341.12'
INV IN(E)=332.86' 36"RCP
INV OUT(W)=332.78' 36"RCP

SD10 36"FES
INV OUT(W)=332.74'

SD11 TOP=341.50'
INV IN(S)=335.38' 30"RCP
INV OUT(N)=335.31' 30"RCP

SD12 TOP=343.01'
INV IN(S)=337.71' 24"RCP
INV OUT(N)=336.81' 30"RCP

SD13 TOP=343.61'
INV IN(SE)=338.58' 24"RCP
INV OUT(N)=338.41' 24"RCP

SD14 TOP=345.51'
INV IN(E)=340.11' 18"RCP
INV IN(S)=340.26' 24"RCP
INV OUT(NW)=339.48' 24"RCP

SD15 TOP=350.39'
INV OUT(W)=345.76' 18"RCP

SD16 TOP=345.48'
INV IN(S)=340.35' 24"RCP
INV OUT(N)=340.32' 24"RCP

SD17 TOP=344.50'
INV IN(S)=340.98' 18"RCP
INV OUT(N)=340.83' 24"RCP

SD18 TOP=349.76'
INV OUT(N)=344.17' 18"RCP

SD19 TOP=345.39'
INV OUT(NW)=340.11' 18"RCP

SD20 TOP=342.18'
INV IN(SW)=337.13' 18"RCP
INV IN(W)=336.47' 24"RCP

INV OUT(N)=334.47' 24"RCP

SD21 TOP=342.02'
INV IN(S)=336.55' 24"RCP
INV OUT(E)=336.51' 24"RCP

SD22 TOP=344.38'
INV IN(S)=339.54' 24"RCP
INV OUT(N)=339.36' 24"RCP

SD23 TOP=336.55'
INV IN(E)=329.90' 24"RCP
INV IN(W)=326.78' 36"RCP
INV OUT(NE)=326.68' 36"RCP

SD24 36"FES
INV OUT(NE)=326.44'

SD25 TOP=334.10'
INV IN(S)=328.39' 30"RCP
INV OUT(E)=327.70' 36"RCP

SD26 TOP=334.18'
INV OUT(W)=329.19' 15"RCP

SD27 TOP=334.18'
INV IN(E)=329.02' 15"RCP
INV IN(S)=328.98' 30"RCP
INV OUT(N)=328.82' 30"RCP

SD28 TOP=336.19'
INV IN(W)=329.64' 24"RCP
INV OUT(N)=329.28' 30"RCP

SD29 TOP=336.05'
INV IN(W)=330.08' 24"RCP
INV OUT(E)=329.92' 24"RCP

SD30 TOP=335.93'
INV IN(W)=331.18' 18"RCP
INV OUT(E)=330.73' 24"RCP

SD31 TOP=329.04'
INV IN(E)=322.87' 24"RCP
INV IN(W)=322.20' 30"RCP
INV OUT(N)=321.71' 30"RCP

SD32 TOP=328.86'
INV IN(S)=321.45' 30"RCP
INV IN(W)=323.59' 15"RCP

INV OUT(N)=321.43' 36"RCP

SD33 TOP=328.99'
INV OUT(E)=324.12' 15"RCP

SD34 TOP=328.77'
INV IN(S)=320.93' 36"RCP
INV OUT(W)=320.52' 36"RCP

SD35 TOP=328.70'
INV IN(E)=320.50' 36"RCP
INV OUT(NW)=320.05' 36"RCP

SD36 36"FES
INV OUT(NW)=317.88'

SD37 TOP=330.99'
INV OUT(S)=326.96' 15"RCP

SD38 TOP=331.58'
INV IN(N)=326.38' 15"RCP
INV IN(E)=326.08' 24"RCP
INV OUT(W)=326.00' 24"RCP

SD39 30"FES

INV OUT(NW)=313.41'

SD40 60"RCP
INV IN(NW)=308.30'

SD41 TOP=316.40'
INV OUT(N)=313.62' 24"RCP

SD42 TOP=319.40'
INV IN(S)=313.35' 24"RCP
INV IN(N)=313.35' 24"RCP
INV OUT(W)=312.84' 24"RCP

SD43 TOP=320.63'
INV OUT(S)=313.71' 24"RCP

SD44 24"RCP
INV IN(SW)=323.11'

SD45 15"RCP
INV OUT(S)=332.63'

SD46 TOP=336.11'
INV OUT(S)=333.04' 15"RCP

SD47 24"RCP

INV IN(N)=329.23'

SD48 24"RCP
INV OUT(S)=329.14'

SD49 24"FES
INV OUT(N)=324.83'

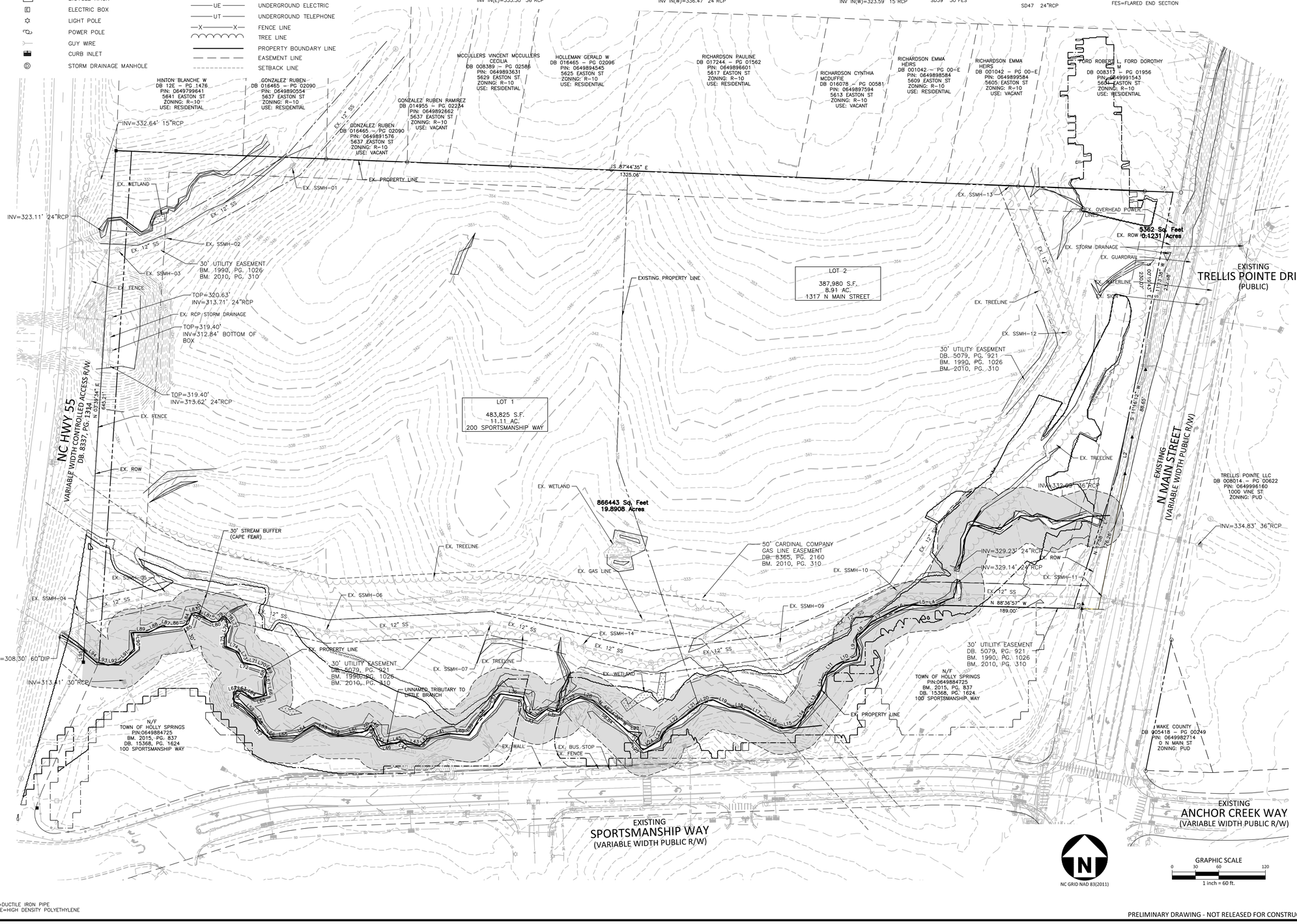
SD50 TOP=328.81'
INV IN(S)=325.15' 24"RCP
INV OUT(N)=325.13' 24"

SD51 TOP=335.78'
INV IN(E)=331.03' 24"RCP
INV OUT(N)=325.75' 24"RCP

SD52 60"RCP
INV OUT(NW)=304.67'

SD53 30"RCP
INV OUT TO POND

RCP=REINFORCED CONCRETE PIPE
CMP=CORRUGATED METAL PIPE
FES=FLARED END SECTION



NC GRID NAD 83(2011)

GRAPHIC SCALE
0 30 60 120
1 inch = 60 ft.

SANITARY SEWER INVERTS
SS1 TOP=341.52'
INV IN(NE)=334.22' 12"HDPE
INV OUT(SW)=334.09' 12"HDPE

SS2 TOP=333.64'
INV IN(NE)=326.88' 12"HDPE
INV OUT(SW)=326.79' 12"HDPE

SS3 TOP=331.70'
INV IN(NE)=323.14' 12"HDPE
INV OUT(W)=321.80' 12"HDPE

SS4 TOP=319.14'
INV IN(S)=305.12' 12"HDPE
INV IN(NE)=305.90' 12"HDPE
INV OUT(N)=304.88' 12"HDPE

SS5 TOP=319.38'
INV IN(SE)=311.23' 12"HDPE
INV OUT(SW)=311.10' 12"HDPE

SS6 TOP=324.57'
INV IN(E)=316.57' 12"HDPE
INV OUT(NW)=316.48' 12"HDPE

SS7 TOP=331.55'
INV IN(SE)=319.37' 12"HDPE
INV OUT(W)=319.27' 12"HDPE

SS8 TOP=327.64'
INV IN(E)=321.52' 12"HDPE
INV OUT(NW)=321.41' 12"HDPE

SS9 TOP=329.92'
INV IN(NE)=322.12' 12"HDPE
INV OUT(W)=322.09' 12"HDPE

SS10 TOP=332.61'
INV IN(E)=325.60' 12"HDPE
INV IN(N)=325.48' 12"HDPE
INV OUT(SW)=324.83' 12"HDPE

SS11 TOP=340.68'
INV IN(S)=329.50' 8"DIP
INV IN(E)=330.29' 8"DIP
INV OUT(W)=329.42' 12"HDPE

SS12 TOP=339.08'
INV IN=332.93' 12"HDPE
INV OUT=332.80' 12"HDPE

SS13 TOP=353.11'
INV IN=339.68' 12"HDPE
INV OUT=339.57' 12"HDPE

SS14 TOP=329.60'
INV IN(SE)=319.91' 12"HDPE
INV OUT(NW)=319.80' 12"HDPE

SD15 TOP=342.09'
INV IN(N)=331.58' 8"DIP
INV OUT(W)=331.52' 8"DIP

SD16 TOP=343.39'
INV IN(S)=330.56' 8"DIP
INV OUT(N)=330.53' 8"DIP

SD17 TOP=363.59'
INV IN(S)=355.16' 8"DIP
INV OUT(N)=355.13' 8"DIP

SS18 TOP=319.15'
INV IN(S)=305.60' 10"HDPE
INV OUT(N)=305.65' 12"HDPE

SS19 TOP=323.44'
INV IN(S)=307.46' 10"HDPE
INV OUT(N)=307.54' 10"HDPE

SS20 TOP=330.02'
INV IN(E)=311.77' 8"HDPE
INV OUT(N)=311.68' 10"HDPE

DIP=DUCTILE IRON PIPE
HDPE=HIGH DENSITY POLYETHYLENE

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

M:\Projects\CAP\CAP22003\04-Production\Engineering\Current Drawings\Development Plan Amendment\CAP22003-XC1.dwg, 5/22/2025 11:54:54 AM, Adam Pike

McADAMS
The John R. McAdams Company, Inc.
One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT

CAPITAL ASSOCIATES
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PIKE — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

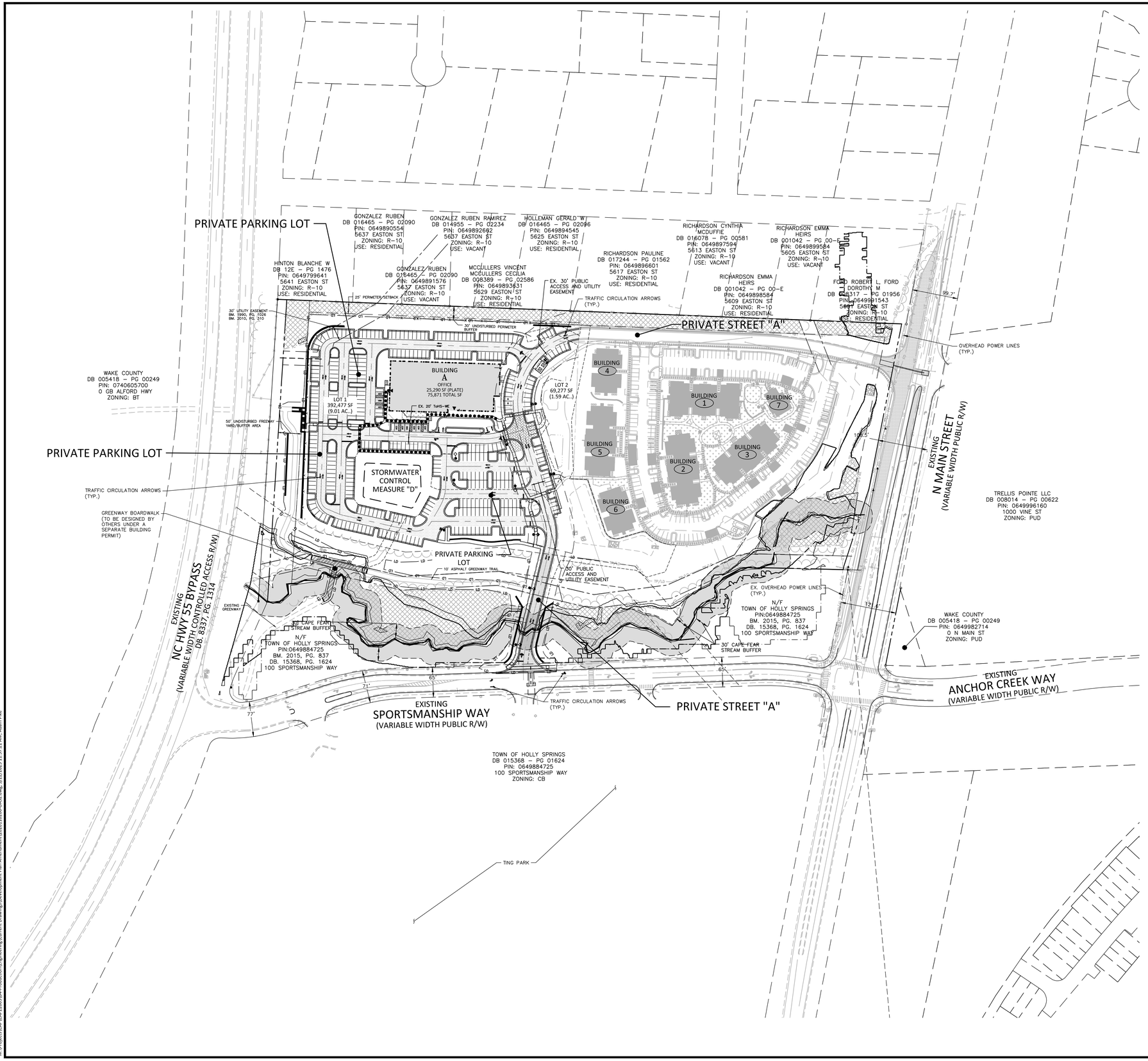
PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	SNP20000-AT1
CHECKED BY	ACP / MDS
DRAWN BY	CAW
SCALE	1"=60'
DATE	03.07.25

SHEET

OVERALL EXISTING CONDITIONS

C1.00



SITE LEGEND

- SIGNAGE
- YARD LIGHTS
- LIGHT POLE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- XX — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT–OF–WAY LINE
- LOT LINE
- EASEMENT LINE
- CENTERLINE
- HEAVY DUTY ASPHALT PAVEMENT
- TREE CONSERVATION AREA
- STREAM BUFFER
- ADA ACCESSIBLE EXTERIOR BUILDING ENTRANCE

UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- FIRE DEPARTMENT CONNECTION (FDC)
- WATER METER
- WATER VALVE
- PIV — POST INDICATOR VALVE
- VALVE IN MANHOLE
- METER & VAULT
- BACKFLOW PREVENTER
- REDUCER
- PLUG
- BLOW–OFF ASSEMBLY
- SANITARY SEWER MANHOLE
- SEWER CLEAN–OUT
- GREASE TRAP
- SEWER FLOW DIRECTION ARROW
- YARD LIGHTS
- LIGHT POLE
- POWER POLE
- LINE BREAK SYMBOL
- WATERLINE
- WATER SERVICE LINE
- UTILITY SLEEVE
- SANITARY SEWER
- SEWER SERVICE LINE
- FM — FM — SEWER FORCE MAIN
- G — G — G — G — GAS LINE
- OU — OU — OVERHEAD UTILITY
- UE — UE — UNDERGROUND ELECTRIC
- T — T — T — T — TELEPHONE
- EASEMENT LINE

GRAPHIC SCALE
0 50 100 200
1 inch = 100 ft.

N

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT

CAPITAL ASSOCIATES
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PIKE
EXPIRATION 12/31/2025
NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	2020110266-OAS2
CHECKED BY	ACP / MDS
DRAWN BY	HWM
SCALE	1"=100'
DATE	03.07.25

SHEET

OVERALL SITE PLAN

C2.00

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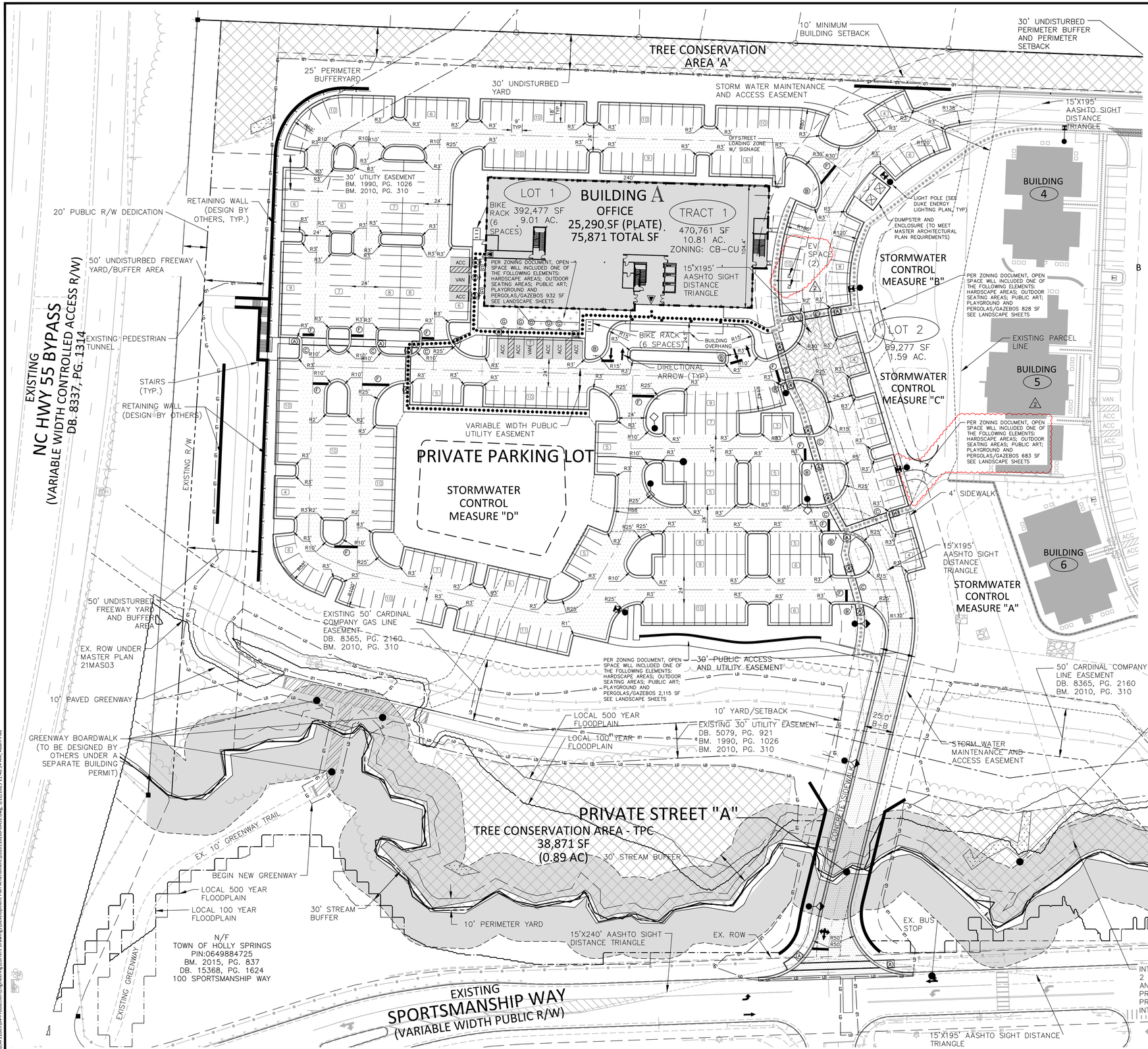

SITE LEGEND

- SIGNAGE
- YARD LIGHTS
- LIGHT POLE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- XX — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- EASEMENT LINE
- CENTERLINE
- HEAVY DUTY ASPHALT PAVEMENT
- TREE CONSERVATION AREA
- STREAM BUFFER
- ADA ACCESSIBLE EXTERIOR BUILDING ENTRANCE

KEY LEGEND

- (A) CURB RAMP
- (B) STOP SIGN
- (C) 6" STANDARD CROSSWALK
- (D) 10" DECORATIVE CROSSWALK
- (E) 6" DECORATIVE CROSSWALK
- (F) 24" STOP BAR
- (G) ACCESSIBLE PARKING SIGNAGE

* = ALL STANDARD TRAFFIC CONTROL AND STREET NAME SIGN AND POSTS SHALL MEET TOWN STANDARDS. SEE DTAIL HS360 FOR MORE INFORMATION ON C8.00

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

N

SITE NOTES:

1. TRAFFIC CONTROL BOLLARDS AND SIGN POLE BOLLARDS SHALL BE BLACK OR PAINTED TO MATCH THE PRIMARY COLOR SCHEME OF THE FACADE.

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CLIENT

CAPITAL ASSOCIATES
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PHONE: 919.233.9901
CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 JOHN C. PIKE — NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	2020110266-OAS1
CHECKED BY	ACP / MDS
DRAWN BY	CAW
SCALE	1"=40'
DATE	03.07.25

SHEET

SITE PLAN

C2.01

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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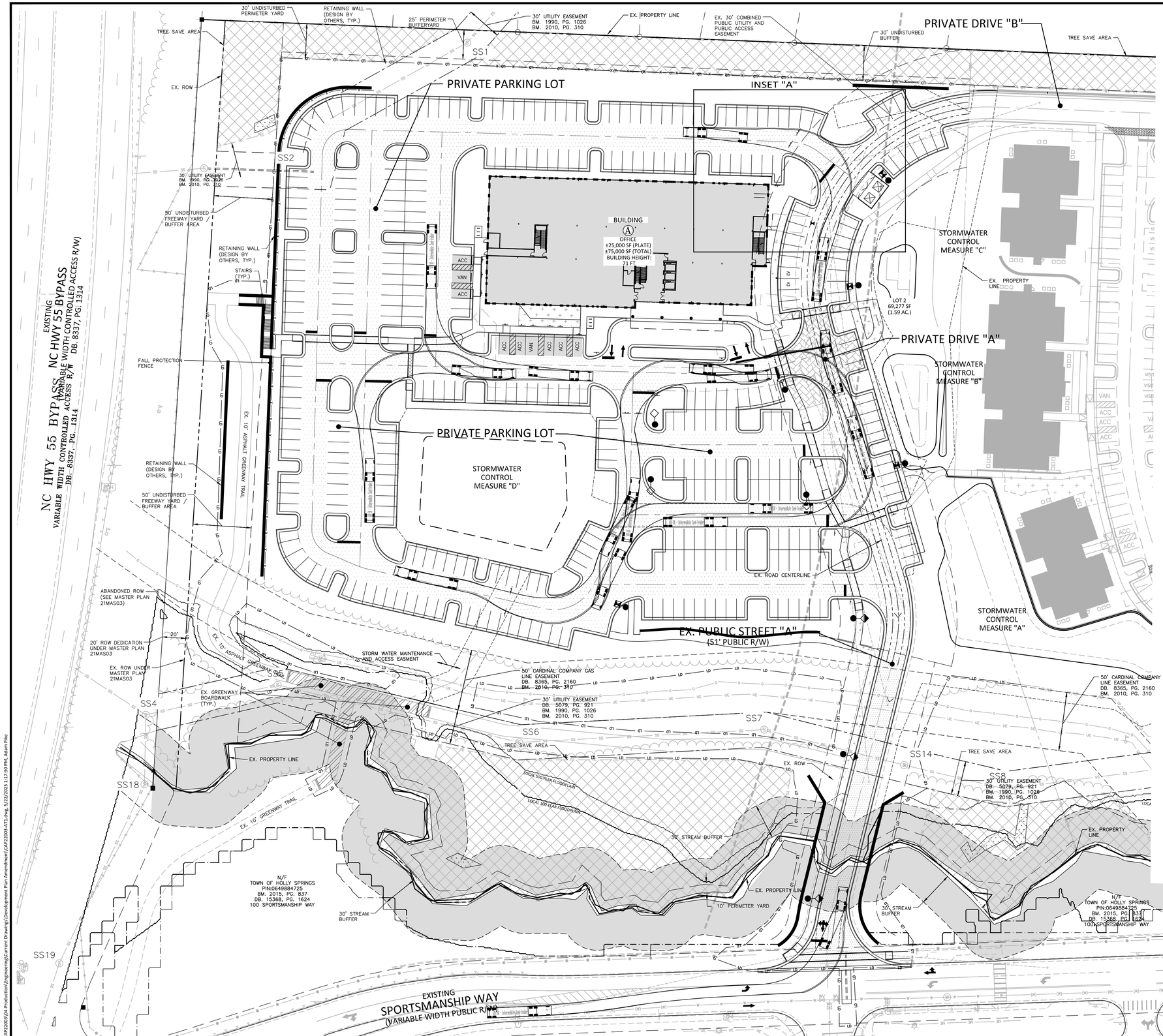

SITE LEGEND

- SIGNAGE
- YARD LIGHTS
- LIGHT POLE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACC — ACCESSIBLE PARKING STALL
- VAN — VAN ACCESSIBLE PARKING STALL
- XX — PARKING SPACE COUNT
- ACCESSIBLE RAMPS
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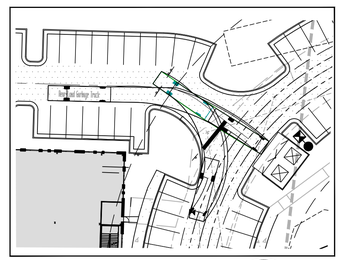
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- EASEMENT LINE
- CENTERLINE
- HEAVY DUTY ASPHALT PAVEMENT
- TREE CONSERVATION AREA
- STREAM BUFFER
- ADA ACCESSIBLE EXTERIOR BUILDING ENTRANCE

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

N

INSET "A"
GARBAGE TRUCK TURN TEMPLATE



GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

N

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The John R. McAdams Company, Inc.
One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT

CAPITAL ASSOCIATES
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 ADAM C. PIKE
NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	CAP22003-AT1
CHECKED BY	ACP / MDS
DRAWN BY	CAW
SCALE	1"=40'
DATE	03.07.25

SHEET

TURN TEMPLATES
1 OF 2

C2.02

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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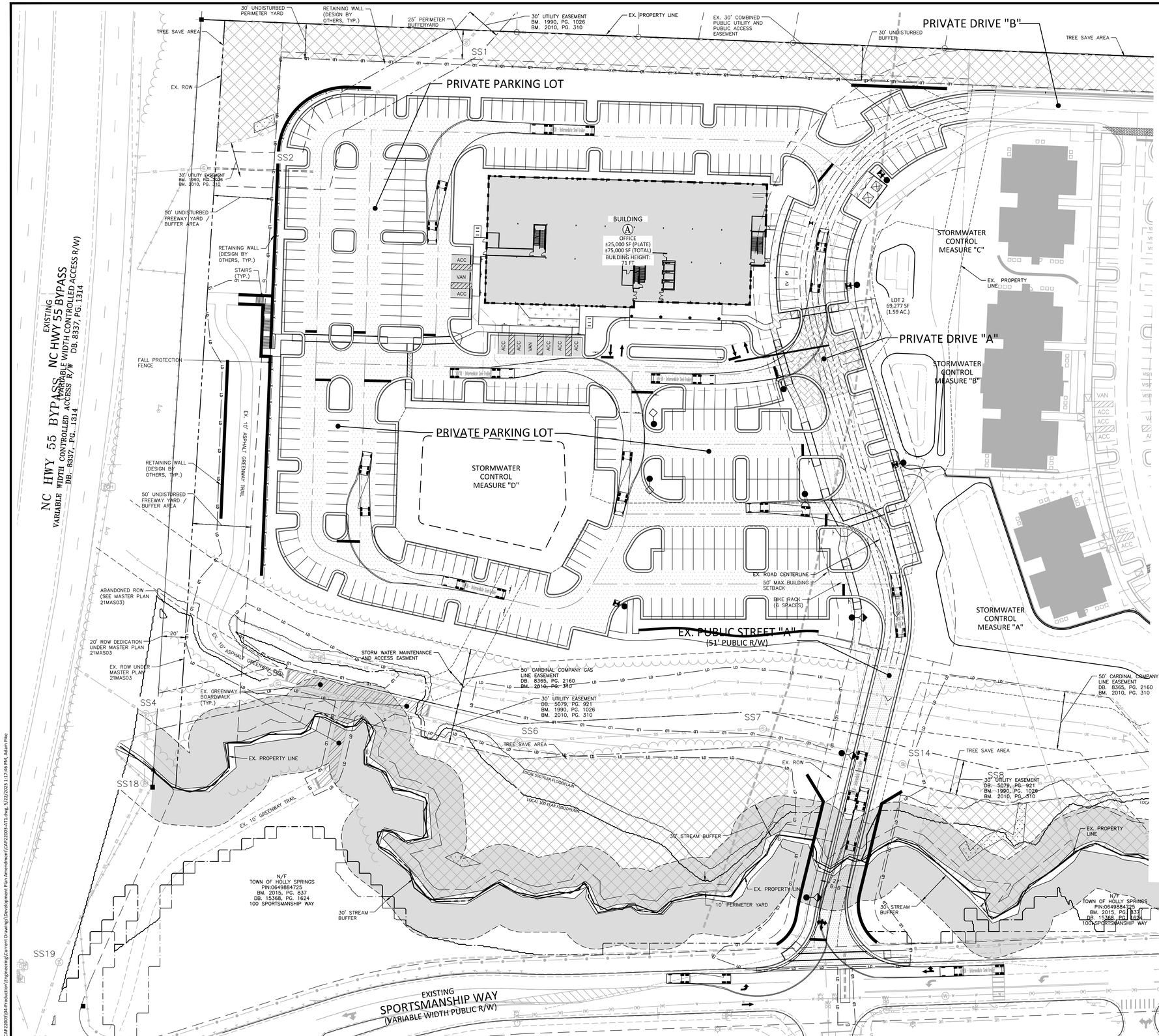

SITE LEGEND

- SIGNAGE
- YARD LIGHTS
- LIGHT POLE
- POWER POLE
- TRAFFIC DIRECTIONAL ARROW
- ACC / VAN / XX — ACCESSIBLE PARKING STALL / VAN ACCESSIBLE PARKING STALL / PARKING SPACE COUNT
- ACCESSIBLE RAMPS
- ACCESSIBLE ROUTE
- PHASE LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- LOT LINE
- EASEMENT LINE
- CENTERLINE
- HEAVY DUTY ASPHALT PAVEMENT
- TREE CONSERVATION AREA
- STREAM BUFFER
- ADA ACCESSIBLE EXTERIOR BUILDING ENTRANCE

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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DATE	03.07.25

SHEET

TURN TEMPLATES
2 OF 2

C2.03

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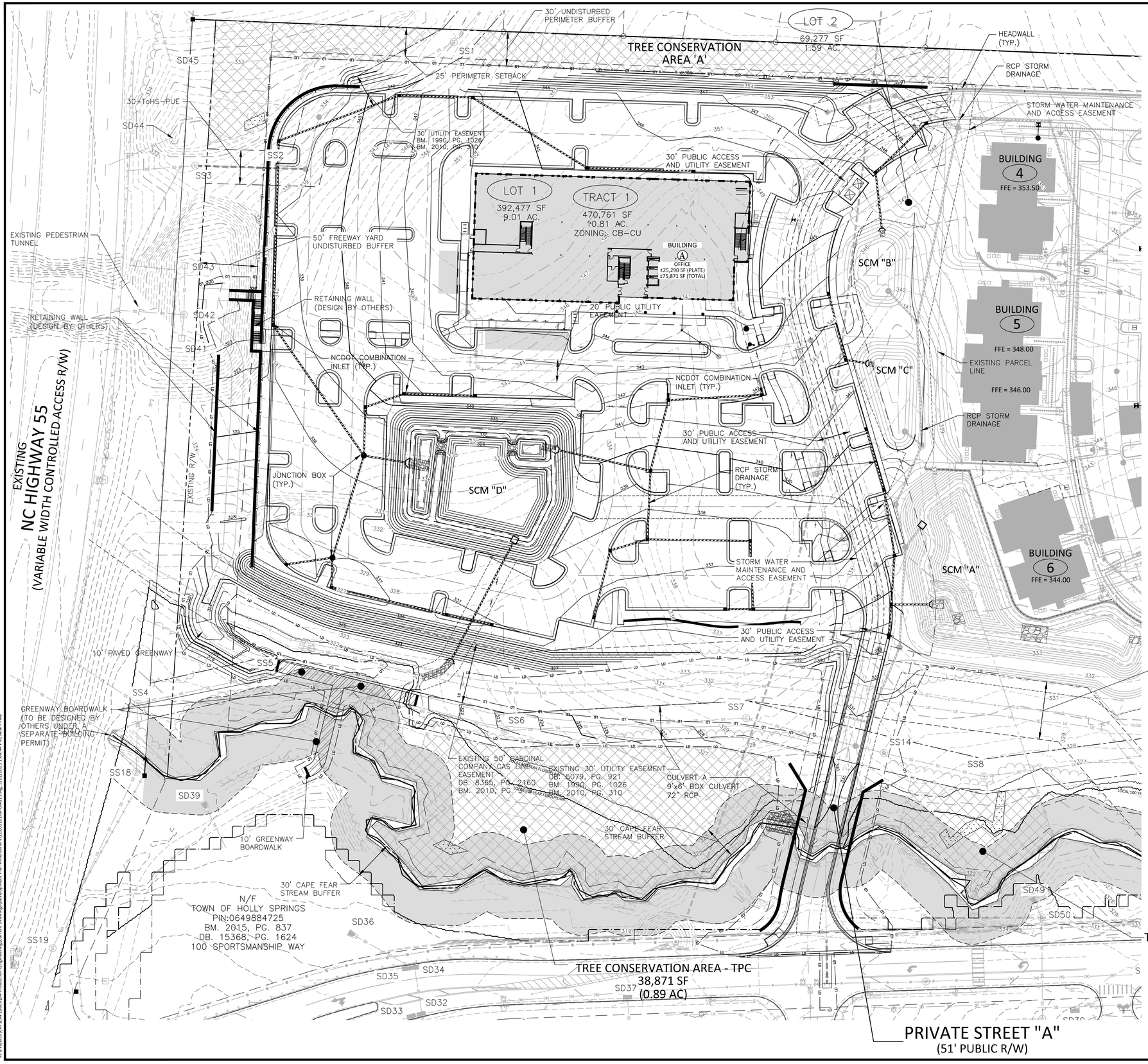

GRADING LEGEND

- FLARED END SECTION
- ENDWALL SECTION
- CATCH BASIN
- DROP INLET
- STORM SERVICE INLET
- STORM SERVICE ROOF-DRAIN
- JUNCTION BOX
- DRAINAGE FLOW ARROW
- LINE BREAK SYMBOL
- 250.50 / 250.00 — TOP & BOTTOM CURB ELEVATIONS
- TW=223.00 / BW=213.00 — TOP OF WALL ELEVATION / BOTTOM OF WALL ELEVATION (NOTE: BOTTOM OF WALL IS GROUND ELEVATION NOT WALL FOUNDATION)
- + 250.60 — SPOT ELEVATION
- STORM DRAINAGE
- STORM SERVICE LINE
- RD — RD — RD — ROOF DRAIN, 8" ADS NON-PERFORATED TUBING OR EQUAL 1.0% MIN. SLOPE 3' MIN. COVER PVC SCHEDULE 40 IN TRAFFIC AREAS
- TP — TP — TP — TREE PROTECTION FENCE
- LD — LD — LIMITS OF DISTURBANCE
- WOODED AREA
- 250 — MAJOR CONTOUR
- 252 — MINOR CONTOUR
- 250 — EXISTING MAJOR CONTOUR
- 252 — EXISTING MINOR CONTOUR
- EASEMENT LINE
- ACCESSIBLE PARKING AREA (2% MAX. SLOPE IN ALL DIRECTIONS)
- TC — TC — TC — TREE CONSERVATION AREA
- STREAM BUFFER

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

DISTURBED AREA = 8.20 AC.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 LICENSED ADAM C. PIKE
NOT FOR CONSTRUCTION

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PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	2020110266-OAG1
CHECKED BY	ACP / MDS
DRAWN BY	CAW
SCALE	1"=40'
DATE	03.07.25

SHEET

OVERALL GRADING PLAN

C3.00

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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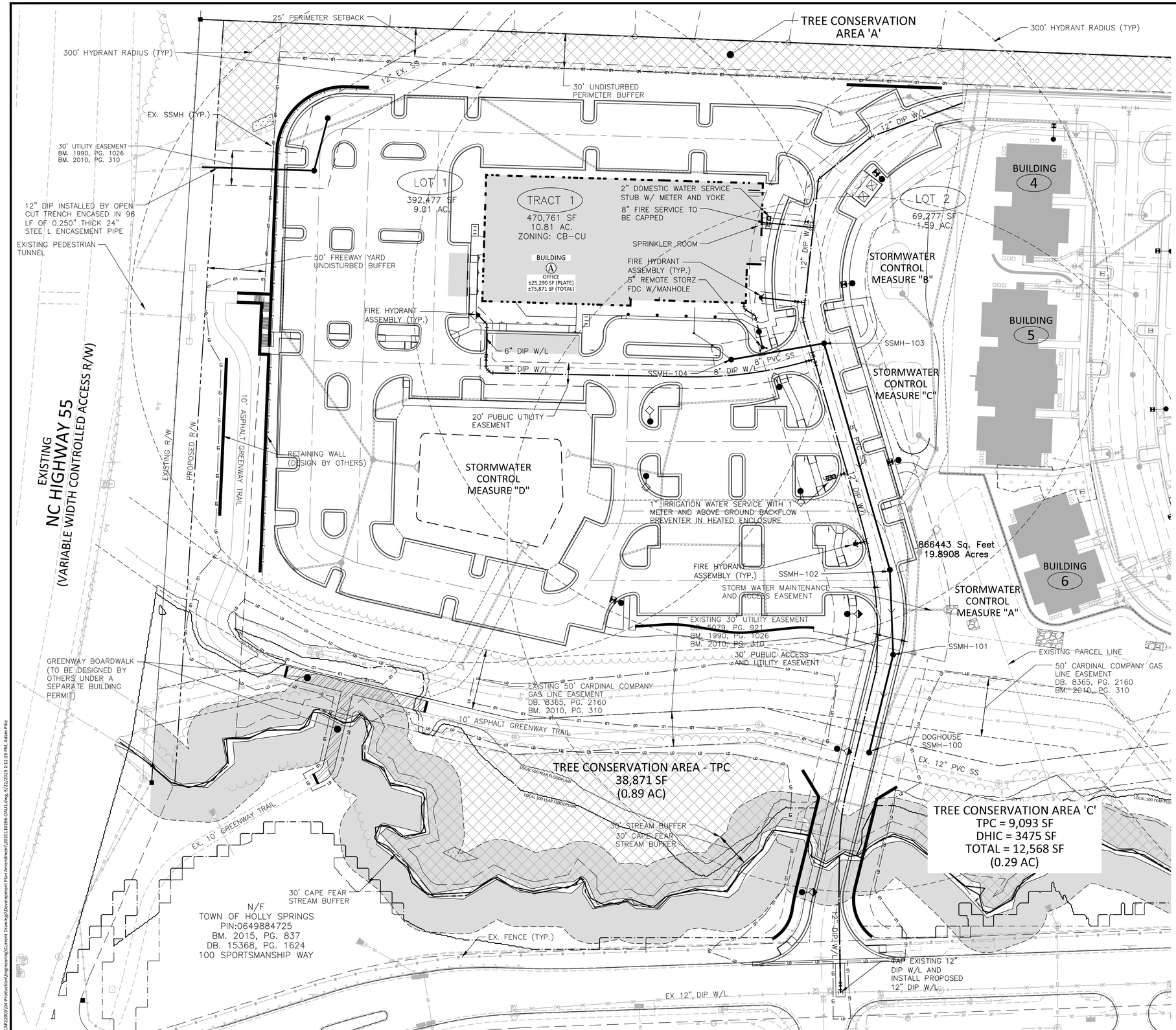

UTILITY LEGEND

- FIRE HYDRANT ASSEMBLY
- FIRE DEPARTMENT CONNECTION (FDC)
- WATER METER
- WATER VALVE
- POST INDICATOR VALVE (PIV)
- VALVE IN MANHOLE
- METER & VAULT
- BACKFLOW PREVENTER
- REDUCER
- PLUG
- BLOW-OFF ASSEMBLY
- SANITARY SEWER MANHOLE
- SEWER CLEAN-OUT
- GREASE TRAP
- SEWER FLOW DIRECTION ARROW
- YARD LIGHTS
- LIGHT POLE
- POWER POLE
- LINE BREAK SYMBOL
- WATERLINE
- WATER SERVICE LINE
- UTILITY SLEEVE
- SANITARY SEWER
- SEWER SERVICE LINE
- SEWER FORCE MAIN
- GAS LINE
- OVERHEAD UTILITY
- UNDERGROUND ELECTRIC
- TELEPHONE
- EASEMENT LINE

GRAPHIC SCALE
0 20 40 80
1 inch = 40 ft.

UTILITY NOTES:

1. ALL FDC'S SHALL BE INSTALLED IN ACCORDANCE WITH HSED&CS. THEY SHALL HAVE A 5" STORTZ CONNECTION.
2. WALL MOUNTED FDC'S ALLOWED ON A SINGLE STORY BUILDINGS ONLY. MULTISTORY BUILDINGS REQUIRE REMOTE FDC'S.
3. MIN. 6" ADDRESS/SUITE NUMBERS REQUIRED.
4. KNOX BOX REQUIRED AT RISER ROOM DOOR.
5. BACKFLOW PREVENTER FOR FIRE AND DOMESTIC SERVICE TO BE LOCATED INSIDE OF THE BUILDING. BACKFLOW PREVENTERS ARE TO BE RPZ.

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 ADAM C. PIKE
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CHECKED BY	ACP / MDS
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SCALE	1"=40'
DATE	03.07.25

SHEET

OVERALL UTILITY PLAN

C4.00

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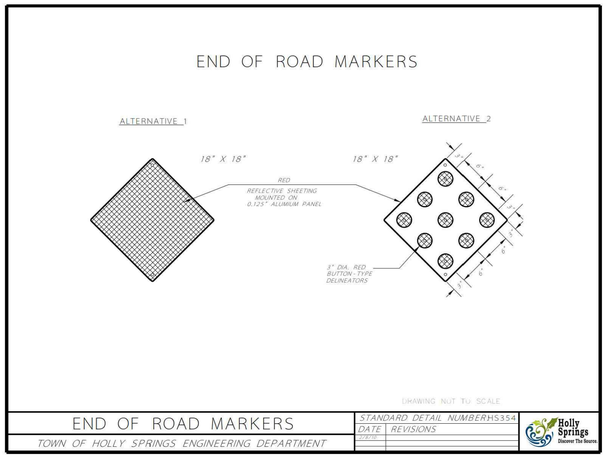
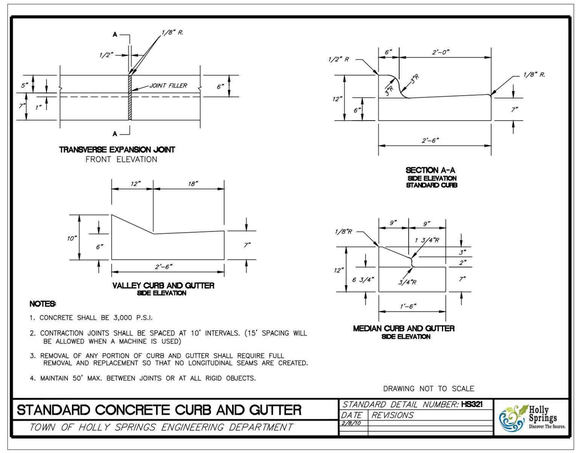
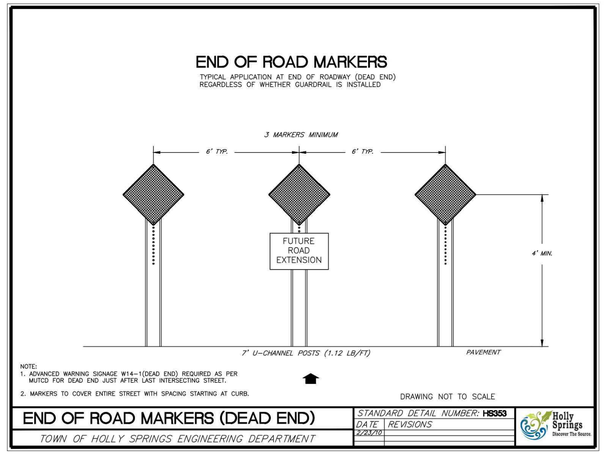
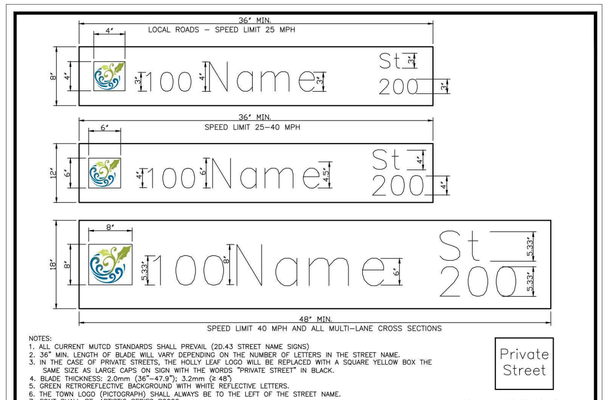
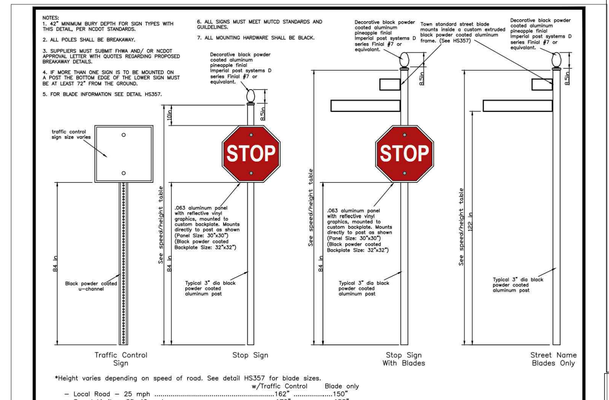
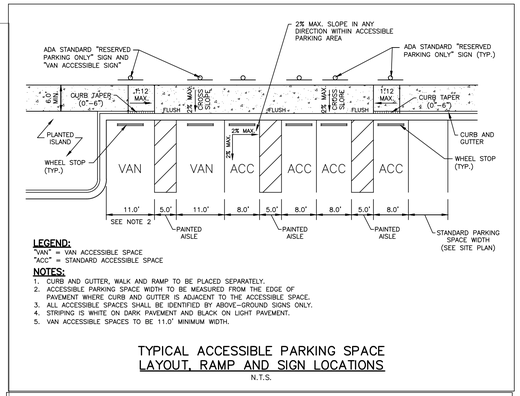


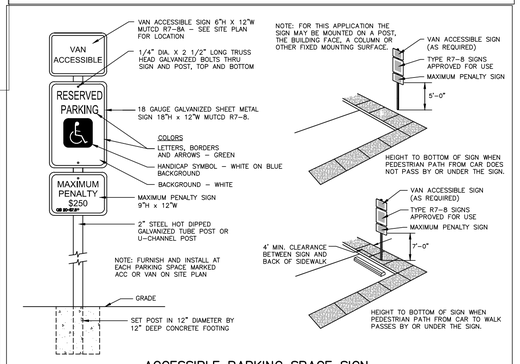


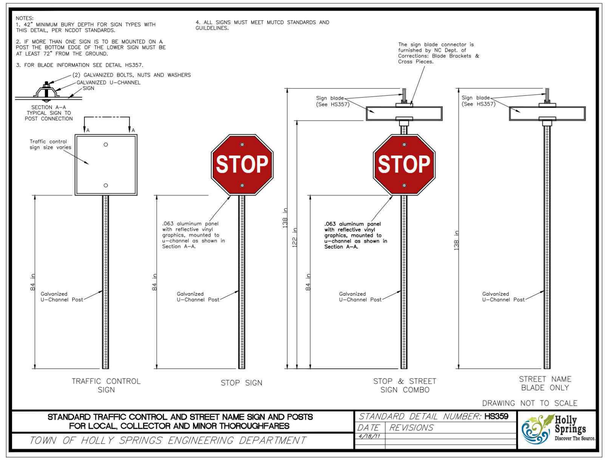




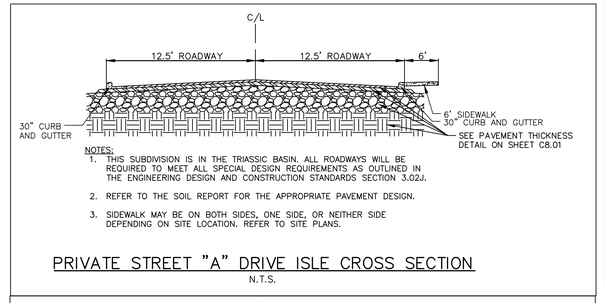


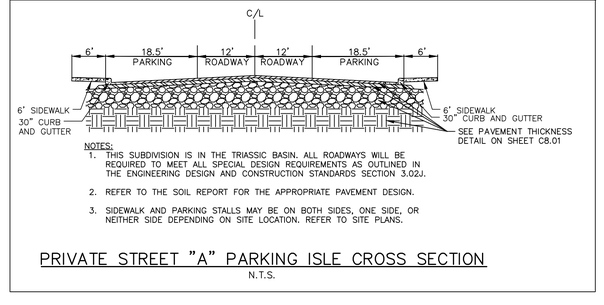






ALL TRAFFIC CONTROL AND STREET NAME SIGNS AND POSTS ALONG THOROUGHFARES SHALL FOLLOW TOWN STANDARD DETAIL HS360..





Master Architectural Plan
All building and structures, including building additions and accessory structures, shall comply with the provisions of the UDO Section 3.08 (Nonresidential and Mixed Use: Section 3.08, Architectural and Site Design Requirements for Commercial/Mixed Use Districts; or UDO Section 2.07 Architectural and Site Design Review) with appropriate variations introduced based on building type, scale/height to allow for architectural diversity and interest. The Master Architectural Plan does not supersede the requirements contained within UDO Section 3.08 or 2.07 but shall be used to reinforce common elements of design where specified.

Architectural Theme
In order to encourage creativity and uniqueness in architectural design and style, there shall be no specific architectural theme defined. The design and style of the buildings shall vary depending on the uses associated with them and their location within the Master Plan area.

Four–sided (360–degree) architecture shall be incorporated on all building elevations.

The use of prototype design shall be prohibited.

The architectural theme shall make use of both Continuity and Variation:
1. **Buildings shall be designed to have architectural continuity through the use of common building materials and finishes for metals as specified.**
2. **Variation is to be implemented to provide an appropriate design response for the building use through variations in floor heights, window sizes, and material selection.**
3. **Retail building located between housing and office building shall pull materials and colors from each building to help tie the site together to create a uniform development while allowing each use to have its own character.**

Nonresidential/Mixed Use Building Materials, Colors, Textures and Architecture

1. **Building Materials.**

Building Materials shall be subject to UDO Section 3.08 A. 1. c. (1) Building Materials, provided however that the following shall also apply:
- **(a) Building Material – Use of precast stone for building base with precast accents**
  - **a. Precast shall match or coordinate with other existing projects on site in color and texture.**
- **(a) Building Material – Use of anodized aluminum window frames**
- **(b) Parapet to be painted fiber cement or other coordinating material approved by the UDO.**
- **(c) All ground floor windows, and glass doors shall be clear glass. Spandrel glass on the ground floor may be allowed in areas where clear glass is not appropriate, provided that the color of the glass is a solid color black or gray.**

Residential Building Materials, Colors, Textures and Architecture.

1. **Building Materials**

Building materials shall be consistent with UDO Section 2.07

Mechanical Equipment
1. **Exterior wall mounted mechanical equipment (such as electrical boxes, electrical meters, etc.) shall be painted to match the primary façade of the building except when prohibited by federal, state, or local law or code.**
2. **Exterior wall mounted pipes, tubes, or other such materials shall be painted to match the primary building material except when prohibited by federal, state, or local law or code.**
3. **Roof mounted equipment to be screened from view at the ground elevation.**

Fencing
All fencing located between front building line and front lot lines shall be black ornamental fencing, see civil drawing C8.02 for style.
Fencing along rear lines to be chain link with black vinyl coating, see civil drawings for detail.

Pedestrian Crosswalk accent
Brick pattern to accent pedestrian crosswalks, see civil drawing C8.02 for style.

Planter boxes in public areas
Planters style to match that shown on L5.02

Site Lighting
Site lighting to be coordinated with Duke, see civil drawing C8.02 for styles. Color to be black or dark bronze.

Signage
Signs to be submitted in separate packages to the town but shall comply with UDO requirements for sizes and locations.

Additional Standards
Sign poles, sign pole bases and traffic bollards are to be black.

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NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER FRANK C. PIKE NOT FOR CONSTRUCTION

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FILENAME	CAP22003-D1
CHECKED BY	ACP / MDS
DRAWN BY	CAW
SCALE	N.T.S.
DATE	03.07.25

SHEET

SITE DETAILS

C8.00

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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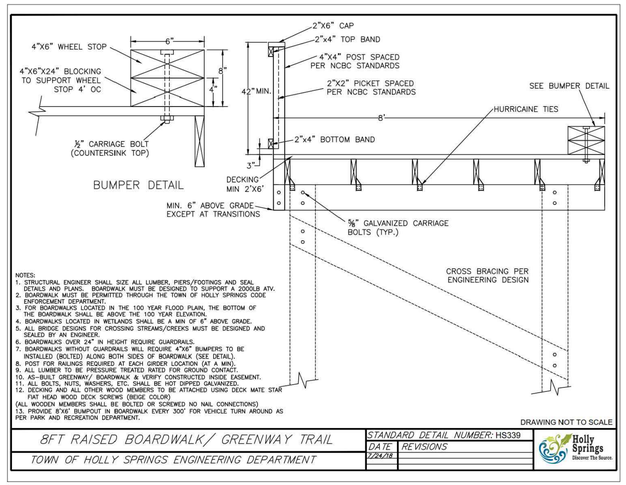
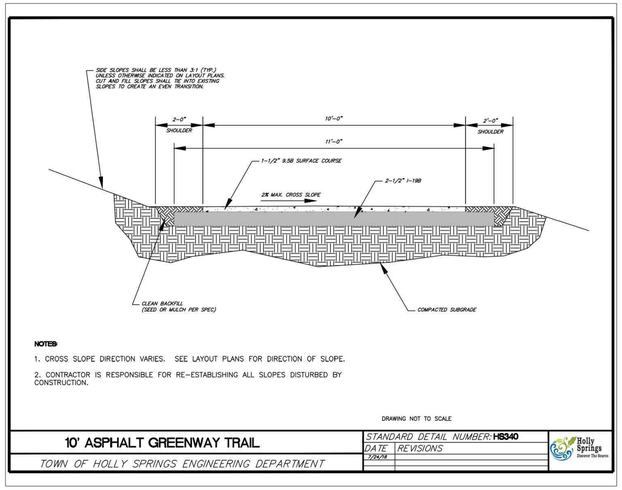


8FT RAISED BOARDWALK/ GREENWAY TRAIL

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS339

DATE: 7/24/18 | REVISIONS:

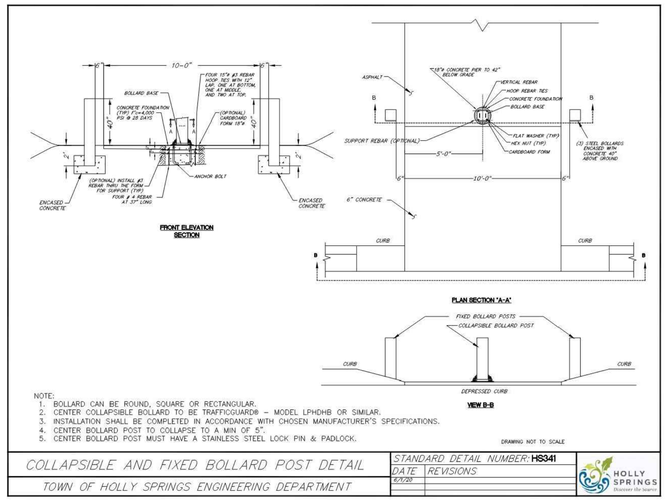


10' ASPHALT GREENWAY TRAIL

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS340

DATE: 7/24/18 | REVISIONS:



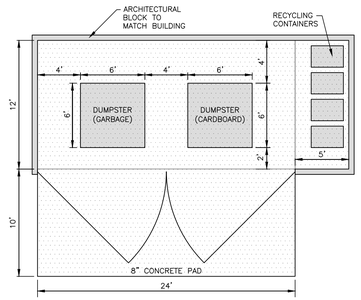
COLLAPSIBLE AND FIXED BOLLARD POST DETAIL

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS341

DATE: 8/1/20 | REVISIONS:

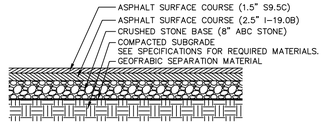
NOTES:
1. DUMPSTER PAD AND APPROACH PAD SHOULD BE 8" THICK CONCRETE REINFORCED WITH REBAR PER GEOTECHNICAL ENGINEER'S RECOMMENDATION
2. CURBS OR BUMPERS AT THE REAR OF EACH DUMPSTER ARE REQUIRED.
3. SEE ARCHITECTURAL DRAWINGS FOR ENCLOSURE AND GATE MATERIALS AND CONSTRUCTION INSTRUCTIONS.
4. IF THE 2 GATES ARE INCLUDED FOR EACH DUMPSTER WITH A POST IN THE CENTER, THE PAD MUST BE AN ADDITIONAL 4' WIDE.
5. ENCLOSURE WALLS SHALL BE A MINIMUM 6" HIGHER THAN THE DUMPSTERS, BUT NO LESS THAN 6' HIGH.



STANDARD DUMPSTER ENCLOSURE

N.T.S.

NOTE:
THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

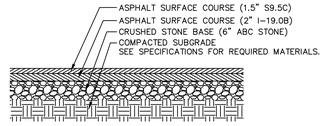


SUBGRADE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) REFER TO SOILS REPORT IF AVAILABLE.

ON-SITE ASPHALT HEAVY DUTY TRAFFIC PAVEMENT DETAIL

N.T.S.

NOTE:
THE PAVEMENT SECTIONS SHOWN ARE PRELIMINARY. THE CONTRACTOR SHALL VERIFY PAVEMENT DESIGN WITH THE GEOTECHNICAL ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.



SUBGRADE COMPACTED TO A MINIMUM 98% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) REFER TO SOILS REPORT IF AVAILABLE.

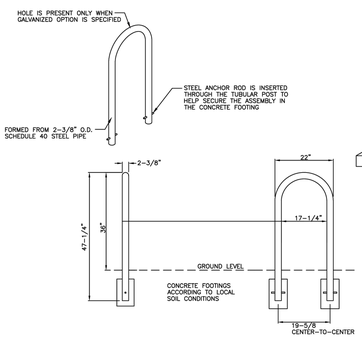
NOTE: THIS SUBDIVISION IS IN THE TRIASSIC BASIN. ALL ROADWAYS WILL BE REQUIRED TO MEET ALL SPECIAL DESIGN REQUIREMENTS AS OUTLINED IN THE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS SECTION 3.02J.

ON-SITE ASPHALT PARKING PAVEMENT DETAIL

N.T.S.

PROPOSED MINIMUM PAVEMENT SECTIONS			
	FLEXIBLE PAVEMENT		RIGID PAVEMENT
MATERIAL	Heavy Duty	Light Duty	Heavy Duty
Portland Cement Concrete Air-Entrained (f'_c = 4000 psi)	-	-	5 in.
AC Surface Course HMA Superpave – 9.5mm	2.5 in	2 in	-
AC Base Course HMA Superpave – 19mm	-	-	-
Aggregate Base Course (ABC)	8 in	6 in	6 in

TOWN OF HOLLY SPRINGS HAS MORE STRIGENT REQUIREMENT THEN SPECIFIED IN THE GEOTECH REPORT. SEE HEAVY DUTY PAVEMENT SECTION DETAIL FOR REQUIRED THICKNESS TO BE USED.



STANDARD IN-GROUND MOUNT BIKE RACK

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS007

DATE: 6/17/19 | REVISIONS:

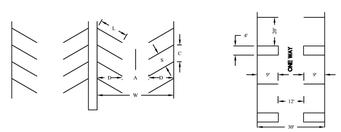
FIGURE 2

PARKING LOT STALL DIMENSIONS

APPLICATION		(S) STALL WIDTH (Feet)	(C) STALL LENGTH (Feet)	(D) STALL DEPTH (Feet)	(L) LINEAR DEPTH (Feet)	(A) AISLE WIDTH (Feet)	(W) MODULE WIDTH (Feet)
DIMENSIONS FOR 90-DEGREE PARKING							
CUSTOMER high turnover	RECOMMENDED MINIMUM	10 9.5	10 9.5	18 18	18 18	24 25	60 61
CUSTOMER AND EMPLOYEE low turnover	RECOMMENDED STANDARD MINIMUM	10 9.5 9	10 9.5 9	18 18 18	18 18 18	23 24 25	59 60 61
DIMENSIONS FOR 60-DEGREE PARKING							
APPLICATION		(S) STALL WIDTH (Feet)	(C) STALL LENGTH (Feet)	(D) STALL DEPTH (Feet)	(L) LINEAR DEPTH (Feet)	(A) AISLE WIDTH (Feet)	(W) MODULE WIDTH (Feet)
CUSTOMER high turnover	RECOMMENDED MINIMUM	10 9.5	11.5 11	15.6 15.6	18 18	22.8 23.8	54 55
CUSTOMER AND EMPLOYEE low turnover	RECOMMENDED STANDARD MINIMUM	10 9.5 9	11.5 11 10.4	15.6 15.6 15.6	18 18 18	20.8 21.8 22.8	52 53 54
DIMENSIONS FOR 45-DEGREE PARKING							
APPLICATION		(S) STALL WIDTH (Feet)	(C) STALL LENGTH (Feet)	(D) STALL DEPTH (Feet)	(L) LINEAR DEPTH (Feet)	(A) AISLE WIDTH (Feet)	(W) MODULE WIDTH (Feet)
CUSTOMER high turnover	RECOMMENDED MINIMUM	10 9.5	14.1 13.4	12.7 12.7	18 18	22.6 22.6	48 48
CUSTOMER AND EMPLOYEE low turnover	RECOMMENDED STANDARD MINIMUM	10 9.5 9	14.1 13.4 12.7	12.7 12.7 12.7	18 18 18	21.6 22.6 23.6	47 48 49

PROVIDE 4'-6" OF SPACING BETWEEN ABUTTING PARKING BAYS

NOTE: C=S FOR 90 DEGREE PARKING
D=L FOR 90 DEGREE PARKING
L=18 FT (FACE TO CURB)



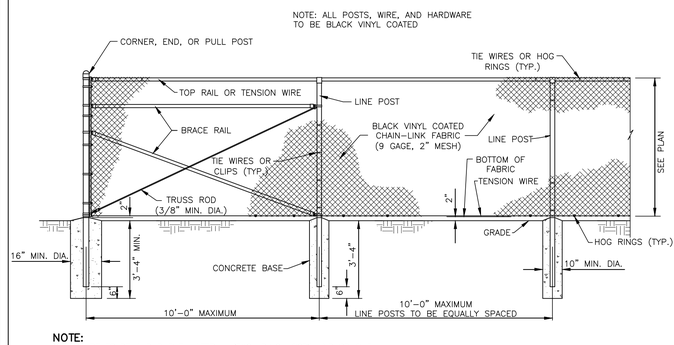
DRAWING NOT TO SCALE

PARKING LOT STALL DIMENSIONS

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS350

DATE: 2/8/10 | REVISIONS:



NOTE:
GATES ARE TO BE A DURABLE MATERIAL (EXCLUDING WOOD) AND OPAQUE

CHAIN-LINK FENCE (BLACK VINYL COATED) DETAIL

N.T.S.

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One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
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1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 ADAM C. PIKE

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	CAP22003-D1
CHECKED BY	ACP / MDS
DRAWN BY	MEM
SCALE	N.T.S.
DATE	03.07.25

SHEET

SITE DETAILS

C8.01

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PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

DUKE ENERGY. PROGRESS

Outdoor Lighting

Enterprise LED



Illuminate streetscapes and pedestrian areas with the Enterprise LED. This sleek, energy-efficient fixture will add modern appeal to any neighborhood or park.

LED *(Light Emitting Diode)*	50 watts
Mounting heights	12', 13', 16'
Color	Black
Poles	Smooth round concrete Fluted concrete Fiberglass Decorative aluminum

For additional information, visit us at
duke-energy.com/OutdoorLighting
or call us toll free at **866.769.6417**.

DUKE ENERGY. PROGRESS

Outdoor Lighting

Sanibel LED



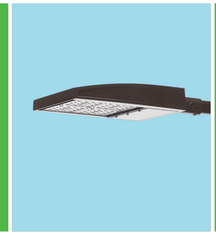
The beauty of the stylish Sanibel LED is its remarkable versatility. Its sleek simplicity, with a gently curved bracket that helps cast light downward, is at home virtually anywhere – from more formal traditional neighborhoods to beachfront communities and other casual locales.

LED *(Light Emitting Diode)*	75 watts, 150 watts
Mounting heights	12', 16', 29'
Color	Black
Pole	Smooth round concrete

For additional information, visit us at
duke-energy.com/OutdoorLighting
or call us toll free at **866.769.6417**.

Outdoor Lighting

Shoebox LED



The energy-efficient Shoebox LED combines a decorative, contemporary style with versatility and ample lighting effect that is perfect for streets, parking lots, commercial buildings and residential communities. The Shoebox LED provides excellent color rendition along with a controlled light pattern that reduces glare and keeps the light directed only where you want it. Available in black, dark bronze, gray or white with one to four fixtures per pole.

LED *(Light Emitting Diode)*	150, 220, 420, 530 watts
Mounting heights	25', 30', 35'
Colors	Black Bronze Gray White
Poles	Fiberglass *(1 or 2 fixtures per pole)* Decorative tapered metal Decorative square metal

Note: 35' pole available in black or bronze only.

For additional information, visit us at
duke-energy.com/OutdoorLighting
or call us toll free at **866.769.6417**.

DUKE ENERGY. PROGRESS

*BUILDING A **SMARTER** ENERGY FUTURE®*



Boulevard Screen wood planters are made with a robust FRP fiberglass liner to make a beautiful, long-lasting commercial grade wood planter. The planter integrates bracket pockets into the interior wall. Brackets mount to either a 3D trellis panel or laser-cut windscreen or privacy panel. Check with your salesperson for alternative shapes or sizes.

Boulevard Screen Wood Planters

Part. No.	Trellis Grid	Total Height to top of Screen	Exterior Size	Weight (lbs.)	Soil Volume (cubic ft.)	Matching Irrigation
BVX3-481824-78	3"	78"	48"L x 18"W x 24"H	143	10.5	CWM-R1620-2k
BVX6-481824-78	6"	78"	48"L x 18"W x 24"H	146	10.5	CWM-R1620-2k
BVX-481824-78	Use WXS screen	78"	48"L x 18"W x 24"H	129	10.5	CWM-R1620-2k
BVX3-482424-78	3"	78"	48"L x 24"W x 24"H	161	13	CWM-R1620-2k
BVX6-482424-78	6"	78"	48"L x 24"W x 24"H	164	13	CWM-R1620-2k
BVX-482424-78	Use WXS screen	78"	48"L x 24"W x 24"H	147	13	CWM-R1620-2k
BVX3-721824-78	3"	78"	72"L x 18"W x 24"H	190	15.5	CWM-R1620-3k
BVX6-721824-78	6"	78"	72"L x 18"W x 24"H	193	15.5	CWM-R1620-3k
BVX-721824-78	Use WXS screen	78"	72"L x 18"W x 24"H	169	15.5	CWM-R1620-3k
BVX3-722424-78	3"	78"	72"L x 24"W x 24"H	214	21.5	CWM-R1620-3k
BVX6-722424-78	6"	78"	72"L x 24"W x 24"H	217	21.5	CWM-R1620-3k
BVX-722424-78	Use WXS screen	78"	72"L x 24"W x 24"H	193	21.5	CWM-R1620-3k
BVX3-961824-78	3"	78"	96"L x 18"W x 24"H	242	21	CWM-R1620-4k
BVX6-961824-78	6"	78"	96"L x 18"W x 24"H	247	21	CWM-R1620-4k
BVX-961824-78	**Call for Information**	78"	96"L x 18"W x 24"H	214	21	CWM-R1620-4k
BVX3-962424-78	3"	78"	96"L x 24"W x 24"H	272	29	CWM-R1620-4k
BVX6-962424-78	6"	78"	96"L x 24"W x 24"H	277	29	CWM-R1620-4k
BVX-962424-78	**Call for Information**	78"	96"L x 24"W x 24"H	241	29	CWM-R1620-4k
BVX3-481836-90	3"	90"	48"L x 18"W x 36"H	198	16	CWM-R1620-2k
BVX6-481836-90	6"	90"	48"L x 18"W x 36"H	201	16	CWM-R1620-2k
BVX-481836-90	Use WXS screen	90"	48"L x 18"W x 36"H	184	16	CWM-R1620-2k
BVX3-721836-90	3"	90"	72"L x 18"W x 36"H	265	24	CWM-R1620-3k
BVX6-721836-90	6"	90"	72"L x 18"W x 36"H	268	24	CWM-R1620-3k
BVX-721836-90	Use WXS screen	90"	72"L x 18"W x 36"H	244	24	CWM-R1620-3k
BVX3-961836-90	3"	90"	96"L x 18"W x 36"H	338	31.5	CWM-R1620-4k
BVX6-961836-90	6"	90"	96"L x 18"W x 36"H	343	31.5	CWM-R1620-4k
BVX-961836-90	**Call for Information**	90"	96"L x 18"W x 36"H	310	31.5	CWM-R1620-4k
WXS-4848	Patterns 2, 3, 4, 6, 7, 8		48"L x 48"W	30-40	Wind screen or privacy panel	
WXS-7248	Patterns 2, 3, 4, 6, 7, 8		72"L x 48"W	45-60	Wind screen or privacy panel	

Note: For BVX versions 96" long with privacy screen, they are not 2 panels; please call for options.

Tournesol SITEWORKS

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ORNAMENTAL ALUMINUM FENCE

Echelon Plus has taken the *quality and performance* of aluminum ornamental fencing to a higher level. The strength characteristics of the *reinforced rail and posts*, coupled with a *superior powder coat finish* make Echelon Plus the *most durable .75" ornamental picket product on the market.*

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DECORATIVE PEDESTRIAN CROSSING
*ALL PEDESTRIAN CROSSINGS SHALL BE STAMPED ASPHALT, RED, IN DIAGONAL HERRINGBONE PATTERN OR SIMILAR APPROVED BY OWNER AND THE TOWN OF HOLLY SPRINGS

Stamped Asphalt
Cable Stamping
Patterns

Pattern: Diagonal Herringbone
Item No: CSTA-HBD
Brick size: 9.75" x 4.75" (24.75 cm x 12.0 cm)
Cable size: .325" (.825 cm)

Pattern Paving Products
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1317 N MAIN
COMMERCIAL TRACT
DEVELOPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 ADAM C. PIKE — NOT FOR CONSTRUCTION

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PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	CAP22003-D1
CHECKED BY	ACP / MDS
DRAWN BY	MEM
SCALE	N.T.S.
DATE	03.07.25

SHEET

SITE DETAILS

C8.02

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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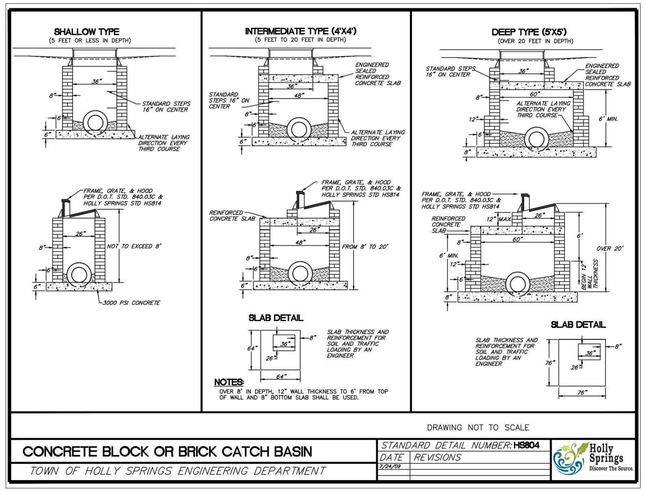

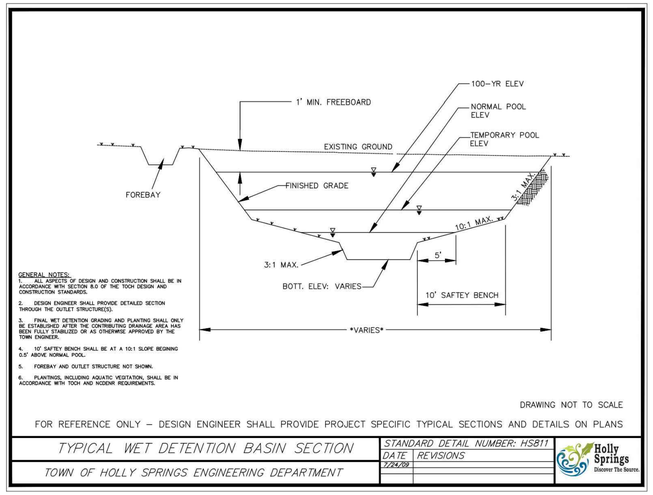

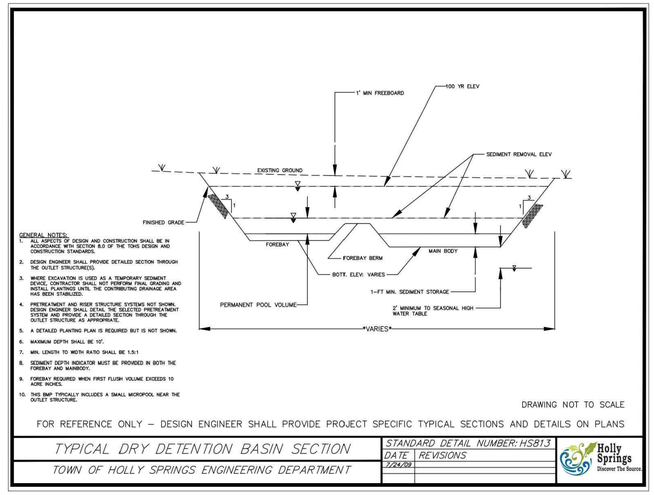

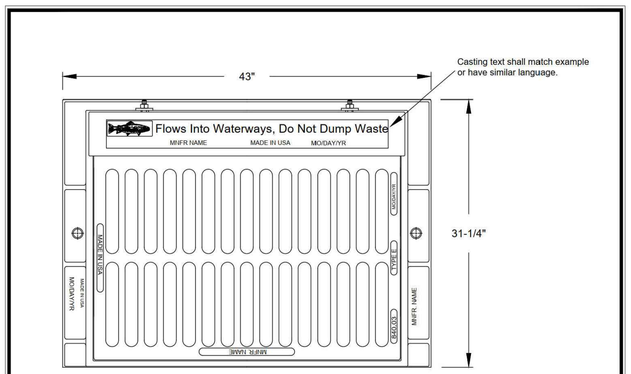

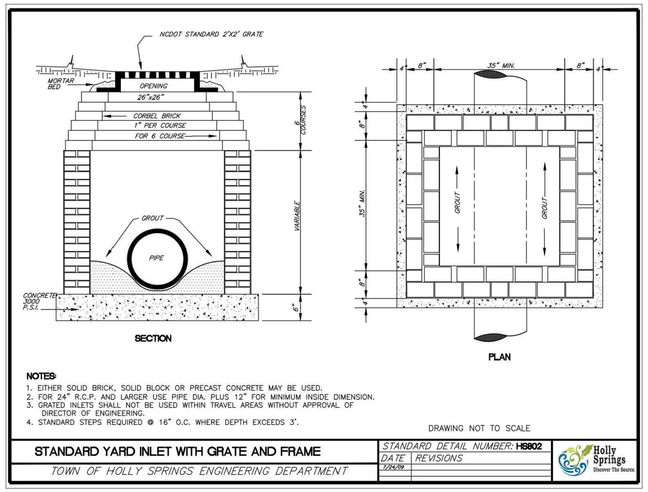

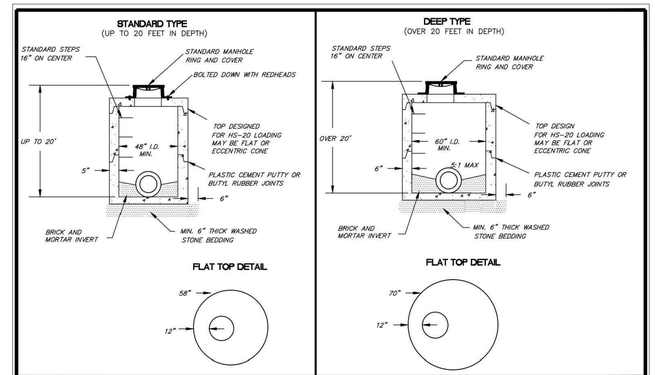

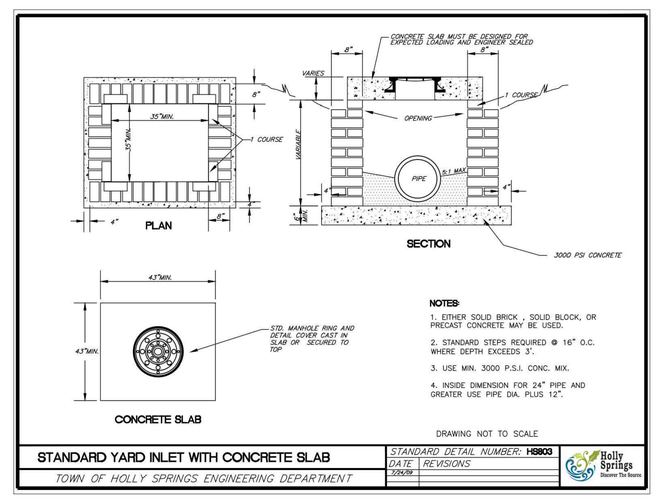

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1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 ADAM C. PIKE
PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

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1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	CAP22003-D1
CHECKED BY	ACP / MDS
DRAWN BY	CAW
SCALE	N.T.S.
DATE	03.07.25

SHEET

STORM DETAILS

C8.03

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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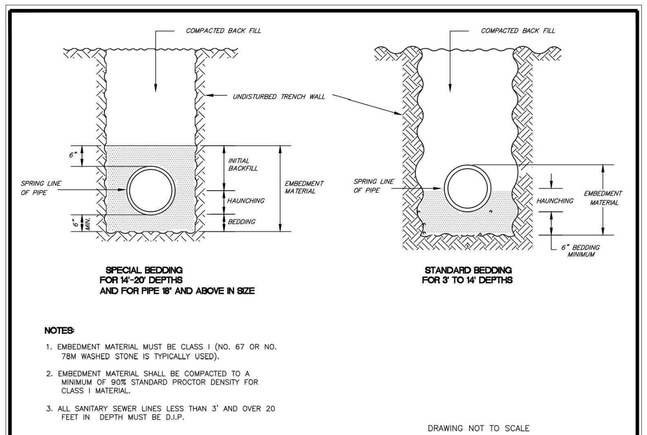


SPECIAL BEDDING FOR 14'-20' DEPTHS AND FOR PIPE 18" AND ABOVE IN SIZE

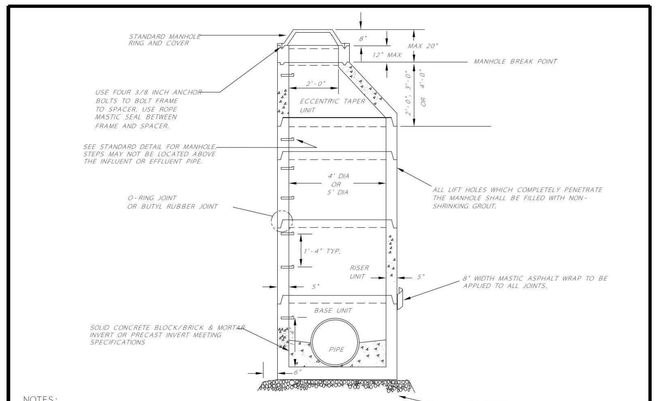
STANDARD BEDDING FOR 3' TO 14' DEPTHS

NOTES:

1. EMBEDMENT MATERIAL MUST BE CLASS I (NO. 67 OR NO. 78M WASHED STONE IS TYPICALLY USED).
2. EMBEDMENT MATERIAL SHALL BE COMPACTED TO A MINIMUM OF 90% STANDARD PROCTOR DENSITY FOR CLASS I MATERIAL.
3. ALL SANITARY SEWER LINES LESS THAN 3' AND OVER 20 FEET IN DEPTH MUST BE D.I.P.

DRAWING NOT TO SCALE

BEDDING FOR FLEXIBLE AND SEMI-RIGID SANITARY SEWER PIPE	STANDARD DETAIL NUMBER: HS703
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS: 1/24/19

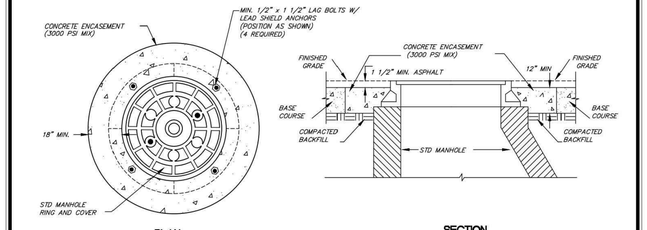


NOTES:

1. ANY MANHOLE OVER 20' IN DEPTH SHALL BE 5' IN DIAMETER.
2. NO FLAT TOPS ALLOWED.

DRAWING NOT TO SCALE

STANDARD PRECAST CONCRETE MANHOLE	STANDARD DETAIL NUMBER: HS706
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS

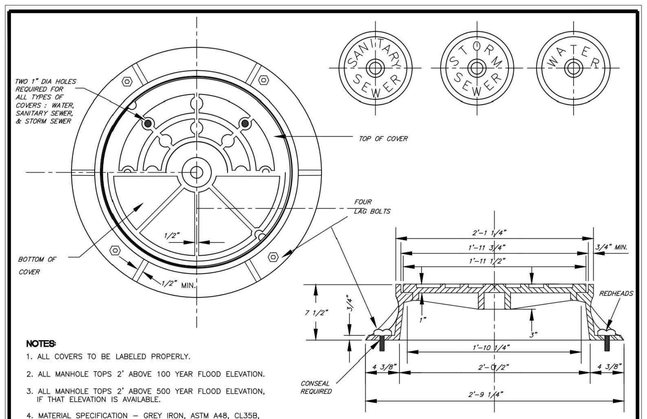


NOTES:

1. ALL MANHOLE COVERS TO HAVE 2 HOLES ONLY.
2. USE SOLID LID ON ALL MANHOLES LOCATED IN LOW AREAS OF ROAD PROFILE.
3. MANHOLE RING TO BE BOLTED AS SHOWN W/ROPE MASTIC SEAL BETWEEN FRAME AND SPACER.
4. DOMESTIC MADE IN USA AND MEET H2O LOADING NCDOT NO 840.54.

DRAWING NOT TO SCALE

STANDARD MANHOLE RING AND COVER ENCASEMENT FOR MANHOLES LOCATED IN PAVED AREAS	STANDARD DETAIL NUMBER: HS710
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS: 1/24/19

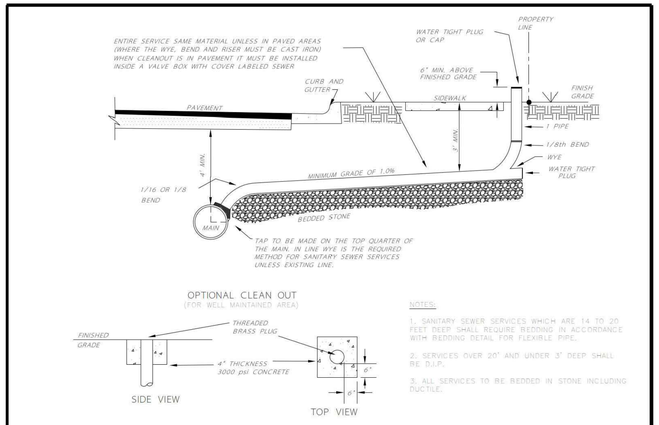


NOTES:

1. ALL COVERS TO BE LABELED PROPERLY.
2. ALL MANHOLE TOPS 2' ABOVE 100 YEAR FLOOD ELEVATION.
3. ALL MANHOLE TOPS 2' ABOVE 500 YEAR FLOOD ELEVATION, IF THAT ELEVATION IS AVAILABLE.
4. MATERIAL SPECIFICATION – GREY IRON, ASTM A48, CL35B, MADE IN USA.

DRAWING NOT TO SCALE

STANDARD MANHOLE RING AND COVER FOR OUTSIDE OF PAVEMENT	STANDARD DETAIL NUMBER: HS711
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS: 1/24/19

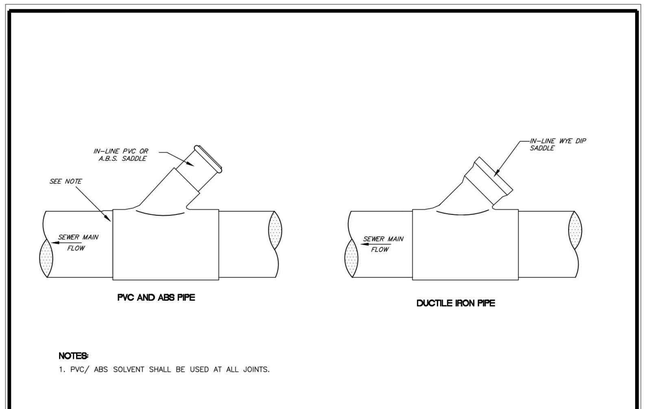


NOTES:

1. SANITARY SEWER SERVICES WHICH ARE 14 TO 20 FEET DEEP SHALL REQUIRE BEDDING IN ACCORDANCE WITH BEDDING DETAIL FOR FLEXIBLE PIPE.
2. SERVICES OVER 20' AND UNDER 3' DEEP SHALL BE D.I.P.
3. ALL SERVICES TO BE BEDDED IN STONE INCLUDING DUCTILE.

DRAWING NOT TO SCALE

STANDARD SANITARY SEWER TAP AND SERVICE	STANDARD DETAIL NUMBER: HS715
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS: 1/24/19

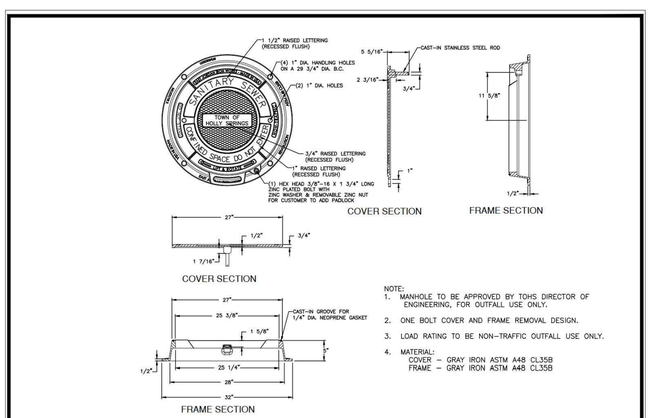


NOTES:

1. PVC/ ABS SOLVENT SHALL BE USED AT ALL JOINTS.

DRAWING NOT TO SCALE

STANDARD SANITARY SEWER LATERAL CONNECTIONS FOR NEW LINES	STANDARD DETAIL NUMBER: HS716
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS: 1/24/19

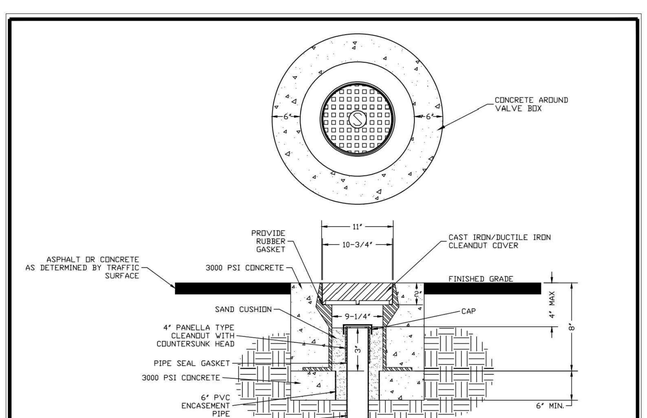


NOTE:

1. MANHOLE TO BE APPROVED BY TOHS DIRECTOR OF ENGINEERING, FOR OUTFALL USE ONLY.
2. ONE BOLT COVER AND FRAME REMOVAL DESIGN.
3. LOAD RATING TO BE NON-TRAFFIC OUTFALL USE ONLY.
4. MATERIAL:
   COVER – GRAY IRON ASTM A48 CL35B
   FRAME – GRAY IRON ASTM A48 CL35B

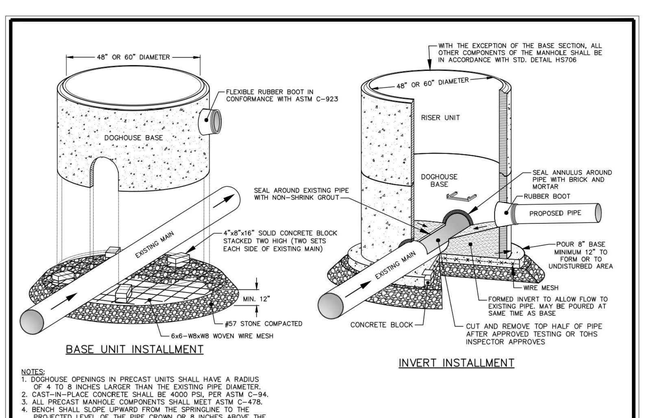
DRAWING NOT TO SCALE

MANHOLE COVER & FRAME FOR OUTFALLS	STANDARD DETAIL NUMBER: HS722
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS: 1/24/19



DRAWING NOT TO SCALE

SEWER MINI-MANHOLE CLEANOUT COVER ASSEMBLY FOR TRAFFIC AREA	STANDARD DETAIL NUMBER: HS723
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS: 1/24/19



NOTES:

1. DOGHOUSE OPENINGS IN PRECAST UNITS SHALL HAVE A RADIUS OF 4 TO 8 INCHES LARGER THAN THE EXISTING PIPE DIAMETER.
2. CAST-IN-PLACE CONCRETE SHALL BE 4000 PSI, PER ASTM C-94.
3. ALL PRECAST MANHOLE COMPONENTS SHALL MEET ASTM C-478.
4. BENCH SHALL SLOPE UPWARD FROM THE SPRINGLINE TO THE PROJECTED LEVEL OF THE PIPE CROWN OR 8 INCHES ABOVE THE SPRINGLINE, WHICHEVER IS LESS.

DRAWING NOT TO SCALE

STANDARD PRECAST CONCRETE DOGHOUSE MANHOLE	STANDARD DETAIL NUMBER: HS728
TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT	DATE / REVISIONS: 1/25/19

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT

CAPITAL ASSOCIATES
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PIKE
NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	CAP22003-D1
CHECKED BY	ACP / MDS
DRAWN BY	CAW
SCALE	N.T.S.
DATE	03.07.25

SHEET

SEWER DETAILS

C8.04

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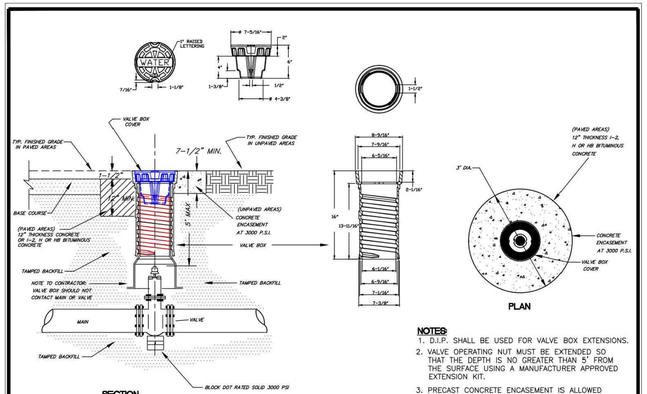


NOTES:

1. D.I.P. SHALL BE USED FOR VALVE BOX EXTENSIONS.
2. VALVE OPERATING NUT MUST BE EXTENDED SO THAT THE DEPTH IS NO GREATER THAN 5' FROM THE SURFACE USING A MANUFACTURER APPROVED EXTENSION KIT.
3. PRECAST CONCRETE ENCASEMENT IS ALLOWED OUTSIDE OF PAVED AREAS.
4. DOMESTIC MADE IN USA.

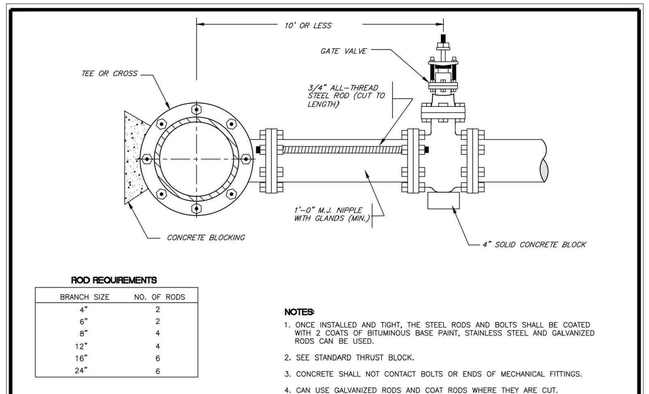
DRAWING NOT TO SCALE

STANDARD VALVE BOX INSTALLATION

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: **HS601**

DATE	REVISIONS
8/4/17	



ROD REQUIREMENTS

BRANCH SIZE	NO. OF RODS
4"	2
6"	2
8"	4
12"	4
16"	6
24"	6

NOTES:

1. ONCE INSTALLED AND TIGHT, THE STEEL RODS AND BOLTS SHALL BE COATED WITH 2 COATS OF BITUMINOUS BASE PAINT, STAINLESS STEEL AND GALVANIZED RODS CAN BE USED.
2. SEE STANDARD THRUST BLOCK.
3. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
4. CAN USE GALVANIZED RODS AND COAT RODS WHERE THEY ARE CUT.

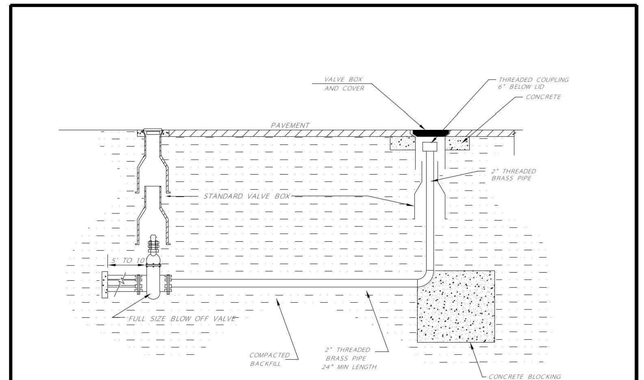
DRAWING NOT TO SCALE

STANDARD VALVE RODDING

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: **HS603**

DATE	REVISIONS
7/24/09	



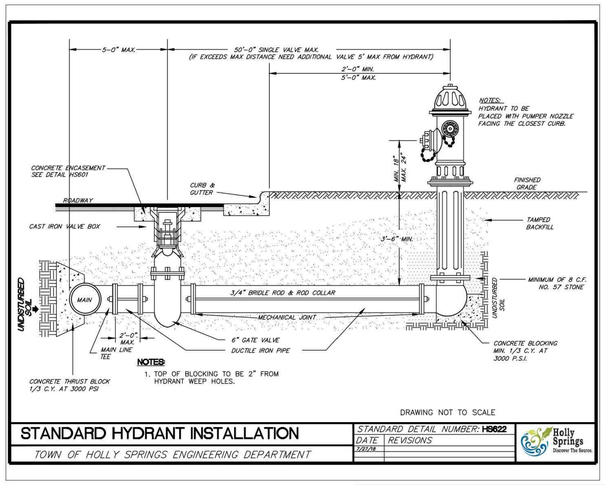
DRAWING NOT TO SCALE

TEMPORARY BLOW-OFF ASSEMBLY

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS605

DATE	REVISIONS
7/24/09	



NOTES:

1. TOP OF BLOCKING TO BE 2" FROM HYDRANT WEEP HOLES.

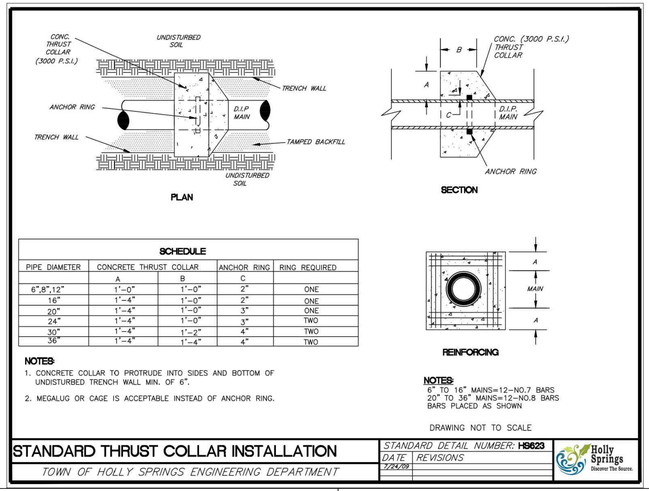
DRAWING NOT TO SCALE

STANDARD HYDRANT INSTALLATION

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: **HS622**

DATE	REVISIONS
7/28/16	



SCHEDULE

PIPE DIAMETER	CONCRETE THRUST COLLAR A	B	ANCHOR RING C	RING REQUIRED
6",8",12"	1'-0"	1'-0"	2"	ONE
16"	1'-4"	1'-0"	2"	ONE
20"	1'-4"	1'-0"	3"	ONE
24"	1'-4"	1'-0"	3"	TWO
30"	1'-4"	1'-2"	4"	TWO
36"	1'-4"	1'-4"	4"	TWO

NOTES:

1. CONCRETE COLLAR TO PROTRUDE INTO SIDES AND BOTTOM OF UNDISTURBED TRENCH WALL MIN. OF 6".
2. MEGALUG OR CAGE IS ACCEPTABLE INSTEAD OF ANCHOR RING.

NOTES:

6" TO 16" MAINS=12-NO.7 BARS
20" TO 36" MAINS=12-NO.8 BARS
BARS PLACED AS SHOWN

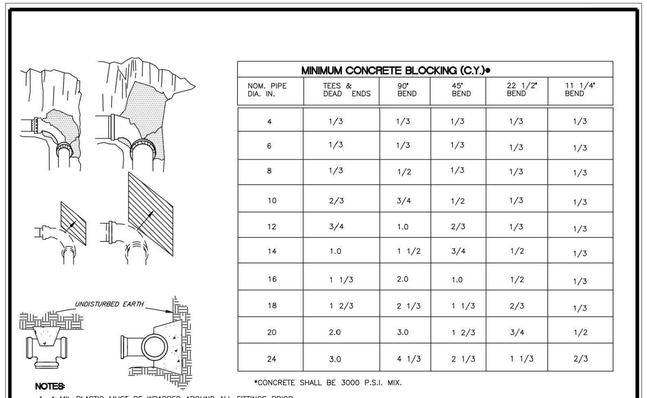
DRAWING NOT TO SCALE

STANDARD THRUST COLLAR INSTALLATION

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: **HS623**

DATE	REVISIONS
7/24/09	



NOTES:

1. 4 MIL PLASTIC MUST BE WRAPPED AROUND ALL FITTINGS PRIOR TO POURING CONCRETE.
2. NO CONCRETE SHALL COVER BOLTS OR GLANDS.

MINIMUM CONCRETE BLOCKING (C.Y.)*

NOM. PIPE DIA. IN.	TEES & DEAD ENDS	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4	1/3	1/3	1/3	1/3	1/3
6	1/3	1/3	1/3	1/3	1/3
8	1/3	1/2	1/3	1/3	1/3
10	2/3	3/4	1/2	1/3	1/3
12	3/4	1.0	2/3	1/3	1/3
14	1.0	1 1/2	3/4	1/2	1/3
16	1 1/3	2.0	1.0	1/2	1/3
18	1 2/3	2 1/3	1 1/3	2/3	1/3
20	2.0	3.0	1 2/3	3/4	1/2
24	3.0	4 1/3	2 1/3	1 1/3	2/3

*CONCRETE SHALL BE 3000 P.S.I. MIX.

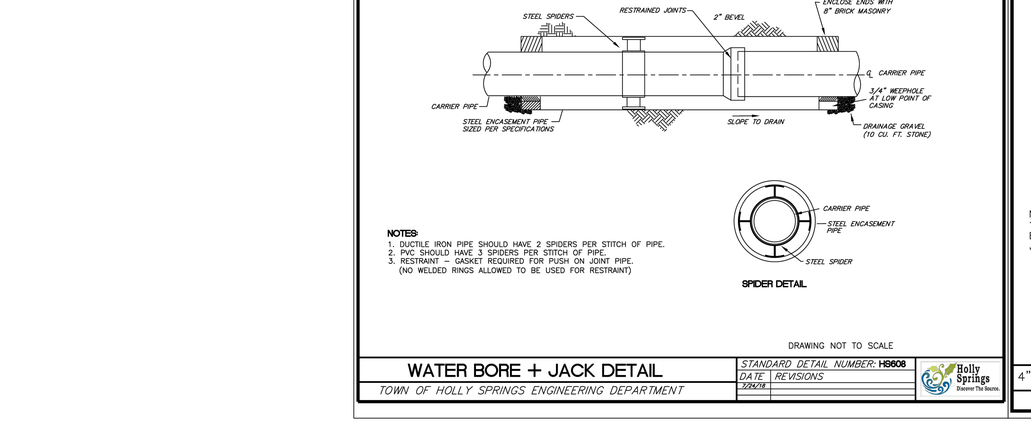
DRAWING NOT TO SCALE

STANDARD REACTION BLOCKING

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: **HS624**

DATE	REVISIONS
7/24/09	



NOTES:

1. DUCTILE IRON PIPE SHOULD HAVE 2 SPIDERS PER STITCH OF PIPE.
2. PVC SHOULD HAVE 3 SPIDERS PER STITCH OF PIPE.
3. RESTRAINT – GASKET REQUIRED FOR PUSH ON JOINT PIPE. (NO WELDED RINGS ALLOWED TO BE USED FOR RESTRAINT)

SPIDER DETAIL

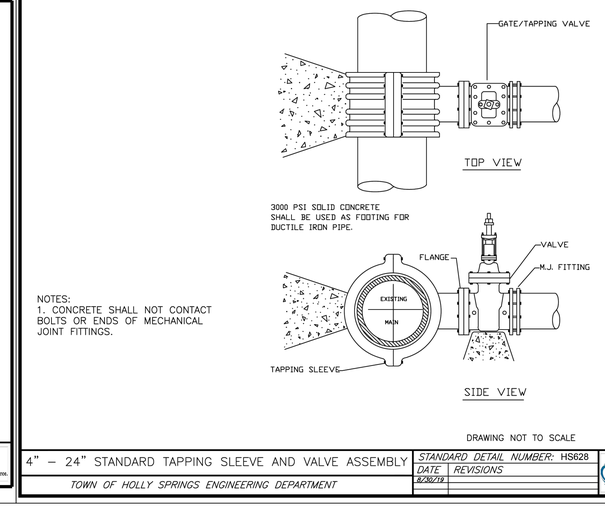
DRAWING NOT TO SCALE

WATER BORE + JACK DETAIL

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: **HS608**

DATE	REVISIONS
7/24/18	



NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.

DRAWING NOT TO SCALE

4" – 24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS628

DATE	REVISIONS
8/28/19	

McADAMS
The John R. McAdams Company, Inc.
One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT

CAPITAL ASSOCIATES
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELOPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL SEAL 036231 ENGINEER ADAM C. PIKE

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
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PLAN INFORMATION

PROJECT NO.	CAP-22003
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SCALE	N.T.S.
DATE	03.07.25

SHEET

WATER DETAILS

C8.05

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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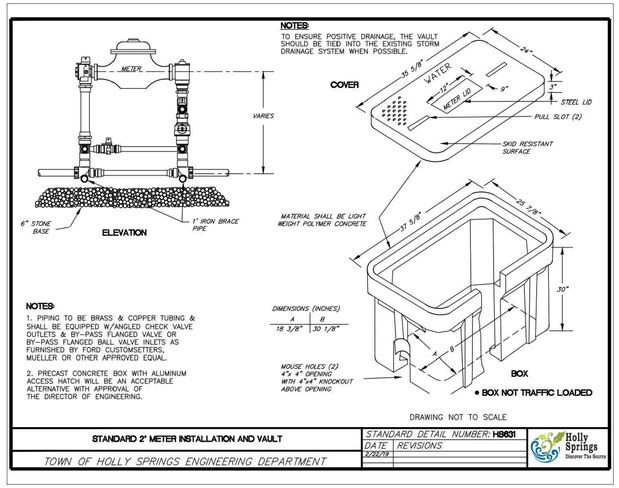
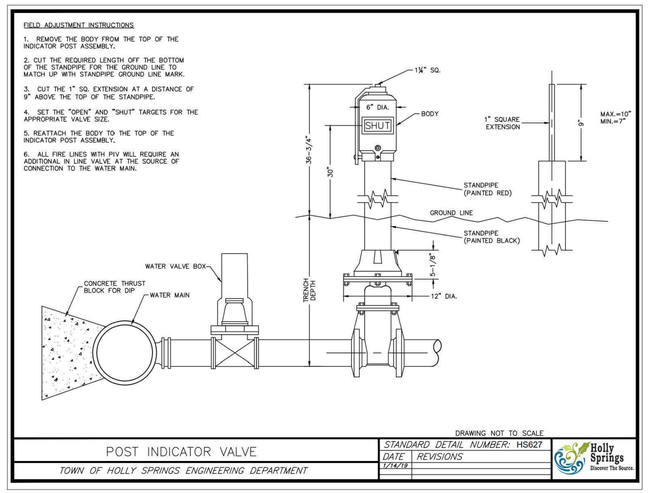


STANDARD 2" METER INSTALLATION AND VAULT

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS631

DATE	REVISIONS
2/28/19	

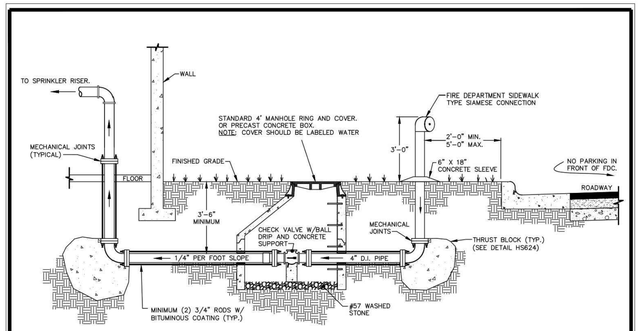


POST INDICATOR VALVE

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS627

DATE	REVISIONS
1/24/19	

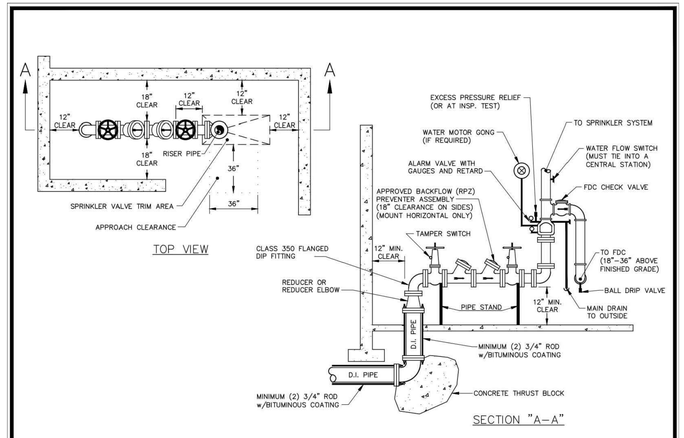


STANDARD DETACHED FDC CONNECTION

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS625

DATE	REVISIONS
5/8/19	

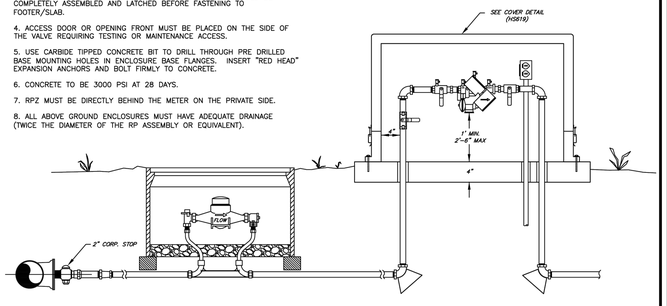


STANDARD SPRINKLER RISER

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS626

DATE	REVISIONS
1/24/19	

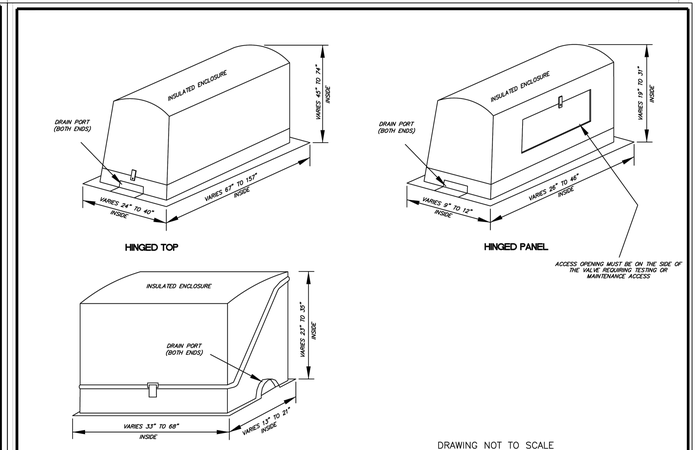


RPZ INSTALLATION FOR COMMERCIAL IRRIGATION METERS

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS618

DATE	REVISIONS
7/24/19	



OUTDOOR RPZ SERVICES COVER

TOWN OF HOLLY SPRINGS ENGINEERING DEPARTMENT

STANDARD DETAIL NUMBER: HS619

DATE	REVISIONS
8/30/19	

McAdams
The John R. McAdams Company, Inc.
One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT

CAPITAL ASSOCIATES
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET

HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 ADAM C. PIKE

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
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PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	CAP22003-D1
CHECKED BY	ACP / MDS
DRAWN BY	CAW
SCALE	N.T.S.
DATE	03.07.25

SHEET

WATER DETAILS

C8.06

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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STORMWATER CONTROL MEASURE 'D' CONSTRUCTION SPECIFICATIONS

GENERAL NOTES

1. PRIOR TO CONSTRUCTION, ANY DISCREPANCIES IN THE PLANS AND NOTES SHALL BE BROUGHT TO THE DESIGN ENGINEER'S ATTENTION IMMEDIATELY.
2. THE PROJECT WILL MEET ALL OF THE REQUIREMENTS RELATIVE TO ENGINEERED STORMWATER CONTROL STRUCTURES AS OUTLINED IN THE TOWN OF HOLLY SPRINGS CODE OF ORDINANCES. (SECTION 8.00)
3. THE FINAL CERTIFICATION FOR THIS FACILITY WILL INCLUDE A CERTIFICATION BY THE ON-SITE GEOTECHNICAL ENGINEER THAT THE PROJECT WAS CONSTRUCTED PER THE APPROVED PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE ON-SITE GEOTECHNICAL ENGINEER FOR OBSERVATION AND TESTING SUCH THAT THE ON-SITE GEOTECHNICAL ENGINEER CAN CERTIFY THE CONSTRUCTION OF THE DAM EMBANKMENT AND SPILLWAY. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY.
4. ALL CONSTRUCTION ACTIVITY RELATED TO THE PROPOSED STORMWATER CONTROL MEASURE SHALL BE PER THE DETAILS AND SPECIFICATIONS SHOWN IN THESE DRAWINGS. SOILS, COMPACTION, AND OTHER MISCELLANEOUS DETAILS AND SPECIFICATIONS MAY BE MODIFIED PER THE RECOMMENDATIONS OF THE ON-SITE GEOTECHNICAL ENGINEER. HOWEVER, PRIOR TO IMPLEMENTATION, THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DEVIATION FROM THESE DESIGN DRAWINGS, INCLUDING SHOP DRAWINGS FOR ANY PROPOSED MODIFICATION.
5. DURING THE INITIAL STAGES OF CONSTRUCTION, THE STORMWATER CONTROL MEASURE MAY BE USED AS A SEDIMENT BASIN FOR EROSION CONTROL PURPOSES. IF SO, THE CONTRACTOR SHALL FOLLOW THE GENERAL CONSTRUCTION SEQUENCE BELOW:
   A. THE CONTRACTOR SHALL CONSTRUCT THE ENTIRE FACILITY (PERMANENT OUTLET STRUCTURE, DAM, ETC.) WITH THE EXCEPTION OF THE INTERIOR FINE GRADING FOR THE FACILITY. THE INTERIOR FINE GRADING WILL BE CONSTRUCTED ONCE THE EROSION CONTROL PHASE IS COMPLETE.
   B. THE TEMPORARY DRAW DOWN RISER (OR SKIMMER) SHALL BE CONNECTED TO THE PERMANENT 2"Ø DIP DRAIN PIPE.
   C. ONCE THE UPSTREAM DRAINAGE AREA IS STABILIZED AND THE EROSION CONTROL INSPECTOR APPROVES THE REMOVAL OF THE SEDIMENT BASIN, THE CONTRACTOR SHALL REMOVE THE TEMPORARY DRAW DOWN RISER (OR SKIMMER) AND CLEAN OUT THE BASIN. ALL SEDIMENT, TRASH, ETC. SHALL BE DISPOSED OF PROPERLY (I.E. - PLACED IN A LANDFILL) AND NOT STOCKPILED IN AN AREA WHERE WATER QUALITY COULD BE ADVERSELY AFFECTED.
   D. ONCE THE BASIN IS CLEANED OUT, AND ALL EROSION CONTROL DEVICES REMOVED, THE CONTRACTOR SHALL CONSTRUCT THE INTERIOR GRADING SHOWN ON THIS SHEET.
   E. ONCE THE GRADING IS COMPLETE, THE CONTRACTOR SHALL REQUEST AN ON-SITE INSPECTION AND AN AS-BUILT SURVEY PRIOR TO INSTALLATION OF THE STORMWATER CONTROL MEASURE PLANTS. IF THE CONTRACTOR PLANTS THE PROPOSED VEGETATION PRIOR TO AN AS-BUILT SURVEY (AND SUBSEQUENT APPROVAL), ANY CHANGES TO THE GRADING / RE-PLANTING OF PLANTS WILL BE AT THE CONTRACTOR'S EXPENSE.
   F. ONCE THE ENGINEER HAS APPROVED THE AS-BUILT GRADING, THE CONTRACTOR SHALL PLANT THE PROPOSED STORMWATER CONTROL MEASURE PLANTS SHOWN ON THE LANDSCAPE PLAN FOR THE FACILITY. AFTER COMPLETION OF THE PLANTING, THE LANDSCAPE CONTRACTOR SHALL PROVIDE A LETTER TO THE ENGINEER CERTIFYING THAT THE PLANTS HAVE BEEN INSTALLED PER THE APPROVED STORMWATER CONTROL MEASURE PLANTING PLAN.
6. ALL OSHA REQUIREMENTS FOR EXCAVATIONS (SHORING, DEPTH, ETC.) ARE THE RESPONSIBILITY OF THE CONTRACTOR. IF REQUIRED, THE CONTRACTOR SHALL PROVIDE AN EXCAVATION PLAN TO BE SEALED BY A NC P.E. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE IF AN EXCAVATION PLAN IS REQUIRED. THE JOHN R. McADAMS COMPANY ASSUMES NO RESPONSIBILITY FOR ANY EXCAVATION DESIGN RELATED TO SAFETY OR OSHA REQUIREMENTS.
7. ON-SITE GEOTECHNICAL ENGINEER TO DETERMINE IF IN-SITU SOILS ENCOUNTERED WOULD MAINTAIN A STORMWATER CONTROL MEASURE PERMANENT POOL AT DESIGN ELEVATION. IF HIGHLY PERMEABLE SOILS ARE ENCOUNTERED THAT WOULD NOT MAINTAIN THE PERMANENT POOL ELEVATION AS DESIGNED, A CLAY LINER MAY BE REQUIRED TO MAINTAIN A PERMANENT POOL OF WATER IN THE STORMWATER CONTROL MEASURE. FINAL DETERMINATION IF A CLAY LINER IS NEEDED SHALL BE THE RESPONSIBILITY OF THE ON-SITE GEOTECHNICAL ENGINEER. UPON DETERMINATION OF HIGHLY PERMEABLE SOIL CONDITIONS, ON-SITE GEOTECHNICAL ENGINEER WILL INFORM THE DESIGN ENGINEER AND RECOMMEND LINER SPECIFICATIONS.
8. IT IS ANTICIPATED THAT DEWATERING WILL BE NECESSARY IN THE EXCAVATION AREAS (E.G. - EMBANKMENT SUB GRADE, INTERIOR PORTIONS OF THE STORMWATER CONTROL MEASURE, KEY TRENCH, ETC.). THEREFORE, THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN ANY PUMPING EQUIPMENT, ETC. NEEDED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE STORMWATER CONTROL MEASURE SITE. DURING PLACEMENT OF FILL WITHIN THESE AREAS, THE CONTRACTOR SHALL KEEP THE WATER LEVEL BELOW THE BOTTOM OF THE EXCAVATION / CONSTRUCTION AREAS. THE MANNER IN WHICH THE WATER IS REMOVED SHALL BE SUCH THAT THE EXCAVATION BOTTOM AND SIDE SLOPES ARE STABLE, WITH NO SEDIMENT DISCHARGED FROM THE SITE (I.E. PUMPED WATER MAY NEED TO BE DIRECTED TO AN APPROVED EROSION CONTROL DEVICE SUCH AS A DIRT BAG (ACF ENVIRONMENTAL), OR ENGINEER APPROVED EQUIVALENT, PRIOR TO DISCHARGE).
9. THE RETAINING WALL ALIGNMENT SHOWN ON THESE PLANS DEPICTS THE LOCATION OF THE FRONT FACE OF THE RETAINING WALL AT THE BOTTOM.
10. THE RETAINING WALL IS TO BE A DESIGN-BUILD PROJECT(S) BY THE CONTRACTOR. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN FINAL CONSTRUCTION DRAWINGS FROM A REGISTERED PROFESSIONAL ENGINEER AND GAIN ALL REQUIRED PERMITS NECESSARY FOR THE CONSTRUCTION OF THE RETAINING WALL.
11. THE RETAINING WALL SHALL BE ASSUMED TO BE BACKFILLED WITH OFF-SITE BORROW MATERIAL OR PROCESSED FILL UNLESS CONTRACTOR CAN PROVIDE OWNER WITH CONFIRMATION FROM THE GEOTECHNICAL ENGINEER AND THE RETAINING WALL DESIGNER THAT READILY AVAILABLE ON-SITE SOILS CAN BE USED.
12. THE TOP AND BOTTOM OF WALL ELEVATIONS SHOWN ON THESE PLANS IDENTIFY FINISHED GRADE ELEVATIONS ONLY. THE EXTENT THAT THE RETAINING WALL WILL BE EXTENDED BELOW GRADE TO THE FOOTING SHALL BE IDENTIFIED ON THE RETAINING WALL CONSTRUCTION DRAWINGS.
13. THE ON-SITE GEOTECHNICAL ENGINEER SHOULD BE GIVEN AN OPPORTUNITY TO REVIEW ALL RETAINING WALL PLANS AND DESIGNS RELEVANT TO GEOTECHNICAL CONSIDERATIONS PRIOR TO FINAL DESIGN OF THE WALLS.
14. PRIOR TO TOPSOIL INSTALLATION, THE CONTRACTOR SHALL SCARIFY THE TOP 2"-3" OF THE BERM SECTION TO PROMOTE BONDING OF THE TOPSOIL WITH THE COMPACTED FILL. THE TOPSOIL DEPTH SHALL RANGE FROM 3"-4" ON THE DAM EMBANKMENT AND AQUATIC SHELF. PLEASE NOTE THE TOPSOIL SHALL BE AMENDED, AS DIRECTED BY A LANDSCAPE PROFESSIONAL, PRIOR TO INSTALLATION ON THE EMBANKMENT AND AQUATIC SHELF.
15. THE CONTRACTOR SHALL REFER TO THE LANDSCAPE PLAN FOR THE PERMANENT PLANTING PLAN/SCHEDULE FOR THIS FACILITY. CONTRACTOR SHALL COORDINATE WITH A LANDSCAPE PROFESSIONAL REGARDING SCHEDULING FOR PLANT INSTALLATION. PLEASE NOTE THAT NO TREES/SHRUBS OF ANY TYPE MAY BE PLANTED ON THE PROPOSED DAM EMBANKMENT (FILL AREAS).

CONSTRUCTION SEQUENCE

1. PRIOR TO CONSTRUCTION, THE OWNER SHALL OBTAIN A LAND DISTURBING (GRADING) PERMIT AND AN "APPROVAL TO CONSTRUCT" FROM THE TOWN OF HOLLY SPRINGS AND ALL OTHER NECESSARY PERMITS FROM APPLICABLE AGENCIES (E.G. 404 / 401 PERMITS)
2. INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES PER THE APPROVED SEDIMENT AND EROSION CONTROL PLAN. THE CONTRACTOR SHALL MAINTAIN ALL APPROVED SEDIMENT AND EROSION CONTROL MEASURES THROUGHOUT THE ENTIRE PROJECT, AS REQUIRED. THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE EROSION CONTROL INSPECTOR, AS REQUIRED BY GOVERNING AGENCIES, PRIOR TO ANY CLEARING.
3. CLEAR AND GRUB AREA WITHIN THE LIMITS OF THE PROPOSED DAM CONSTRUCTION. ALL TREES AND THEIR ENTIRE ROOT SYSTEMS MUST BE REMOVED FROM THE DAM FOOTPRINT AREA AND BACKFILLED WITH SUITABLE SOIL MATERIAL. THE BACKFILLED AREAS SHALL BE COMPACTED TO THE SAME STANDARDS AS THE DAM EMBANKMENT. THE REMAINING AREA OF THE EMBANKMENT SHALL BE STRIPPED TO A SUITABLE DEPTH AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER. ANY RESIDUAL SOILS TO BE LEFT IN PLACE MUST BE WELL SCARIFIED TO PROMOTE BONDING OF THE NEW EMBANKMENT FILL. NO EMBANKMENT MATERIAL SHALL BE PLACED FOR THE DAM OR KEY TRENCH UNTIL APPROVAL OF THE DAM SUBGRADE IS OBTAINED FROM THE ON-SITE GEOTECHNICAL ENGINEER.
4. EXCAVATE FOR THE NEW KEY TRENCH ALONG THE CENTERLINE OF THE PROPOSED DAM EMBANKMENT. THE TRENCH SHALL EXTEND A MINIMUM OF 5 FT BELOW EXISTING GRADE OR 2 FT BELOW THE 24"Ø RCP OUTLET BARREL AND SHALL HAVE A MINIMUM BOTTOM WIDTH OF 5 FEET. THE KEY TRENCH SIDESLOPES SHALL BE A MINIMUM OF 1:1 (H:V). WHEN EXCAVATING THE KEY TRENCH, IF ANY DEBRIS IS ENCOUNTERED TO AN EXTENT THAT SUCH DEBRIS MAY EXIST IN OTHER INSITU PORTIONS OF THE DAM EMBANKMENT, IT SHOULD ALSO BE REMOVED. THE KEY TRENCH SHALL BE COMPACTED TO THE SAME SPECIFICATION LISTED IN ITEM 4 OF THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS." DEPENDING UPON ON-SITE SOIL CONDITIONS ENCOUNTERED DURING EXCAVATION, THE ON-SITE GEOTECHNICAL ENGINEER MAY VARY THE DEPTH AND DIMENSIONS OF THE KEY TRENCH AS DEEMED NECESSARY. THE ON-SITE GEOTECHNICAL ENGINEER SHALL RETAIN DOCUMENTATION OF ANY VARIATION FOR FUTURE AS-BUILT SUBMITTALS TO THE TOWN OF HOLLY SPRINGS.
5. BEGIN PLACEMENT OF BACKFILL WITHIN THE KEY TRENCH. THE KEY TRENCH SHALL BE COMPACTED TO THE SPECIFICATIONS LISTED ITEM 4 OF THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS." THE KEY TRENCH SHALL BE TESTED PER THE SPECIFICATIONS LISTED IN THAT SECTION.
6. PRIOR TO INSTALLATION, SUBGRADE CONDITIONS ALONG THE SPILLWAY PIPES SHOULD BE EVALUATED BY THE ON-SITE GEOTECHNICAL ENGINEER TO ASSESS WHETHER SUITABLE BEARING CONDITIONS EXIST AT THE SUBGRADE LEVEL. SHOULD SOFT OR OTHERWISE UNSUITABLE CONDITIONS BE ENCOUNTERED ALONG THE PIPE ALIGNMENTS, THESE MATERIALS SHOULD BE UNDERCUT AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE UNDERCUT MATERIALS SHALL BE REPLACED WITH ADEQUATELY COMPACTED STRUCTURAL FILL, LEAN CONCRETE OR FLOWABLE FILL AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.
7. IN ORDER TO HELP PROTECT THE SOIL SUBGRADE FROM DETERIORATION (DUE TO EXPOSURE, RAINFALL, SEEPAGE, AND RUNOFF) BEFORE THE CRADLE CAN BE POURED, IT IS STRONGLY RECOMMENDED THAT A 3" TO 4" THICK CONCRETE MUD MAT BE POURED OVER THE SUBGRADE ONCE IT IS APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER. THE MUD MAT WILL ALSO PROVIDE BEARING FOR THE BLOCKS THAT TEMPORARILY SUPPORT THE SPILLWAY PIPE UNTIL THE CRADLE CAN BE POURED. THE METHOD OF BLOCK SUPPORT FOR THE PIPE PROPOSED BY THE CONTRACTOR SHOULD BE SUBMITTED TO THE JOHN R. McADAMS COMPANY FOR REVIEW.
8. BEGIN CONSTRUCTION OF THE NEW EMBANKMENT. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8" THICK LIFTS PRIOR TO COMPACTION, UNLESS DIRECTED OTHERWISE BY THE ON-SITE GEOTECHNICAL ENGINEER. FILL LIFTS SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH OF FILL. IF IT IS NECESSARY, THE EMBANKMENT FILL MATERIAL WILL BE OVERBUILT IN HORIZONTAL LIFTS AND CUT BACK TO FINAL GRADE IN ORDER TO ACHIEVE PROPER COMPACTION.
9. AS CONSTRUCTION OF THE EMBANKMENT MOVES FORWARD, IT WILL BE NECESSARY TO INSTALL THE CONCRETE CRADLE. SEE NOTE ON CRADLE DETAIL (SHEET C9.XX). THIS MAY BE CONSTRUCTED USING ONE OF THE FOLLOWING METHODS:
   A. IF THE PROPOSED STRUCTURAL FILL MATERIAL IS UTILIZED AS THE FORMWORK FOR THE CONCRETE CRADLE, THEN THE STRUCTURAL FILL SHOULD BE INSTALLED AND COMPACTED UP TO THE TOP OF CONCRETE CRADLE ELEVATION. ONCE THE STRUCTURAL FILL REACHES THE NEXT DOWNSTREAM JUNCTION BOX OR HEADWALL AND IS COMPACTED TO THE ELEVATION OF THE TOP OF THE CONCRETE CRADLE, EXCAVATE THE CONCRETE CRADLE TRENCH PER THE PROVIDED DETAILS AND CONSTRUCT THE CONCRETE CRADLE AS PER THE PROVIDED CONCRETE CRADLE DETAIL.
   B. IF THE PROPOSED STRUCTURAL FILL IS NOT UTILIZED AS THE FORMWORK FOR THE CONCRETE CRADLE, THEN PRIOR TO CONSTRUCTING THE STRUCTURAL FILL EMBANKMENT, THE FORMWORK FOR THE CONCRETE CRADLE SHOULD BE INSTALLED ON EXISTING GROUND AND/OR THE MUD MAT. THE CONCRETE CRADLE SHALL BE CONSTRUCTED PER THE PROVIDED DETAILS
10. AS AN ALTERNATE TO A CONCRETE CRADLE UNDER THE BARREL PIPE (SEE SHEET C9.XX), THE CONTRACTOR MAY CHOOSE TO ELIMINATE THE CONCRETE CRADLE AND USE COMPACTED BACKFILL IF THE ON-SITE GEOTECHNICAL ENGINEER WILL PROVIDE A NC PE SEALED LETTER CERTIFYING THAT THE COMPACTION UNDER, AROUND, AND ABOVE THE BARREL MEETS THE SPECIFICATIONS OF THE EMBANKMENT COMPACTION REQUIREMENTS AND MOISTURE CONTENT. THIS CERTIFICATION LETTER MUST BE SUBMITTED TO THE DESIGN ENGINEER PRIOR TO BACKFILL. THIS SEPARATE CERTIFICATION MUST BE SPECIFIC TO THE BARREL PIPE FOR THE FACILITY, AND MUST CLEARLY STATE THAT ALL SOIL MATERIAL UNDER, AROUND, AND ABOVE THE BARREL PIPE MEETS THE BERM AND SOIL COMPACTION SPECIFICATIONS ON THIS SHEET. THIS CERTIFICATION IS TO INCLUDE REFERENCE TO BOTH MATERIAL AND COMPACTION, AND MUST STATE THAT ALL MATERIALS UNDER, AROUND, AND ABOVE THE BARREL HAVE BEEN COMPACTED PER THE BERM MATERIAL SPECIFICATIONS (AT LEAST 95% OF MAXIMUM DRY DENSITY USING ASTM D698 STANDARD PROCTOR) WITH NO VOID SPACES PRESENT. THE CONTRACTORS INTENT TO UTILIZE THIS ALTERNATIVE MUST BE STATED PRIOR TO CONSTRUCTION TAKING PLACE. THIS CONTRACTORS CERTIFICATION MUST BE PRESENTED TO THE DESIGN ENGINEER BEFORE AN AS-BUILT CERTIFICATION CAN BE ISSUED FOR THIS FACILITY.
11. INSTALL RISER / BARREL ASSEMBLY, ALONG WITH THE EMERGENCY DRAIN SYSTEM. INSTALL 24" RCP OUTLET BARREL SPILLWAY FILTER FROM THE DETAILS SHOWN ON C9.21.
12. CONSTRUCT EMBANKMENT PER SPECIFICATIONS LISTED IN THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS" AND REQUIREMENTS OF THE ON-SITE GEOTECHNICAL ENGINEER. ALL CHARACTERISTICS OF THE EMBANKMENT FILL MATERIAL SHALL MEET THE STANDARDS SET FORTH IN "BERM AND SOIL COMPACTION SPECIFICATIONS", INCLUDING COMPACTION AND MOISTURE REQUIREMENTS. IF NECESSARY TO ACHIEVE PROPER COMPACTION, THE EMBANKMENT FILL MATERIAL WILL BE OVERBUILT IN HORIZONTAL LIFTS AND CUT BACK TO PROPER FINAL GRADE. ANY HAND COMPACTION ACTIVITIES AROUND SPILLWAY OR DRAIN STRUCTURES SHALL BE CONDUCTED IN 4-INCH LOOSE LIFTS AND BE TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT. ALL COMPACTION AND MOISTURE TESTING SHALL BE CARRIED OUT AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER AND AS LISTED IN THE SECTION TITLED "BERM AND SOIL COMPACTION SPECIFICATIONS".
13. UPON COMPLETION OF DAM EMBANKMENT, PROMPTLY STABILIZE AND SEED DAM EMBANKMENT PER SEEDING SCHEDULE. PERMANENT GROUND COVER SHALL BE ESTABLISHED PER THE PERMANENT SEEDING SCHEDULE FOUND ON SHEET C9.23.
14. SCHEDULE A FINAL AS-BUILT INSPECTION AND AS-BUILT SURVEY WITH THE ENGINEER AND SURVEYOR. AN AS-BUILT INSPECTION AND SURVEY SHALL BE SCHEDULED BEFORE IMPOUNDING WATER IN THE FACILITY AND A MINIMUM OF 60 DAYS PRIOR TO THE ANTICIPATED DATE OF CERTIFICATION APPROVAL. ANY COMMENTS OR DEFICIENCIES IN THE SCM CONSTRUCTION MUST BE CORRECTED TO THE SATISFACTION OF THE ENGINEER AND OWNER BEFORE CERTIFICATION SHALL BE GRANTED.

OUTLET STRUCTURE MATERIAL SPECIFICATIONS

1. THE 24"Ø RCP OUTLET BARREL SHALL BE CLASS III RCP, MODIFIED BELL AND SPIGOT, MEETING THE REQUIREMENTS OF ASTM C76-LATEST. THE PIPES SHALL HAVE CONFINED O-RING RUBBER GASKET JOINTS MEETING ASTM C-443-LATEST. THE PIPE JOINTS SHALL BE TYPE R-4.
2. THE STRUCTURAL DESIGN FOR THE 4' 4' 9" (INTERNAL DIMENSIONS) RISER BOX WITH EXTENDED BASE SHALL BE BY OTHERS. PRIOR TO ORDERING THE STRUCTURES, THE CONTRACTOR SHALL PROVIDE, TO THE DESIGN ENGINEER FOR REVIEW, SHOP DRAWINGS AND SUPPORTING STRUCTURAL CALCULATIONS SEALED BY A P.E. REGISTERED IN NORTH CAROLINA DEMONSTRATING THE PERTINENT VERTICAL LOADS ARE SUPPORTED BY THE CONCRETE RISER STRUCTURE.
3. THE RISER BOX OUTLET STRUCTURE SHALL BE PROVIDED WITH STEPS 16" ON CENTER. STEPS SHALL BE PROVIDED ON THE INNER WALL OF THE RISER BOX. STEPS SHALL BE IN ACCORDANCE WITH NCDOT STD. 840.66. PLEASE REFER TO SHEET C9.XX FOR LOCATION OF THE RISER STEPS. NOTE THE STEPS SHALL LINE UP WITH THE ACCESS HATCH OF THE TRASH RACK.
4. THE CONCRETE ANTI-FLOTATION BLOCK SHALL BE CAST-IN-PLACE. STEEL REINFORCEMENT AND CONNECTION TO THE RISER SHALL BE PROVIDED IN ACCORDANCE WITH THE DETAIL ON SHEET C9.XX. THE CONTRACTOR SHALL ENSURE THE WEIGHT OF THE ENTIRE RISER STRUCTURE IS GREATER THAN OR EQUAL TO XX,XXX LBS. IN LIEU OF CAST-IN-PLACE, THE CONTRACTOR MAY OPT FOR A PRECAST ANTI-FLOTATION BLOCK. SHOP DRAWINGS FOR THE PRECAST BLOCK SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. THE PRECAST ANTI-FLOTATION BLOCK SHALL HAVE A SHIPPING WEIGHT OF XX,XXX LBS.
5. THE RISER BOX JOINTS SHALL BE SEALED USING BUTYL RUBBER SEALANT CONFORMING TO ASTM-C990-LATEST. IF NECESSARY, THE CONTRACTOR SHALL INCORPORATE A WATERSTOP INTO THE RISER BOX JOINT TO ENSURE A WATERTIGHT CONNECTION. THE CONTRACTOR SHALL PARGE JOINTS ON BOTH THE INSIDE AND OUTSIDE WITH NON-SHRINK GROUT AND INSTALL GALVANIZED STEEL STRAPS PER DETAIL ON SHEET C9.XX.
6. PRIOR TO ORDERING, THE CONTRACTOR SHALL SUBMIT TRASH RACK SHOP DRAWINGS TO THE ENGINEER FOR REVIEW. CONTRACTOR SHALL ENSURE THAT AN ACCESS HATCH IS PROVIDED WITHIN THE TRASH RACK (SEE DETAIL FOR LOCATION) THAT WILL ALLOW FOR FUTURE MAINTENANCE ACCESS. CONTRACTOR SHALL ALSO PROVIDE A CHAIN AND LOCK FOR SECURING THE ACCESS HATCH. NOTE THE ACCESS HATCH SHALL LINE UP WITH THE ACCESS STEPS AFTER INSTALLATION.
7. ALL POURED CONCRETE SHALL MEET THE FOLLOWING SPECIFICATIONS UNLESS OTHERWISE NOTED:

   -MINIMUM 3000 PSI (28 DAY)
   -SLUMP = 3" - 5"
   -ENTRAINED AIR = 5% - 7%

   PLEASE NOTE NO CONCRETE SHALL BE POURED WHEN THE AMBIENT AIR TEMPERATURES ARE EXPECTED TO BE ABOVE 85°F OR BELOW 40°F. CAST-IN-PLACE CONCRETE SHALL BE "WET CURED" AFTER FINISHING FOR A MINIMUM OF 48 HOURS.

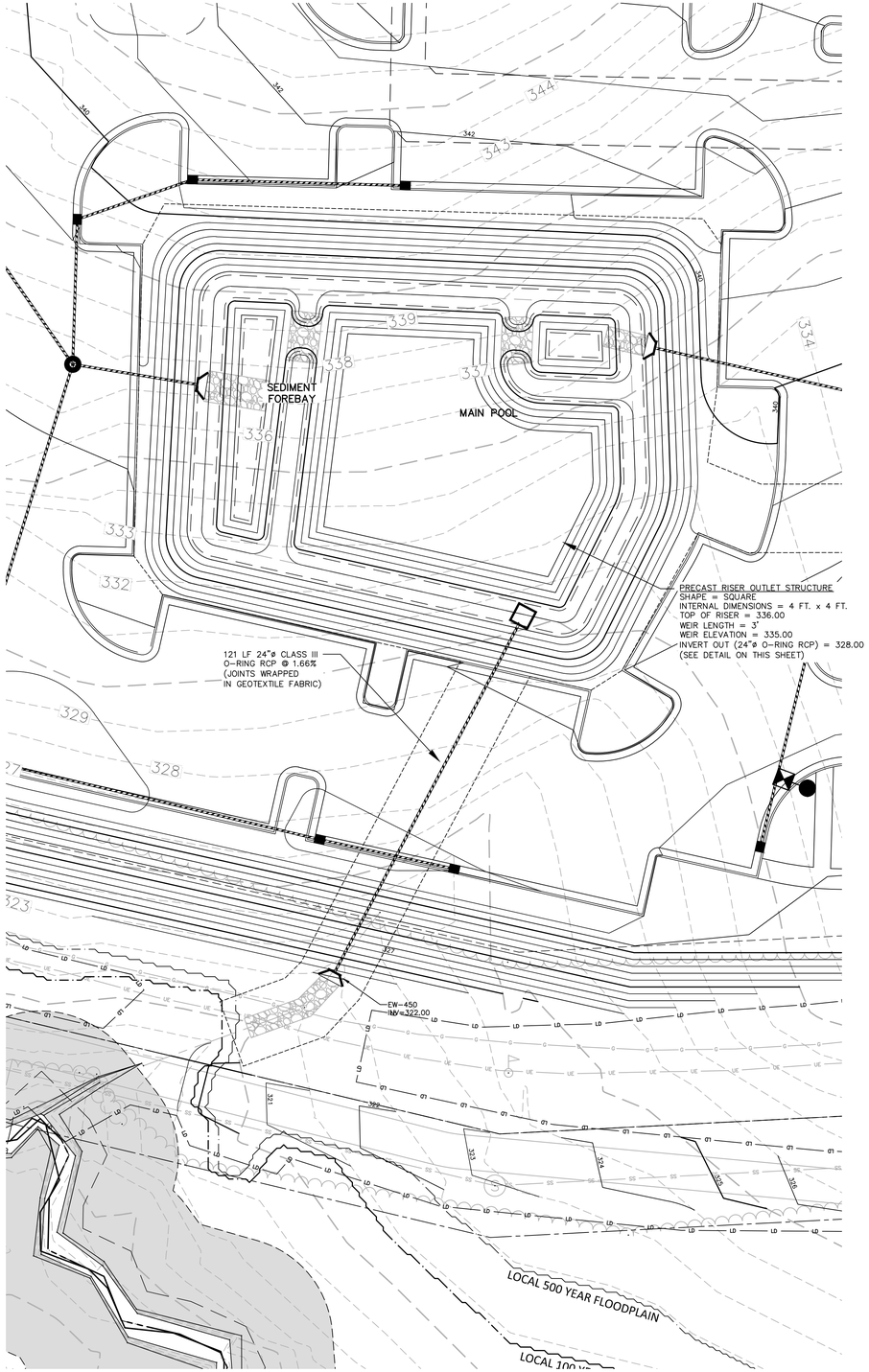
   ON-SITE GEOTECHNICAL ENGINEER TO ENSURE AND CERTIFY ALL POURED CONCRETE MEETS THE ABOVE SPECIFICATIONS.
8. GEOTEXTILE FABRIC FOR THE 24"Ø RCP OUTLET BARREL JOINTS SHALL BE MIRAFI 180N OR ENGINEER APPROVED EQUAL (NON-WOVEN FABRIC).
9. STORMWATER CONTROL MEASURE EMERGENCY DRAW DOWN IS VIA AN 2"Ø PLUG VALVE. THE VALVE SHALL BE A M&H STYLE 1820 ECCENTRIC VALVE OR APPROVED EQUAL. THIS VALVE IS IN ACCORDANCE WITH AWWA C-517, AND SHALL BE OPERABLE FROM TOP OF OUTLET STRUCTURE VIA A HAND WHEEL (SEE DETAIL SHEET C9.XX). THE CONTRACTOR SHALL PROVIDE A REMOVABLE VALVE WRENCH WITH A HAND WHEEL ON TOP FOR OPERATION OF THE 2"Ø PLUG VALVE.

BERM AND SOIL COMPACTION SPECIFICATIONS

1. PRIOR TO CONSTRUCTION, THE ON-SITE GEOTECHNICAL ENGINEER SHALL IDENTIFY BORROW / FILL AREAS AND VERIFY THEIR SUITABILITY FOR USE WITHIN THE DAM EMBANKMENT. ALSO, THE ON-SITE GEOTECHNICAL ENGINEER SHALL PERFORM STANDARD PROCTORS ON THE PROPOSED BORROW MATERIAL TO ENSURE THAT OPTIMUM MOISTURE CONTENT AND COMPACTION CAN BE ACHIEVED / CONTROLLED DURING CONSTRUCTION.
2. ALL FILL MATERIALS TO BE USED FOR THE DAM EMBANKMENT SHALL BE TAKEN FROM BORROW AREAS APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER. THE FILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, WOOD, STONES GREATER THAN 6", AND FROZEN OR OTHER OBJECTIONABLE MATERIAL. THE FOLLOWING SOIL TYPES ARE SUITABLE FOR USE AS FILL WITHIN THE DAM EMBANKMENT AND KEY TRENCH: ML AND CL. ALL FILL MATERIALS SHALL BE APPROVED BY THE ONSITE GEOTECHNICAL ENGINEER FOR THE INTENDED USE.
3. FILL PLACEMENT FOR THE EMBANKMENT SHALL NOT EXCEED A MAXIMUM 8" LIFT (UNCOMPACTED). EACH LIFT SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF EMBANKMENT. BEFORE PLACEMENT OF FILL FOR THE BERM SECTION, ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND THE SURFACE PROPERLY PREPARED FOR FILL PLACEMENT. FILL MATERIAL ADJACENT TO ALL SPILLWAY AND DRAINAGE STRUCTURES SHALL BE PLACED IN 4-INCH (UNCOMPACTED) LIFTS AND HAND-COMPACTED TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT.
4. ALL FILL SOILS USED IN THE EMBANKMENT CONSTRUCTION SHALL BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D-698). THE FILL SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT WITHIN -1 TO +3 PERCENT OF ITS OPTIMUM MOISTURE CONTENT. COMPACTION TESTS SHALL BE PERFORMED BY THE ON-SITE GEOTECHNICAL ENGINEER DURING CONSTRUCTION TO VERIFY THAT THE PROPER COMPACTION LEVEL HAS BEEN REACHED. THE FILL SHOULD BE COMPACTED USING A SHEEPSFOOT TYPE COMPACTOR. IN ORDER TO PREVENT DAMAGE TO THE PIPE, NO COMPACTION EQUIPMENT SHALL CROSS ANY PIPE UNTIL MINIMUM COVER IS ESTABLISHED ALONG THE PIPE.
5. THE DESIGN ENGINEER SHALL BE PROVIDED WITH REPORTS AND CERTIFICATION, BY THE ON-SITE GEOTECHNICAL ENGINEER, THAT THE GEOTECHNICAL ASPECTS OF THE FACILITY HAVE BEEN CONSTRUCTED PER PLAN. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY. THESE REPORTS AND CERTIFICATION WILL BE NEEDED DURING THE AS-BUILT CERTIFICATION PROCESS FOR THIS STORMWATER CONTROL MEASURE. THEREFORE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE TESTING AND OBSERVATION WITH THE ON-SITE GEOTECHNICAL ENGINEER.
6. TESTING OF THE NEW FILL MATERIALS SHALL BE PERFORMED TO VERIFY THAT THE RECOMMENDED LEVEL OF COMPACTION IS ACHIEVED DURING CONSTRUCTION. THEREFORE, ONE DENSITY TEST SHALL BE PERFORMED FOR EVERY 2,500 SQUARE FEET OF AREA FOR EVERY LIFT OF FILL OR AS RECOMMENDED BY THE ON-SITE GEOTECHNICAL ENGINEER.
7. TESTING WILL BE REQUIRED ALONG THE 24"Ø RCP OUTLET BARREL AT A FREQUENCY OF ONE TEST PER 25 LF OF PIPE PER VERTICAL FOOT OF FILL OR AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.

STATEMENT OF RESPONSIBILITY

1. ALL REQUIRED MAINTENANCE AND INSPECTIONS OF THE STORMWATER CONTROL MEASURE SHALL BE THE RESPONSIBILITY OF THE OWNER, PER THE EXECUTED OPERATION AND MAINTENANCE AGREEMENT FOR THIS FACILITY.



GRAPHIC SCALE
0 10 20 40
1 inch = 20 ft.

STORMWATER CONTROL MEASURE 'D' PLAN VIEW
1" = 20'

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT

CAPITAL ASSOCIATES
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELOPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 036231 ADAM C. PIKE
NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	CAP22003-SWD
CHECKED BY	ACP / MDS
DRAWN BY	
SCALE	1" = 40'
DATE	03.07.25

SHEET

SCM "D" PLAN AND DETAILS

C9.00

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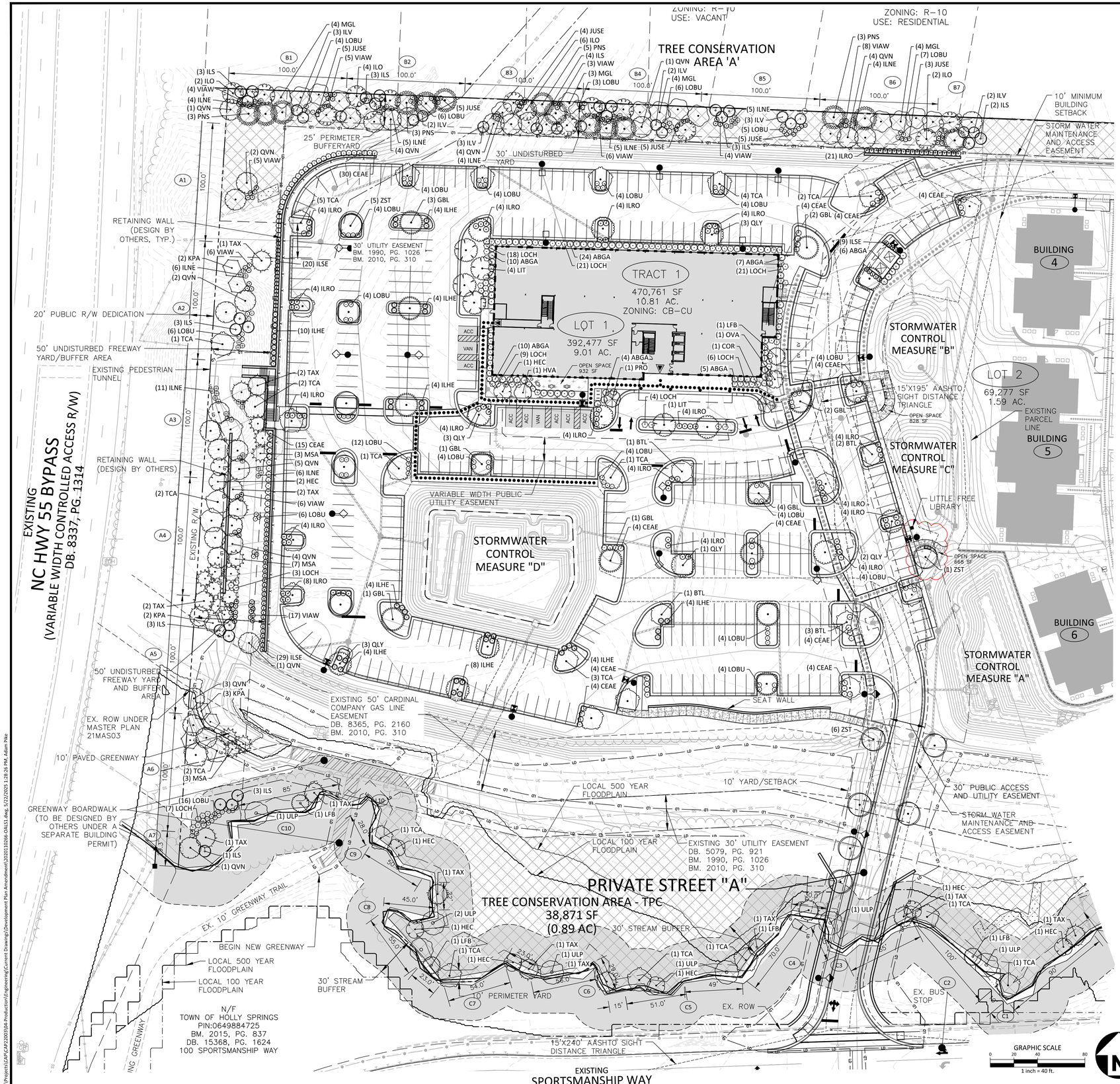

SITE LEGEND

	SIGNAGE		ACCESSIBLE ROUTE
	YARD LIGHTS		PHASE LINE
	LIGHT POLE		PROPERTY LINE
	POWER POLE		RIGHT-OF-WAY LINE
	TRAFFIC DIRECTIONAL ARROW		LOT LINE
ACC	ACCESSIBLE PARKING STALL		EASEMENT LINE
VAN	VAN ACCESSIBLE PARKING STALL		CENTERLINE
	ACCESSIBLE RAMPS	TC TC TC / TC TC TC	TREE CONSERVATION AREA
			STREAM BUFFER

PLANT SCHEDULE SITE

SYMBOL	CODE	COMMON NAME	BOTANICAL NAME
EVERGREEN TREES			
	ILO	AMERICAN HOLLY	ILEX OPACA
	MGL	SOUTHERN MAGNOLIA	MAGNOLIA GRANDIFLORA
	PNS	WHITE PINE	PINUS STROBUS
	QVN	SOUTHERN LIVE OAK	QUERCUS VIRGINIANA
DECIDUOUS CANOPY TREES			
	BTL	SWEET BIRCH	BETULA LENTA
	GBL	MAIDENHAIR TREE	GINKGO BILOBA
	LIT	ARNOLD TULIP POPLAR	LIRIODENDRON TULIPIFERA 'ARNOLD'
	QLY	OVERCUP OAK	QUERCUS LYRATA
	TAX	BALD CYPRESS	TAXODIUM DISTICHUM
	TCA	LITTLELEAF LINDEN	TILIA CORDATA
	ULP	LACEBARK ELM	ULMUS PARVIFOLIA
	ZST	SAWLEAF ZELKOVA	ZELKOVA SERRATA
EVERGREEN UNDERSTORY TREES			
	ILS	NELLIE R. STEVENS HOLLY	ILEX X 'NELLIE R. STEVENS'
	ILV	YAUPON HOLLY	ILEX VOMITORIA
	MSA	SAUCER MAGNOLIA	MAGNOLIA X SOULANGEANA
SMALL DECIDUOUS TREES			
	COR	STELLAR PINK® DOGWOOD	CORNUS X 'RUTGAN'
	HEC	SILVERBELL	HALESIA CAROLINA
	HVA	COMMON WITCH HAZEL	HAMAMELIS VIRGINIANA
	KPA	GOLDEN RAIN TREE	KOELREUTERIA PANICULATA
	LFB	BILOXI CRAPE MYRTLE	LAGERSTROEMIA INDICA X FAURIEI 'BILOXI'
	OVA	AMERICAN HOPHORNBEAM	OSTRYA VIRGINIANA
	PRO	OKAME FLOWERING CHERRY	PRUNUS X 'OKAME'
SHRUBS			
	ABGA	TWIST OF LIME GLOSSY ABELIA	ABELIA X GRANDIFLORA 'HOPLEYS'
	CEAE	NEW JERSEY TEA	CEANOTHUS AMERICANUS
	ILHE	HELER JAPANESE HOLLY	ILEX CRENATA 'HELLERI'
	ILNE	NEEDLEPOINT CHINESE HOLLY	ILEX CORNUTA 'NEEDLEPOINT'
	ILRO	ROTUNDA DWARF CHINESE HOLLY	ILEX CORNUTA 'ROTUNDA'
	ILSE	STEEDS JAPANESE HOLLY	ILEX CRENATA 'STEEDS'
	JUSE	SEA GREEN PFITZER JUNIPER	JUNIPERUS X PFITZERIANA 'SEA GREEN'
	LOBU	BURGUNDY FRINGE FLOWER	LOROPETALUM CHINENSE RUBRUM 'BURGUNDY'
	LOCH	PURPLELEAF FRINGE FLOWER	LOROPETALUM CHINENSE RUBRUM
	VIAW	CHINDO SWEET VIBURNUM	VIBURNUM AWABUKI 'CHINDO'

McADAMS
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CLIENT

CAPITAL ASSOCIATES
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA LANDSCAPE ARCHITECTURE
SARA RUNGE DONOHUE
2027
PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	2020110266-OAS1
CHECKED BY	ACP / MDS
DRAWN BY	MCG
SCALE	1"=40'
DATE	03.07.25

SHEET

LANDSCAPE PLAN

L5.01

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

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PLANT SCHEDULE SITE

SYMBOL	CODE	QTY	COMMON NAME	BOTANICAL NAME	CAL	REMARKS
DECIDUOUS CANOPY TREES						
	BTL	7	SWEET BIRCH	BETULA LENTA	2.5" MIN	10.60%
	GBL	14	MAIDENHAIR TREE	GINKGO BILOBA	2.5" MIN	21.21%
	LIT	5	ARNOLD TULIP POPLAR	LIRIODENDRON TULIPIFERA 'ARNOLD'	2.5" MIN	7.57%
	QLY	12	OVERCUP OAK	QUERCUS LYRATA	2.5" MIN	18.18%
	TCA	16	LITTLELEAF LINDEN	TILIA CORDATA	2.5" MIN	24.24%
	ZST	12	SAWLEAF ZELKOVA	ZELKOVA SERRATA	2.5" MIN	18.18%
		66	SUBTOTAL:			
SMALL DECIDUOUS TREES						
	COR	1	STELLAR PINK® DOGWOOD	CORNUS X 'RUTGAN'	1.5" MIN	16.66%
	HEC	1	SILVERBELL	HALESIA CAROLINA	1.5" MIN	16.66%
	HVA	1	COMMON WITCH HAZEL	HAMAMELIS VIRGINIANA	1.5" MIN	16.66%
	LFB	1	BILOXI CRAPE MYRTLE	LAGERSTROEMIA INDICA X FAURIEI 'BILOXI'	1.5" MIN	16.66%
	OVA	1	AMERICAN HOPHORNBEAM	OSTRYA VIRGINIANA	1.5" MIN	16.66%
	PRO	1	OKAME FLOWERING CHERRY	PRUNUS X 'OKAME'	1.5" MIN	16.66%
		6	SUBTOTAL:			

SYMBOL	CODE	QTY	COMMON NAME	BOTANICAL NAME	CONT	REMARKS
SHRUBS						
	ABGA	66	TWIST OF LIME GLOSSY ABELIA	ABELIA X GRANDIFLORA 'HOPLEYS'	36" MIN	13.44%
	CEAE	85	NEW JERSEY TEA	CEANOTHUS AMERICANUS	36" MIN	17.31%
	ILHE	46	HELER JAPANESE HOLLY	ILEX CRENATA 'HELLERI'	36" MIN	9.36%
	ILRO	93	ROTUNDA DWARF CHINESE HOLLY	ILEX CORNUTA 'ROTUNDA'	36" MIN	18.94%
	ILSE	58	STEEDS JAPANESE HOLLY	ILEX CRENATA 'STEEDS'	36" MIN	11.81%
	LOBU	64	BURGUNDY FRINGE FLOWER	LOROPETALUM CHINENSE RUBRUM 'BURGUNDY'	36" MIN	13.03%
	LOCH	79	PURPLELEAF FRINGE FLOWER	LOROPETALUM CHINENSE RUBRUM	36" MIN	16.08%
		491	SUBTOTAL:			

SPECIES DIVERSITY

INCLUDES PLANT TOTALS FROM OVERALL SITE (EXCLUDING BUFFERS)

CANOPY TREES
TOTAL: 66
MAX. OF ONE SPECIES ALLOWED: =17 (25%)
MAX. OF ONE SPECIES PROVIDED: =16

UNDERSTORY TREES
TOTAL: 6
MAX. OF ONE SPECIES ALLOWED: =1.5 (25%)
MAX. OF ONE SPECIES PROVIDED: =1

SHRUBS
TOTAL: 491
MAX. OF ONE SPECIES ALLOWED: =122.75 (25%)
MAX. OF ONE SPECIES PROVIDED: =93

GENERAL NOTES

1. BUFFER SEGMENTS NOT MEETING A–20 BUFFER REQUIREMENTS SHALL BE RE–PLANTED PER THE 20' PRESERVATION (A–20) GREENBELT DETAIL THIS PAGE.
2. ALL TREES SHALL BE LOCATED A MINIMUM OF 25' FROM THE BASE OF ALL STREET LIGHT POLES.
3. ALL TREES SHALL BE LOCATED OUTSIDE OF SITE DISTANCE TRIANGLES. THE TOWN SHALL TRIM OR REMOVE ANY STREET TREES OR LIMBS THAT CONFLICT WITH SIGHT DISTANCE REQUIREMENTS.
4. STREET TREES SHALL INCLUDE A ROOT GUARD LOCATED BETWEEN BACK OF CURB AND SIDEWALK PER TOWN OF HOLLY SPRINGS STANDARDS. SEE DETAIL THIS SHEET.
5. AT THE TIME OF INSTALLATION THE NURSERY TAGS MUST REMAIN ON ALL STREET TREES AND A WRITTEN STATEMENT FROM THE CONTRACTOR, CERTIFIED BY THE LANDSCAPE ARCHITECT, MUST BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING TO CERTIFY THAT THE CORRECT SPECIES OF TREES HAVE BEEN INSTALLED.
6. STREET TREES ARE TO BE CENTERED IN THE PUBLIC RIGHT–OF–WAY WITHIN THE UTILITY STRIP BETWEEN SIDEWALK AND BACK OF CURB.
7. HOMEOWNER'S ASSOCIATION SHALL BE RESPONSIBLE FOR ALL MAINTENANCE OF LANDSCAPING AFTER EXPIRATION OF THE INITIAL LANDSCAPE WARRANTY.
8. TREE LOCATIONS ARE SCHEMATIC AND MAY BE FIELD ADJUSTED DURING CONSTRUCTION TO AVOID CONFLICTS WITH UNDERGROUND UTILITIES.

LANDSCAPING NOTES

1. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
2. CONTRACTOR IS RESPONSIBLE FOR THE SITE INSPECTION BEFORE LANDSCAPE CONSTRUCTION AND INSTALLATION IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS.
3. LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE BEGINNING DEMOLITION OR INSTALLATION.
4. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN THE NOTES, SPECIFICATIONS, DRAWINGS OR SITE CONDITIONS FOR RESOLUTION PRIOR TO INSTALLATION.
5. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
6. THIS PLAN IS FOR PLANTING PURPOSES ONLY. FOR INFORMATION REGARDING BUILDINGS, GRADING, WALLS, ETC., REFER TO ARCHITECTURE, SITE AND GRADING PLANS.
7. VERIFICATION OF TOTAL PLANT QUANTITIES AS SHOWN IN THE PLANT SCHEDULE SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT.
8. CONTRACTOR TO ENSURE PROPER STABILIZATION AND SEEDING OF THE SITE IN ACCORDANCE WITH APPLICABLE REGULATIONS.
9. LANDSCAPE MATERIAL SHALL BE WELL FORMED, VIGOROUS, GROWING SPECIMENS WITH GROWTH TYPICAL OF VARIETIES SPECIFIED AND SHALL BE FREE FROM DAMAGE, INSECTS AND DISEASES. MATERIAL SHALL EQUAL OR SURPASS #1 QUALITY AS DEFINED IN THE CURRENT ISSUE OF 'AMERICAN STANDARD FOR NURSERY STOCK' AS PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION.
10. ALL PLANT MATERIAL IS TO BE CAREFULLY HANDLED BY THE ROOT BALL, NOT THE TRUNK, BRANCHES AND/OR FOLIAGE OF THE PLANT. MISHANDLED PLANT MATERIAL MAY BE REJECTED BY THE LANDSCAPE ARCHITECT.
11. ALL PLANT MATERIAL IS TO BE WELL ROOTED, NOT ROOT BOUND, SUCH THAT THE ROOT BALL REMAINS INTACT THROUGHOUT THE PLANTING PROCESS. DEFICIENT PLANT MATERIAL MAY BE REJECTED BY THE LANDSCAPE ARCHITECT OR OWNER.
12. ALL PLANTS TO BE A MINIMUM OF WHAT IS SPECIFIED IN THE PLANT SCHEDULE. ANY CHANGES OR SUBSTITUTIONS SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT AND GOVERNING JURISDICTION PRIOR TO ANY HOLE BEING DUG.
13. CONTRACTOR TO COORDINATE WITH OWNER'S REPRESENTATIVE AND LANDSCAPE ARCHITECT TO ESTABLISH THE EXTENTS OF MULCH/SEED/SOD IF NOT SPECIFICALLY SHOWN ON PLANS.
14. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE IN ALL PLANTING AREAS.
14. PROPOSED TREES TO BE PLANTED A MINIMUM 25 FEET FROM ANY LIGHT POLE AS MEASURED FROM TRUNK OF THE TREE TO THE POLE.
15. CONTRACTOR SHALL COMPLETE SOIL TEST IN ALL PLANTING AREAS TO DETERMINE SOIL AMENDMENT REQUIREMENTS UNLESS WAIVED BY OWNER'S REPRESENTATIVE. CONTRACTOR SHALL ADJUST PH AND FERTILITY BASED UPON THE SOIL TEST RESULTS.
16. TOPSOIL SHALL BE FREE OF MATERIAL LARGER THAN 1.0 INCH IN DIAMETER OR LENGTH AND SHALL NOT CONTAIN SLAG, CINDERS, STONES, LUMPS OF SOIL, STICKS, ROOTS, TRASH, OR OTHER EXTRANEOUS MATERIAL.
17. LOOSEN SUBGRADE / SURFACE SOIL TO A MINIMUM DEPTH OF 6 INCHES. APPLY SOIL AMENDMENTS AND FERTILIZERS AS REQUIRED BY THE SOIL TEST RESULTS TO ACHIEVE A HEALTHY GROWING MEDIA AND MIX THOROUGHLY INTO TOP 4 INCHES OF SOIL. SPREAD PLANTING SOIL MIX TO A DEPTH OF 6 INCHES BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT. DO NOT SPREAD IF PLANTING SOIL OR SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET.
18. IF IMPORTED TOPSOIL IS REQUIRED, THE SUBGRADE SHALL BE SCARIFIED OR TILLED TO A DEPTH OF AT LEAST 6 INCHES PRIOR TO INSTALLATION OF IMPORTED TOPSOIL. FOLLOWING INSTALLATION OF IMPORTED TOPSOIL, THE TOPSOIL SHALL BE TILLED TO INTEGRATE THE SOIL PROFILES.
19. PLANT MATERIALS ARE TO BE GUARANTEED FOR A PERIOD OF 12 MONTHS. PLANT MATERIALS WHICH REMAIN UNHEALTHY WILL BE REPLACED BY THE LANDSCAPE CONTRACTOR BEFORE THE EXPIRATION OF THE GUARANTEE PERIOD OR IMMEDIATELY IF SO DIRECTED BY THE OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
20. ALL TREE PLANTINGS SHALL BE MULCHED TO A DEPTH OF 3 INCHES, AND WITH A MINIMUM 3 FOOT RADIUS FROM BASE OF TREE OR TO DRIPLINE. MULCH SHALL BE FREE OF TRASH AND MAINTAINED WEED FREE. MULCH SHALL NOT COVER THE ROOT FLARE. CONFIRM MULCH SPECIFICATIONS WITH OWNER'S REPRESENTATIVE OR LANDSCAPE ARCHITECT.
21. DO NOT PRUNE TREES AND SHRUBS BEFORE DELIVERY. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND–TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DESTROY THEIR NATURAL SHAPE. PROVIDE PROTECTIVE COVERING OF EXTERIOR PLANTS DURING DELIVERY. DO NOT DROP EXTERIOR PLANTS DURING DELIVERY AND HANDLING.
22. DELIVER EXTERIOR PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND INSTALL IMMEDIATELY. IMMEDIATELY AFTER UNLOADING, STAND THE TREES UP TO REDUCE THE RISK OF SUN SCALD. PROPERLY STACKED TREES ARE STANDING, UNTIED AND SPACED. UNLESS IMMEDIATELY INSTALLED, SET EXTERIOR PLANTS AND TREES IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST.
23. SEE LANDSCAPE DETAILS FOR TREE STAKING REQUIREMENTS.
24. ALL PROPOSED PLANTINGS TO BE IN MULCH PLANTING BEDS UNLESS OTHERWISE SPECIFIED. EXCAVATE EDGES OF ALL PLANTING BEDS TO 2 INCH DEPTH TO FORM A NEAT AND CRISP DEFINITION.
25. CONTRACTOR SHALL REMOVE DEBRIS AND FINE GRADE ALL PLANTING AREAS PRIOR TO INSTALLATION.
26. REMOVE GUY WIRES AND STAKES AT END OF WARRANTY PERIOD OR ESTABLISHMENT.
27. FINISH GRADING: GRADE PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. GRADE TO WITHIN PLUS OR MINUS 1/2 INCH OF FINISH ELEVATION. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES. LIMIT FINISHED GRADING TO AREAS THAT CAN BE PLANTED IN THE IMMEDIATE FUTURE.
28. PLANTING MATERIAL LOCATED WITHIN 5 FT OF BACK OF CURB AND LOCATED AT A CRITICAL TURNING POINT WITHIN A PARKING AREA SHALL BE MAINTAINED NOT TO EXCEED 36 IN.

WARRANTY & MAINTENANCE:

1. WARRANTY: INSTALLER SHALL REPAIR OR REPLACE ANY PLANTINGS THAT FAIL IN MATERIALS, WORKMANSHIP, OR GROWTH WITHIN ONE YEAR AFTER THE DATE OF SUBSTANTIAL COMPLETION. FAILURES INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   - DEATH AND UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLECT, ABUSE BY OWNER, OR INCIDENTS THAT ARE BEYOND CONTRACTOR'S CONTROL.
   - STRUCTURAL FAILURES INCLUDING PLANTINGS FALLING OR BLOWING OVER.
2. INSTALLER SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY REQUIRED PLANTING, WHICH IS REMOVED OR DIES AFTER THE PLANTING DATE. SUCH REPLACEMENT SHALL OCCUR DURING THE NEXT PLANTING SEASON; AND, THE REPLACEMENT OF ANY TREE IN A TREE SAVE AREA, WHICH IS REMOVED OR DIES AFTER THE DATE OF APPROVAL OF A PRESERVATION LANDSCAPE PLAN. SUCH REPLACEMENT SHALL OCCUR DURING THE NEXT PLANTING SEASON.
3. MAINTENANCE: INITIAL MAINTENANCE SHALL BE PROVIDED IMMEDIATELY AFTER EACH AREA IS PLANTED AND CONTINUE UNTIL SUBSTANTIAL COMPLETION. UPON SUBSTANTIAL COMPLETION, MAINTENANCE FOR ALL PLANT MATERIAL SHALL BE PROVIDED FOR ONE YEAR AT A MINIMUM SHALL INCLUDE:
   - TREE AND SHRUB MAINTENANCE: MAINTAIN PLANTINGS BY PRUNING, CULTIVATING, WATERING, WEEDING, FERTILIZING, RESTORING PLANTING SAUCERS, AND RESETTING TO PROPER GRADES OR VERTICAL POSITION, AS REQUIRED TO ESTABLISH HEALTHY, VIABLE PLANTINGS. SPRAY OR TREAT AS REQUIRED TO KEEP TREES AND SHRUBS FREE OF INSECTS AND DISEASE.
   - GROUND COVER AND PLANT MAINTENANCE: MAINTAIN AND ESTABLISH PLANTINGS BY WATERING, WEEDING, FERTILIZING, MULCHING, AND OTHER OPERATIONS AS REQUIRED TO ESTABLISH HEALTHY, VIABLE PLANTINGS.
   - PROTECT EXTERIOR PLANTS FROM DAMAGE DUE TO LANDSCAPE OPERATIONS, OPERATIONS BY OTHER CONTRACTORS AND TRADES, AND OTHERS. MAINTAIN PROTECTION DURING INSTALLATION AND MAINTENANCE PERIODS. TREAT, REPAIR, OR REPLACE DAMAGED PLANTINGS.
4. OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL REQUIRED LANDSCAPE BY KEEPING LAWNS MOWED, ALL PLANTINGS MAINTAINED AS DISEASE FREE, ALL PLANTING BEDS GROOMED AND KEPT WEED FREE (EXCEPT IN AREAS OF PRESERVED EXISTING NATURAL VEGETATION, I.E. THICKETS) AND KEPT FREE FROM TRASH, DEBRIS AND OTHER OBJECTIONABLE MATERIALS.

INTERIOR PARKING AREA

TOTAL PARKING SPACES: 372 (9 OF 372 ACCESSIBLE)
PARKING ISLANDS REQUIRED: 37 (1 ISLAND PER 10 SPACES)
PARKING ISLANDS PROVIDED: 54 ISLANDS

CANOPY TREES REQUIRED: 54 (1/ISLAND)
CANOPY TREES PROVIDED: 54

SHRUBS REQUIRED: 216 (4/ISLAND)
SHRUBS PROVIDED: 216

STREET TREES CALCULATIONS

ENTRANCE FROM SPORTSMANSHIP WAY 324 LF
TREES REQUIRED: 7 (1/50 LF)
TREES PROVIDED: 6 *DUE TO EXISTING EASEMENTS

FOUNDATION LANDSCAPING

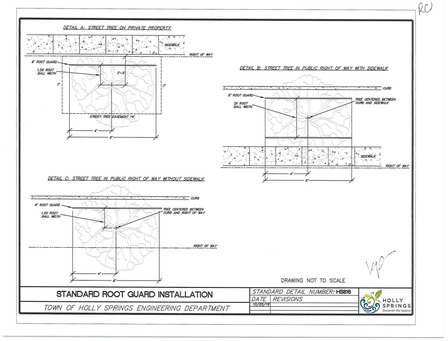
NORTH ELEVATION
REQUIRED TREES 240 LF / 75 = 3 CANOPY OR 6 UNDERSTORY TREES
PROVIDED TREES 3 CANOPY TREES (RELOCATED TO WEST ELEVATION)
REQUIRED SHRUBS 240 LF / 5 = 48 LARGE OR 68 MEDIUM OR 136 SMALL SHRUBS
PROVIDED SHRUBS 48 LARGE SHRUBS AT 36" HEIGHT (2 RELOCATED TO SOUTH ELEVATION – ISLAND*)

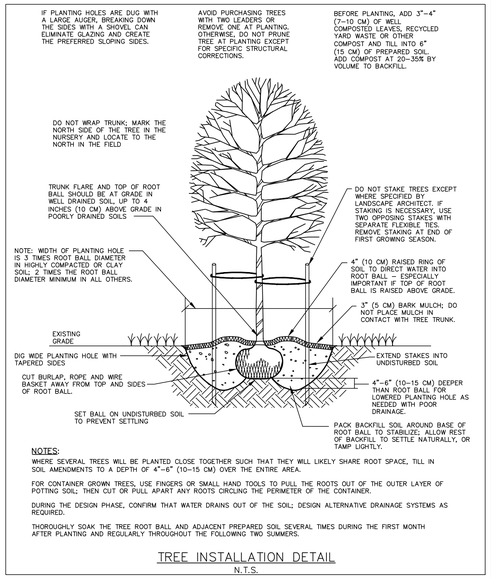
WEST ELEVATION
REQUIRED TREES 110 LF / 75 = 1 CANOPY OR 3 UNDERSTORY TREES
PROVIDED TREES 1 CANOPY TREE
REQUIRED SHRUBS 110 LF / 5 = 22 LARGE OR 33 MEDIUM OR 66 SMALL SHRUBS
PROVIDED SHRUBS 22 LARGE SHRUBS AT 36" HEIGHT

SOUTH ELEVATION
REQUIRED TREES 240 LF / 75 = 3 CANOPY OR 6 UNDERSTORY TREES
PROVIDED TREES 6 UNDERSTORY TREES (3 RELOCATED TO EAST ELEVATION)
REQUIRED SHRUBS 240 LF / 5 = 48 LARGE OR 69 MEDIUM OR 138 SMALL SHRUBS
PROVIDED SHRUBS 48 LARGE SHRUBS AT 36" HEIGHT
(2 RELOCATED TO ISLAND*, 7 TO EAST ELEVATION, 5 TO WEST ELEVATION)

EAST ELEVATION
REQUIRED TREES 105 LF / 75 = 1 CANOPY OR 3 UNDERSTORY TREES
PROVIDED TREES 1 CANOPY TREE (RELOCATED TO SOUTH ELEVATION – ISLAND*)
REQUIRED SHRUBS 105 LF / 5 = 21 LARGE OR 36 MEDIUM OR 72 SMALL SHRUBS
PROVIDED SHRUBS 21 LARGE SHRUBS AT 36" HEIGHT

*DUE TO LIMITED PLANTING AREA ADDITIONAL FOUNDATION PLANTINGS PROVIDED AT ISLAND IN FRONT OF SOUTH ELEVATION BUILDING DROP OFF





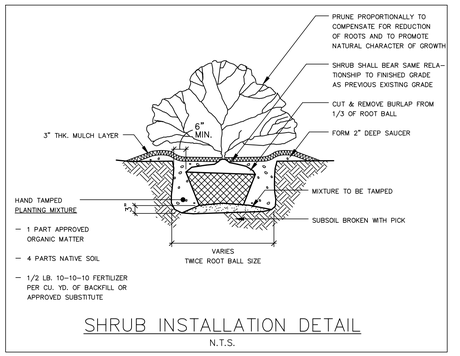
NOTES:
WHERE SEVERAL TREES WILL BE PLANTED CLOSE TOGETHER SUCH THAT THEY WILL LIKELY SHARE ROOT SPACE, TILL IN SOIL AMENDMENTS TO A DEPTH OF 4"–6" (10–15 CM) OVER THE ENTIRE AREA.

FOR CONTAINER GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.

DURING THE DESIGN PHASE, CONFIRM THAT WATER DRAINS OUT OF THE SOIL; DESIGN ALTERNATIVE DRAINAGE SYSTEMS AS REQUIRED.

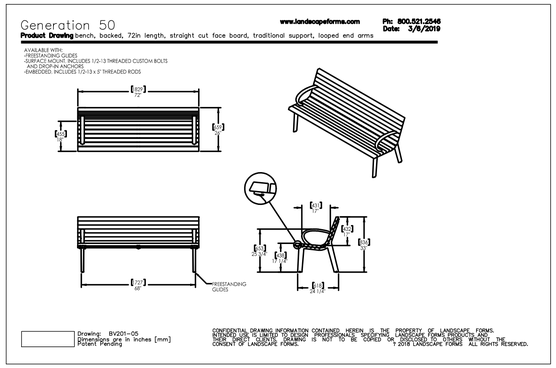
THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AND REGULARLY THROUGHOUT THE FOLLOWING TWO SUMMERS.

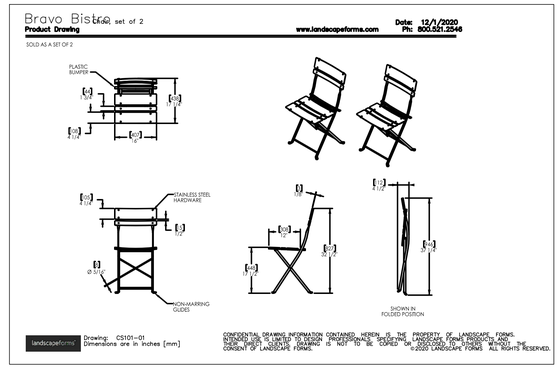
TREE INSTALLATION DETAIL
N.T.S.

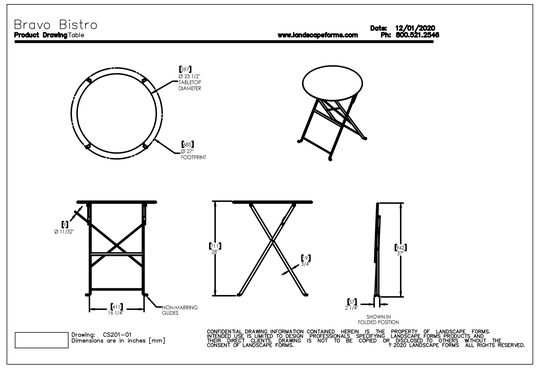


SHRUB INSTALLATION DETAIL
N.T.S.

HARDSCAPE AREA FURNISHING DETAILS









SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF HOLLY SPRINGS AND NCDOT (WHERE APPLICABLE) ENGINEERING DESIGN AND CONSTRUCTION STANDARDS

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT

CAPITAL ASSOCIATES
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2
1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	CAP22003-LS1
CHECKED BY	ACP / MDS
DRAWN BY	MCG
SCALE	
DATE	03.07.25

SHEET

LANDSCAPE NOTES AND DETAILS

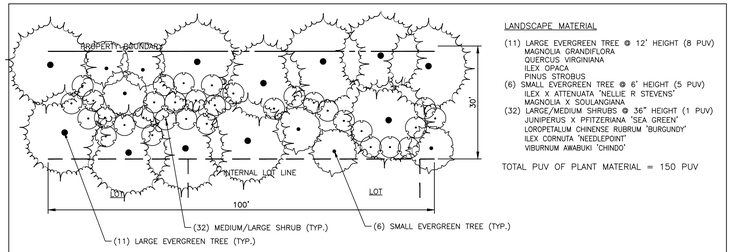
L5.02

NORTH CAROLINA LANDSCAPE ARCHITECT SARA RUNGE DONOHOE FULL SEAL NOT VALID WITHOUT ORIGINAL SIGNATURE & COLORED SEAL 2027

M:\Projects\CAP\CAP22003\04-Production\Engineering\Current Drawings\Development Plan Amendment\20201102661-DA1S1.dwg, 5/22/2025 1:28:55 PM, Adam Pike

PLANT SCHEDULE 30' C-150 PERIMETER BUFFERYARD

SYMBOL	CODE	QTY	COMMON NAME	BOTANICAL NAME	CAL	HEIGHT	REMARKS
EVERGREEN TREES							
	ILO	14	AMERICAN HOLLY	ILEX OPACA	-	12` MIN	6.93%
	MGL	15	SOUTHERN MAGNOLIA	MAGNOLIA GRANDIFLORA	-	12` MIN	7.43%
	PNS	14	WHITE PINE	PINUS STROBUS	-	12` MIN	6.93%
	QVN	14	SOUTHERN LIVE OAK	QUERCUS VIRGINIANA	-	12` MIN	6.93%
EVERGREEN UNDERSTORY TREES							
	ILS	15	NELLIE R. STEVENS HOLLY	ILEX X 'NELLIE R. STEVENS'	-	6`	7.43%
	ILV	15	YAUPON HOLLY	ILEX VOMITORIA	-	6`	7.43%
SYMBOL	CODE	QTY	COMMON NAME	BOTANICAL NAME	CONT	HEIGHT	REMARKS
SHRUBS							
	ILNE	27	NEEDLEPOINT CHINESE HOLLY	ILEX CORNUTA 'NEEDLEPOINT'	36" MIN		13.37%
	JUSE	27	SEA GREEN PFITZER JUNIPER	JUNIPERUS X PFITZERIANA 'SEA GREEN'	36" MIN		13.37%
	LOBU	31	BURGUNDY FRINGE FLOWER	LOROPETALUM CHINENSE RUBRUM 'BURGUNDY'	36" MIN		15.35%
	VIAW	30	CHINDO SWEET VIBURNUM	VIBURNUM AWABUKI 'CHINDO'	36" MIN		14.85%



LANDSCAPE MATERIAL

(11) LARGE EVERGREEN TREE @ 12' HEIGHT (8 PUV)
- MAGNOLIA GRANDIFLORA
- QUERCUS VIRGINIANA
- ILEX OPACA
- PINUS STROBUS

(6) SMALL EVERGREEN TREE @ 6' HEIGHT (5 PUV)
- ILEX X ATTENUATA 'NELLIE R STEVENS'
- MAGNOLIA X SOULANGIANA

(32) LARGE/MEDIUM SHRUBS @ 36" HEIGHT (1 PUV)
- JUNIPERUS X PFITZERIANA 'SEA GREEN'
- LOROPETALUM CHINENSE RUBRUM 'BURGUNDY'
- ILEX CORNUTA 'NEEDLEPOINT'
- VIBURNUM AWABUKI 'CHINDO'

TOTAL PUV OF PLANT MATERIAL = 150 PUV

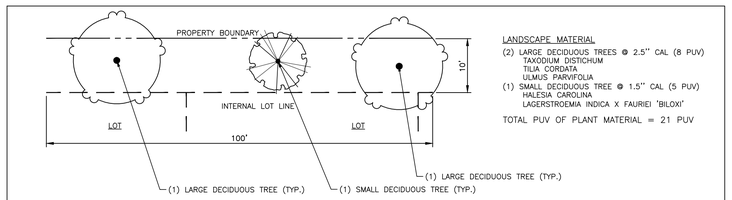
30' (C-150) LANDSCAPE PERIMETER BUFFERYARD
NOT TO SCALE
(MAXIMUM 25% OF ANY SPECIES FOR SECTIONS REQUIRING MORE THAN 25 TREES)

30' C-150 PERIMETER BUFFERYARD					
INCREMENT	LANDSCAPE MATERIAL	PUV OF MATERIAL	TOTAL PUV PROVIDED	% OF PUV	PUV REQUIRED
B1 100 LF	*(3) EX LARGE DECIDUOUS TREES @ 2"-4" CAL (3 PUV) *(1) EX LARGE DECIDUOUS TREES @ 4"-6" CAL (6 PUV) (11) LARGE EVERGREEN TREES @ 12' HT (8 PUV) (6) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (17) LARGE/MED SHRUBS @ 36" HT (1 PUV)	9 6 88 30 17	 150	6.00% 4.00% 58.67% 20.00% 11.33%	C-150
B2 100 LF	*(1) EX LARGE DECIDUOUS TREES @ 4"-6" CAL (6 PUV) (11) LARGE EVERGREEN TREES @ 12' HT (8 PUV) (6) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (26) LARGE/MED SHRUBS @ 36" HT (1 PUV)	6 88 30 26	 150	4.00% 58.67% 20.00% 17.33%	C-150
B3 100 LF	*(1) EX LARGE DECIDUOUS TREES @ 4"-6" CAL (6 PUV) *(3) EX LARGE DECIDUOUS TREES @ >6" CAL (9) (11) LARGE EVERGREEN TREES @ 12' HT (8 PUV) (3) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (14) LARGE/MED SHRUBS @ 36" HT (1 PUV)	6 27 88 15 14	 150	4.00% 18.00% 58.67% 10.00% 9.33%	C-150
B4 100 LF	*(2) EX LARGE DECIDUOUS TREES @ 2"-4" CAL (3 PUV) *(1) EX LARGE DECIDUOUS TREES @ >6" CAL (9 PUV) (11) LARGE EVERGREEN TREES @ 12' HT (8 PUV) (5) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (22) LARGE/MED SHRUBS @ 36" HT (1 PUV)	6 9 88 25 22	 150	4.00% 6.00% 58.67% 16.66% 14.67%	C-150
B5 100 LF	(8) EX LARGE EVERGREEN TREES @ >12' HT (12 PUV) (6) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (24) LARGE/MED SHRUBS @ 36" HT (1 PUV)	96 30 24	 150	64.00% 20.00% 16.00%	C-150
B6 100 LF	(4) EX LARGE EVERGREEN TREES @ >12' HT (12 PUV) (1) EX LARGE EVERGREEN TREES @ 8"-12' HT (8 PUV) (10) LARGE EVERGREEN TREES @ >12' HT (8 PUV) (14) LARGE/MED SHRUBS @ 36" HT (1 PUV)	48 8 80 14	 150	32.00% 5.33% 53.34% 9.33%	C-150
B7 40 LF	(4) LARGE EVERGREEN TREES @ 12' HT (8 PUV) (4) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (8) LARGE/MED SHRUBS @ 36" HT (1 PUV)	32 20 8	 60	53.33% 33.33% 13.34%	C-150 (60 REQ)

* DENOTES INSTANCES WHERE A DECIDUOUS TREE HAS BEEN COUNTED TOWARDS EVERGREEN PUV REQUIREMENTS PER TABLE 7.01-D OF THE HOLLY SPRINGS UDO LANDSCAPE REGULATIONS

PLANT SCHEDULE 10' A-20 LANDSCAPE PERIMETER YARD

SYMBOL	CODE	QTY	COMMON NAME	BOTANICAL NAME	CAL	REMARKS
DECIDUOUS CANOPY TREES						
	TAX	7	BALD CYPRESS	TAXODIUM DISTICHUM	2.5" MIN	23.33%
	TCA	6	LITTLELEAF LINDEN	TILIA CORDATA	2.5" MIN	20.00%
	ULP	7	LACEBARK ELM	ULMUS PARVIFOLIA	2.5" MIN	23.33%
SMALL DECIDUOUS TREES						
	HEC	6	SILVERBELL	HALESIA CAROLINA	1.5" MIN	20.00%
	LFB	4	BILOXI CRAPE MYRTLE	LAGERSTROEMIA INDICA X FAURIEI 'BILOXI'	1.5" MIN	13.33%



LANDSCAPE MATERIAL

(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV)
- TAXODIUM DISTICHUM
- TILIA CORDATA
- ULMUS PARVIFOLIA

(1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)
- HALESIA CAROLINA
- LAGERSTROEMIA INDICA X FAURIEI 'BILOXI'

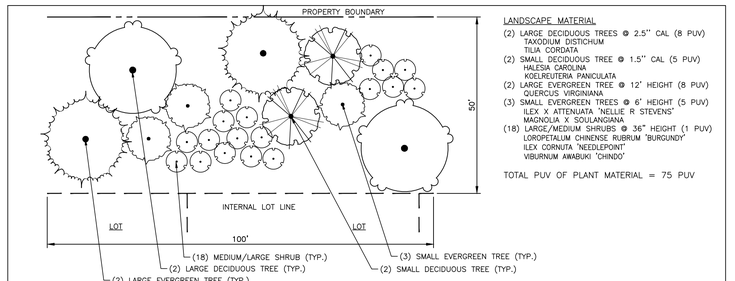
TOTAL PUV OF PLANT MATERIAL = 21 PUV

10' (A-20) LANDSCAPE PERIMETER YARD
NOT TO SCALE
(MAXIMUM 25% OF ANY SPECIES FOR SECTIONS REQUIRING MORE THAN 25 TREES)

10' A-20 PERIMETER YARD					
INCREMENT	LANDSCAPE MATERIAL	PUV OF MATERIAL	TOTAL PUV PROVIDED	% OF PUV	PUV REQUIRED
C1 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)	16 5	 21	76.19% 23.81%	A-20
C2 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)	16 5	 21	76.19% 23.81%	A-20
C3 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)	16 5	 21	76.19% 23.81%	A-20
C4 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)	16 5	 21	76.19% 23.81%	A-20
C5 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)	16 5	 21	76.19% 23.81%	A-20
C6 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)	16 5	 21	76.19% 23.81%	A-20
C7 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)	16 5	 21	76.19% 23.81%	A-20
C8 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)	16 5	 21	76.19% 23.81%	A-20
C9 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)	16 5	 21	76.19% 23.81%	A-20
C10 85 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)	16 5	 21	76.19% 23.81%	A-20 (17 REQ)

PLANT SCHEDULE 50' FREEWAY YARD/BUFFER AREA B-75 - UNDISTURBED

SYMBOL	CODE	QTY	COMMON NAME	BOTANICAL NAME	CAL	HEIGHT	REMARKS
EVERGREEN TREES							
	QVN	18	SOUTHERN LIVE OAK	QUERCUS VIRGINIANA	-	12` MIN	11.25%
DECIDUOUS CANOPY TREES							
	TAX	8	BALD CYPRESS	TAXODIUM DISTICHUM	2.5" MIN		5.00%
	TCA	7	LITTLELEAF LINDEN	TILIA CORDATA	2.5" MIN		4.38%
EVERGREEN UNDERSTORY TREES							
	ILS	10	NELLIE R. STEVENS HOLLY	ILEX X 'NELLIE R. STEVENS'	-	6`	6.25%
	MSA	13	SAUCER MAGNOLIA	MAGNOLIA X SOULANGEANA	-	6`	8.13%
SMALL DECIDUOUS TREES							
	HEC	2	SILVERBELL	HALESIA CAROLINA	1.5" MIN		2.50%
	KPA	7	GOLDEN RAIN TREE	KOELREUTERIA PANICULATA	1.5" MIN		3.13%
SYMBOL	CODE	QTY	COMMON NAME	BOTANICAL NAME	CONT	HEIGHT	REMARKS
SHRUBS							
	ILNE	23	NEEDLEPOINT CHINESE HOLLY	ILEX CORNUTA 'NEEDLEPOINT'	36" MIN		14.38%
	LOBU	28	BURGUNDY FRINGE FLOWER	LOROPETALUM CHINENSE RUBRUM 'BURGUNDY'	36" MIN		6.25%
	LOCH	10	PURPLELEAF FRINGE FLOWER	LOROPETALUM CHINENSE RUBRUM	36" MIN		17.50%
	VIAW	34	CHINDO SWEET VIBURNUM	VIBURNUM AWABUKI 'CHINDO'	36" MIN		21.25%



LANDSCAPE MATERIAL

(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV)
- TAXODIUM DISTICHUM
- TILIA CORDATA

(2) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV)
- HALESIA CAROLINA
- KOELREUTERIA PANICULATA

(2) LARGE EVERGREEN TREE @ 12' HEIGHT (8 PUV)
- QUERCUS VIRGINIANA

(3) SMALL EVERGREEN TREES @ 6' HEIGHT (5 PUV)
- ILEX X ATTENUATA 'NELLIE R STEVENS'
- MAGNOLIA X SOULANGIANA

(18) LARGE/MEDIUM SHRUBS @ 36" HEIGHT (1 PUV)
- LOROPETALUM CHINENSE RUBRUM 'BURGUNDY'
- ILEX CORNUTA 'NEEDLEPOINT'
- VIBURNUM AWABUKI 'CHINDO'

TOTAL PUV OF PLANT MATERIAL = 75 PUV

50' FREEWAY YARD / BUFFER AREA (B-75) - UNDISTURBED
NOT TO SCALE
(MAXIMUM 25% OF ANY SPECIES FOR SECTIONS REQUIRING MORE THAN 25 TREES)

50' FREEWAY YARD / BUFFER AREA B-75-UNDISTURBED					
INCREMENT	LANDSCAPE MATERIAL	PUV OF MATERIAL	TOTAL PUV PROVIDED	% OF PUV	PUV REQUIRED
A1 100 LF	(3) EX LARGE DECIDUOUS TREES @ 4"-6"CAL (12 PUV) *(2) EX LARGE DECIDUOUS TREES @ >6" CAL (9 PUV) (2) LARGE EVERGREEN TREES @ 12' HT (8 PUV) (5) LARGE/MED SHRUBS @ 36" HT (1 PUV)	36 18 16 5	 75	48.00% 24.00% 21.33% 6.67%	B-75
A2 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (2) SMALL DECIDUOUS TREES @ 1.5" CAL (5 PUV) (2) LARGE EVERGREEN TREES @ >12' HT (8 PUV) (3) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (18) LARGE/MEDIUM SHRUBS @ 36" HT (1 PUV)	16 10 16 15 18	 75	4.00% 58.67% 20.00% 17.33%	B-75
A3 100 LF	(4) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV) (5) LARGE EVERGREEN TREES @ >12' HT (8 PUV) (3) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (15) LARGE/MED SHRUBS @ 36" HT (1 PUV)	32 5 40 15 15	 107	29.90% 4.67% 37.39% 14.02% 14.02%	B-75
A4 100 LF	(4) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREES @ 1.5" CAL (5 PUV) (4) LARGE EVERGREEN TREES @ 12' HT (8 PUV) (5) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (15) LARGE/MED SHRUBS @ 36" HT (1 PUV)	32 5 32 30 15	 114	28.07% 4.39% 28.07% 26.31% 13.16%	B-75
A5 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (3) SMALL DECIDUOUS TREES @ 1.5" CAL (5 PUV) (2) LARGE EVERGREEN TREES @ 12' HT (8 PUV) (5) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (17) LARGE/MED SHRUBS @ 36" HT (1 PUV)	16 15 16 25 17	 89	17.98% 16.85% 17.98% 28.09% 19.10%	B-75
A6 100 LF	(2) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) SMALL DECIDUOUS TREE @ 1.5" CAL (5 PUV) (2) LARGE EVERGREEN TREES @ 12' HT (8 PUV) (6) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (20) LARGE/MED SHRUBS @ 36" HT (1 PUV)	16 10 16 30 20	 92	17.39% 10.87% 17.39% 32.62% 21.73%	B-75
A7 29.3 LF	(1) LARGE DECIDUOUS TREES @ 2.5" CAL (8 PUV) (1) LARGE EVERGREEN TREES @ 12' HT (8 PUV) (1) SMALL EVERGREEN TREES @ 6' HT (5 PUV) (3) LARGE/MED SHRUBS @ 36" HT (1 PUV)	8 8 5 3	 89	17.98% 16.85% 17.98% 28.09%	B-75 (22 REQ)

* DENOTES INSTANCES WHERE A DECIDUOUS TREE HAS BEEN COUNTED TOWARDS EVERGREEN PUV REQUIREMENTS PER TABLE 7.01-D OF THE HOLLY SPRINGS UDO LANDSCAPE REGULATIONS

NOTE: ADDITIONAL PLANTINGS HAVE BEEN PROVIDED ALONG THE GREENWAY TRAIL THAT EXCEED THE PLANTING REQUIREMENTS BY ToHS IN THE UNDISTURBED BUFFER.

SEE SHEET C0.00 FOR ALL PROJECT, SITE, GRADING, STORM DRAINAGE AND UTILITY NOTES

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT TOWN OF HOLLY SPRINGS AND NCDOT (WHERE APPLICABLE) ENGINEERING DESIGN AND CONSTRUCTION STANDARDS

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS
The John R. McAdams Company, Inc.
One Glenwood Avenue
Suite 201
Raleigh, NC 27603
phone 919. 823. 4300
fax 919. 361. 2269
license number: C-0293, C-187
www.mcadamsco.com

CLIENT

CAPITAL ASSOCIATES
1501 SUNRISE AVENUE, SUITE 100
RALEIGH, NORTH CAROLINA 27608
PHONE: 919.233.9901

CAPITAL ASSOCIATES

1317 N MAIN COMMERCIAL TRACT DEVELPMENT PLAN

DEVELOPMENT PLANS - AMENDMENT #2

1317 NORTH MAIN STREET
HOLLY SPRINGS, NORTH CAROLINA 27540

NORTH CAROLINA LANDSCAPE ARCHITECT SARA RUNGE DONOHUE 2027 PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

NO.	DATE	
1	04. 24. 2025	REVISED PER TOHS 1ST REVIEW COMMENTS
2	05. 22. 2025	REVISED PER TOHS 2ND REVIEW COMMENTS

PLAN INFORMATION

PROJECT NO.	CAP-22003
FILENAME	CAP22003-LS1
CHECKED BY	ACP / MDS
DRAWN BY	MCG
SCALE	
DATE	03.07.25

SHEET

LANDSCAPE BUFFER NOTES AND DETAILS

L5.03

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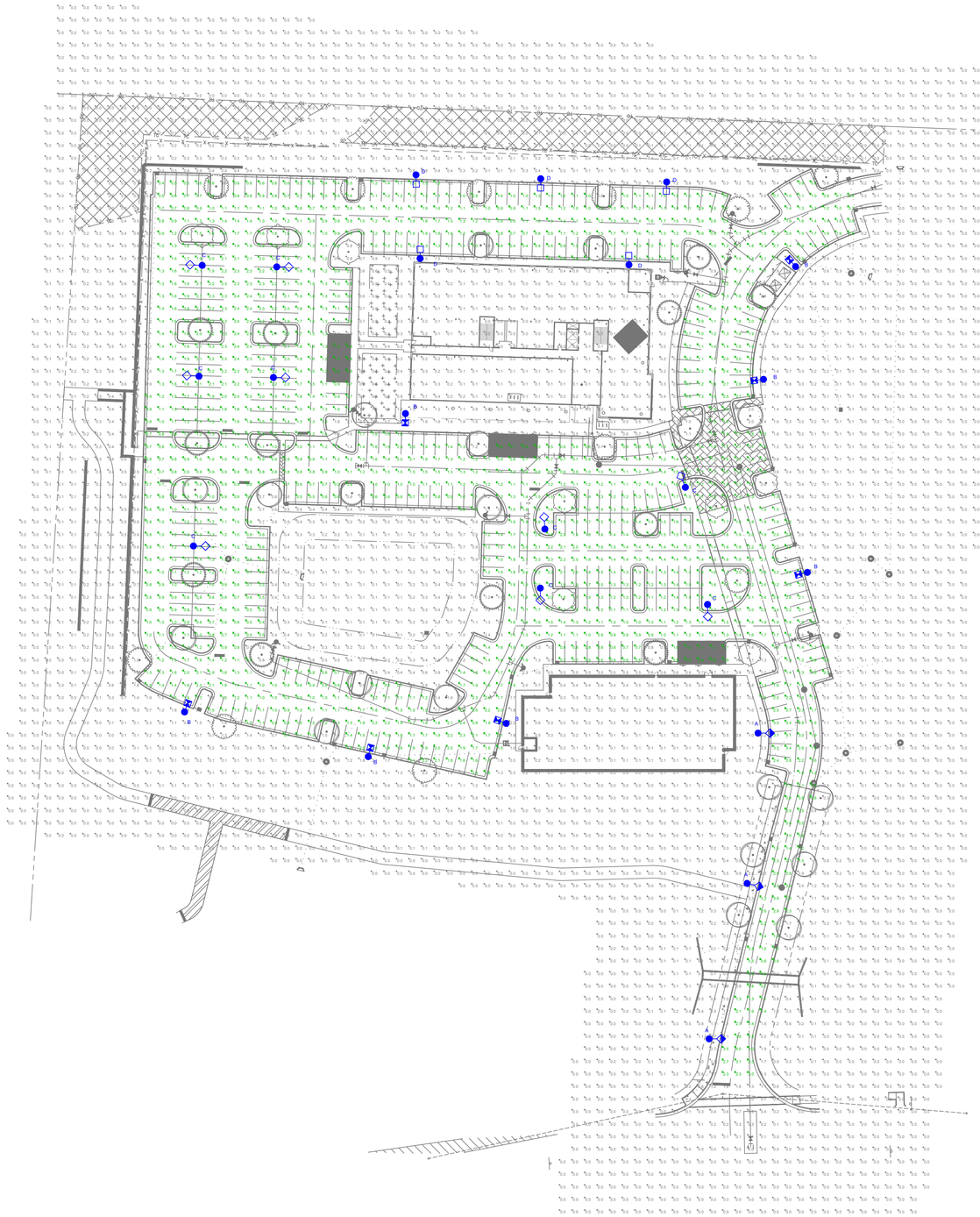

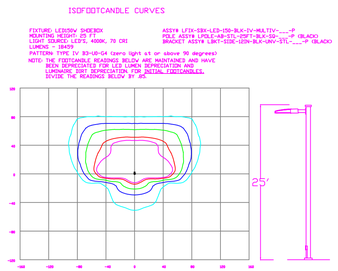

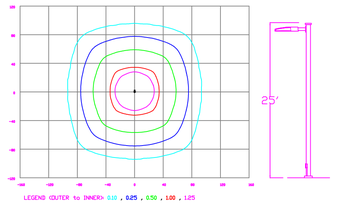

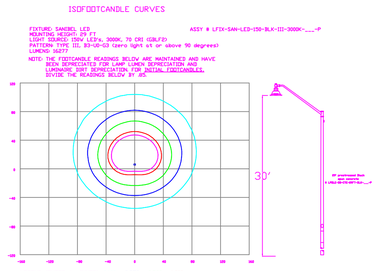

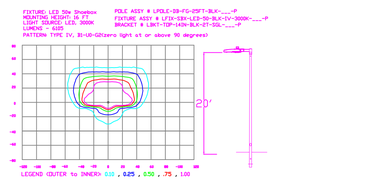

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Parking	+	1.4 fc	4.1 fc	0.4 fc	10.3:1	3.5:1

Schedule

Symbol	Label	Quantity	Description	Number Lamps	Lumens Per Lamp	Light Loss Factor
	A	3	LED 150w Sanibel - Type III - 4000K	1	15269	0.85
	B	7	LED 150w Shoebox - Type IV - 4000K	48	385	0.85
	C	9	LED 150w Shoebox - Type V - 4000K	48	408	0.85
	D	5	LED 50w Shoebox - Type IV - 3000K	16	382	0.85

Outdoor Lighting



SHOEBOX LED
(Meets Dark Sky Criteria)

LED (Light-emitting diode)	150 | 220 | 420 | 530 watts
Mounting height	25', 30', 35'
Color	Black | Bronze | Gray | White
Pole	Fiberglass *(1 or 2 fixtures per pole)* Decorative tapered metal Decorative square metal
Applications	Neighborhoods Roadways Shopping centers

Light source: LED (white)
Wattage: 150 | 220 | 420 | 530 watts
Light pattern: IES Type V | Type IV (forward throw) | Type III
IESNA cutoff classification: Full-cutoff
BUG rating: 150W Type III = B2U0G3 / Type IV = B3U0G4 / Type V = B5U0G3
220W Type III = B2U0G4 / Type IV = B3U0G4 / Type V = B4U0G3
420W Type IV = B3U0G5 / Type V = B5U0G5
530W Type IV = B3U0G5 / Type V = B5U0G5
Color temperature: 4,000K

POLE AVAILABLE	MOUNTING HEIGHT	COLOR
Round tapered decorative metal*	35'	Black, Bronze
Decorative square metal*	25' and 30'	Black, Bronze, Gray, White
Fiberglass	25' and 30'	Black *(1 or 2 fixtures per pole)* Gray *(1 or 2 fixtures per pole)*



light distribution pattern

FEATURES	BENEFITS
Turnkey operation	Provides hassle-free installation and service
Little or no installation cost	Frees up capital for other projects
Design services by lighting professionals included	Meets industry standards and lighting ordinances
Maintenance, electricity & warranty included	Eliminates high and unexpected repair bills
One low monthly cost on your electric bill	Convenience and savings for you

For additional information, email us at
DDLCarolinas@duke-energy.com.

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Outdoor Lighting



SANIBEL LED
(Meets Dark Sky Criteria)

LED (Light-emitting diode)	50 | 150 watts
Mounting height	12', 16', 29'
Color	Black
Pole	Smooth, round concrete
Applications	Neighborhoods Parks Pathways/walkways Shopping centers Streets

Light source: LED (white)
Wattage: 50 | 150 watts
Lumens: 6,358 | 6,773 | 16,160
Light pattern: IESNA Type III
IESNA cutoff classification: Full-cutoff
BUG rating: B2U0G2
Color temperature: 3,000K (50W) | 4,000K (50W/150W)



light distribution pattern

POLE AVAILABLE	MOUNTING HEIGHT	COLOR
Smooth, round concrete	12', 16', 29'	Black

FEATURES	BENEFITS
Turnkey operation	Provides hassle-free installation and service
Little or no installation cost	Frees up capital for other projects
Design services by lighting professionals included	Meets industry standards and lighting ordinances
Maintenance, electricity & warranty included	Eliminates high and unexpected repair bills
One low monthly cost on your electric bill	Convenience and savings for you

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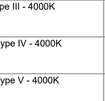
Outdoor Lighting



PEDESTRIAN SHOEBOX LED
(Meets Dark Sky Criteria)

LED (Light-emitting diode)	50 watts
Mounting height	12' - 17'
Color	Black
Pole	Aluminum Fiberglass Concrete Decorative aluminum
Applications	Neighborhoods Parks Shopping centers

Light source: LED (white)
Wattage: 50 watts
Lumens: 6,105 | 6,458
Light pattern: IESNA Type IV
IESNA cutoff classification: Full-cutoff
BUG rating: Type IV = B1U0G2
Color temperature: 3,000K | 4,000K



light distribution pattern

POLE AVAILABLE	MOUNTING HEIGHT	COLOR
Aluminum	12', 15', 17'	Black
Fiberglass	16'	Black
Fluted Concrete	13'	Black
Decorative Aluminum	12', 16'	Black

FEATURES	BENEFITS
Turnkey operation	Provides hassle-free installation and service
Little or no installation cost	Frees up capital for other projects
Design services by lighting professionals included	Meets industry standards and lighting ordinances
Maintenance, electricity & warranty included	Eliminates high and unexpected repair bills
One low monthly cost on your electric bill	Convenience and savings for you

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NO.	DATE	REVISION	BY
Rev C	06/14/23	Updated Site Plan	NJ
Rev B	09/16/21	Updated Site Plan	NJ

DISTANCE CALIBRATION <INCHES>
0 0.5 1.0 2.0 3.0 4.0

LIGHTING DESIGN TOLERANCE

The calculated footcandle light levels in this lighting design are predicted values and are based on specific information that has been supplied to Duke Energy. Any inaccuracies in the supplied information, differences in luminaire installation, lighted area geometry including elevation differences, reflective properties of surrounding surfaces, obstructions (foliage or otherwise) in the lighted area, or lighting from sources other than listed in this design may produce different results from the predicted values. Normal tolerances of voltage, lamp output, and ballast and luminaire manufacture will also affect results.

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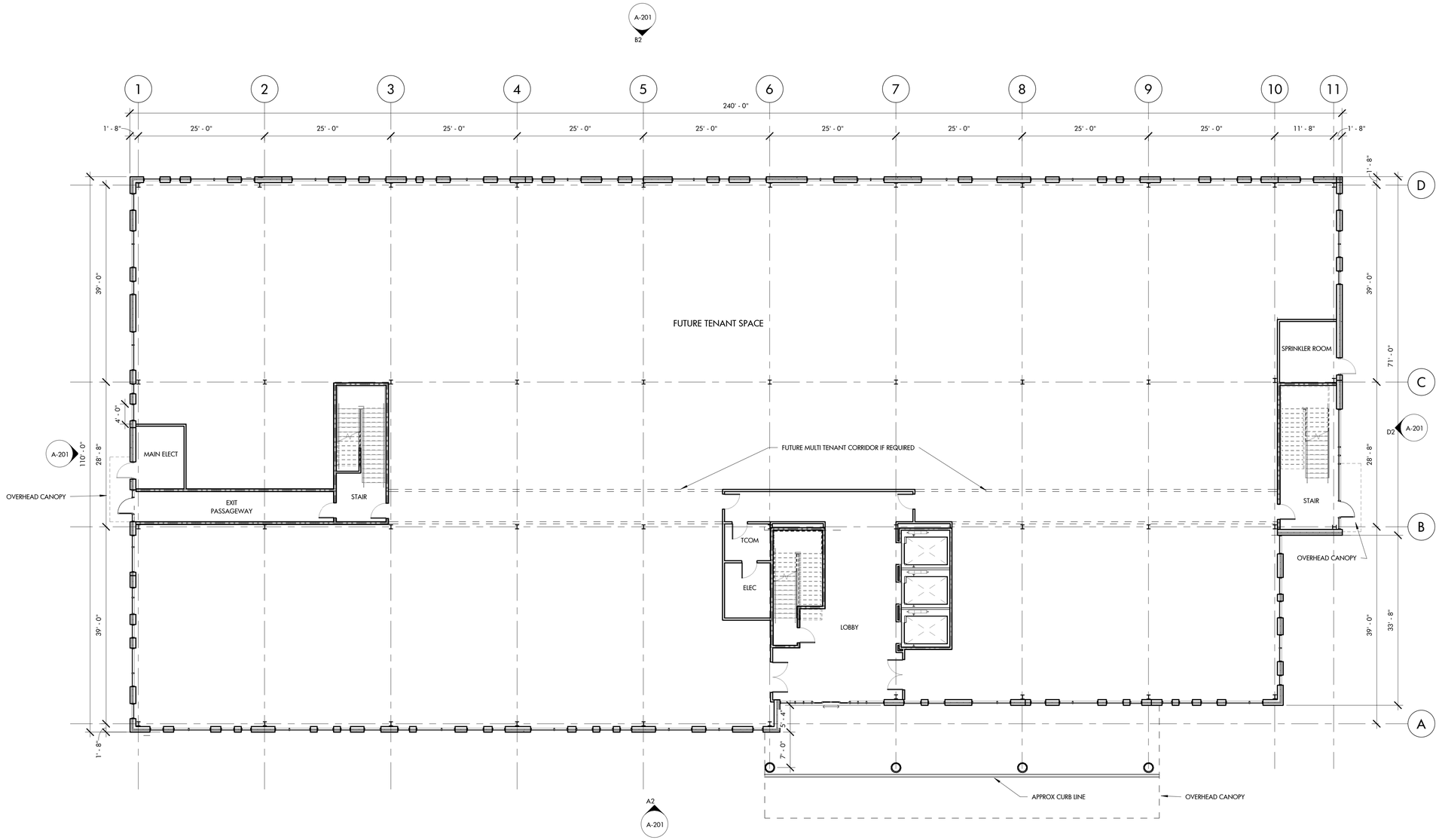
1317 Main Street
Holly Springs, NC
SITE LIGHTING ARRANGEMENT

Designed by DUKE ENERGY PROGRESS LIGHTING SOLUTIONS
Reviewed by N. Johnson
Scale 1" = 50'
Date 06/14/2023
Size Drawing size "D"
Description LED Shoebox & Sanibel
Drawing No. 21-0171C
Sht. 1 OF 1



A1 / A-101 LEVEL 1 PLAN
3/32" = 1'-0"

HAGERSMITH
ARCHITECTURE | INTERIOR DESIGN
LANDSCAPE ARCHITECTURE

300 S. DAWSON STREET
RALEIGH, NC 27601 | 919.821.5547
www.hagersmith.com
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SEALS





PROJECT 000-000

HOLLY SPRINGS MEDICAL OFFICE BUILDING

SPORTSMANSHIP WAY
HOLLY SPRINGS, NC

CONSULTANTS

CLIENT

CAPITAL ASSOCIATES

DRAWING TITLE

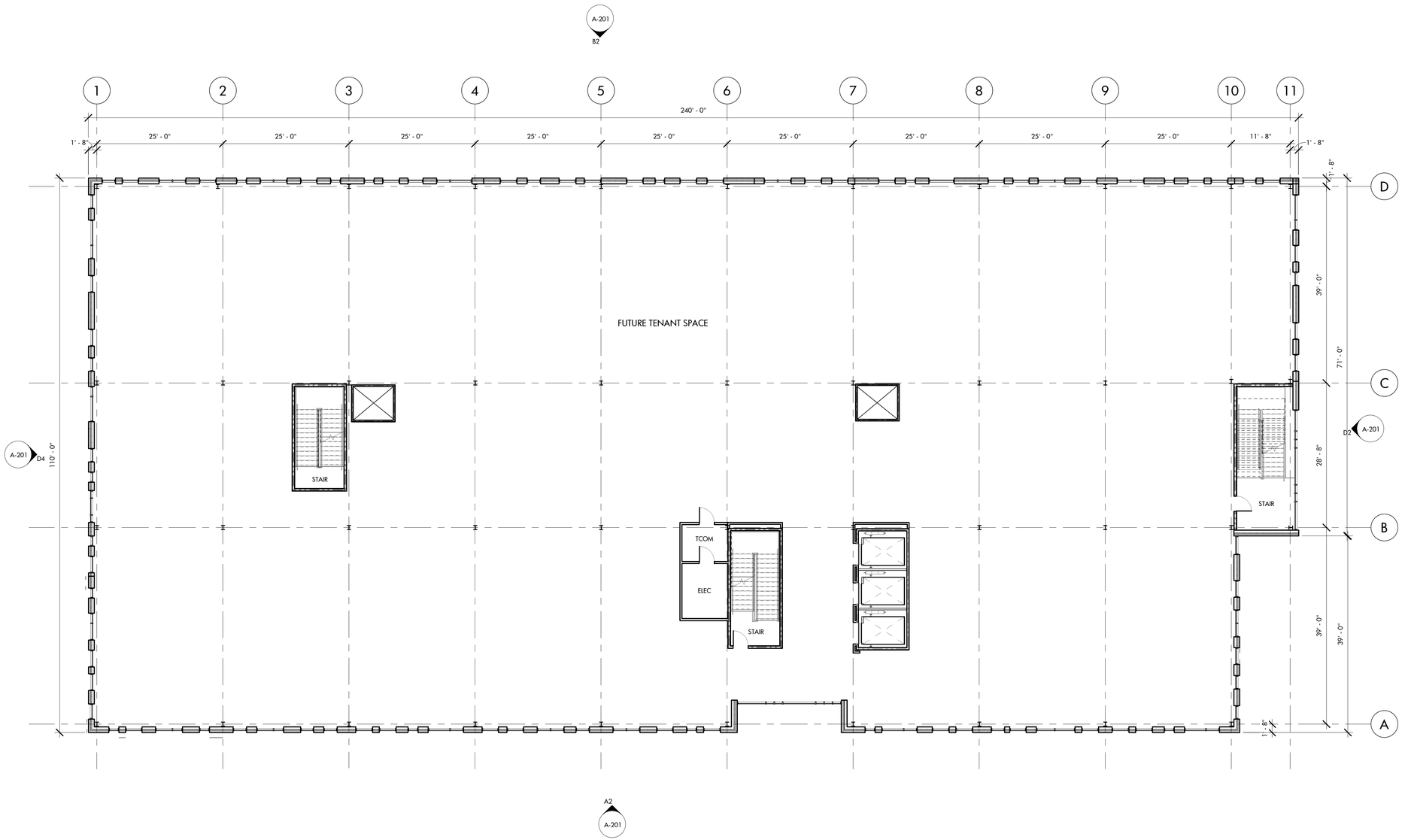
FIRST FLOOR PLAN

REVISIONS

NUMBER	DESCRIPTION	DATE

DRAWN BY CML
CHECKED BY BDG
DATE ISSUED 3/7/25 ___ OF ___

A-101



A1 / A-102 FLOOR PLANS 2 AND 3
3/32" = 1'-0"

HAGERSMITH
ARCHITECTURE | INTERIOR DESIGN
LANDSCAPE ARCHITECTURE

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SEALS





PROJECT 000-000

HOLLY SPRINGS MEDICAL OFFICE BUILDING

SPORTSMANSHIP WAY
HOLLY SPRINGS, NC

CONSULTANTS

CLIENT

CAPITAL ASSOCIATES

DRAWING TITLE

UPPER FLOOR PLANS

REVISIONS

NUMBER	DESCRIPTION	DATE

DRAWN BY CML
CHECKED BY BDG
DATE ISSUED 3/6/25 ___ OF ___

A-102



D2 A-201 EAST 3/32" = 1'-0"



D4 A-201 WEST 3/32" = 1'-0"



B2 A-201 NORTH 3/32" = 1'-0"



A2 A-201 SOUTH 3/32" = 1'-0"

HOLLY SPRINGS UDO CONFORMANCE NOTES:

GENERAL
1. BUILDING IS CONSIDERED A LARGE BUILDING - APPROX 77,273 GROSS SF

BUILDING MATERIALS
SEE SHEET A-202 FOR MATERIAL DESIGNATIONS

1. THE TYPE 1 BUILDING MATERIAL IS BRICK AND IS REQUIRED TO BE AT LEAST 60% OF EACH ELEVATION (EXCLUDING GLASS)
SOUTH = 8132 TOTAL SF X .60 = 4879 SF REQUIRED
6531 SF PROVIDED
NORTH = 9028 TOTAL SF X .60 = 5417 SF REQUIRED
7382 SF PROVIDED
EAST = 3230 TOTAL SF X .60 = 1939 SF REQUIRED
2767 SF PROVIDED
WEST= 3783 TOTAL SF X .60 = 2270 SF REQUIRED
3089 SF PROVIDED

2. THE PRIMARY BRICK IS LIMITED TO 2 COLORS (BLACK AND GRAY)

3. THE TYPE 2 MATERIAL IS ALUMINUM WOOD LOOK SIDING/CLADDING - NO RESTRICTIONS
SOUTH = 1601 SF PROVIDED
NORTH = 1646 SF PROVIDED
EAST = 463 SF PROVIDED
WEST= 694 SF PROVIDED

BULK AND MASSING
1. SEE ELEVATIONS FOR BASE, MIDDLE, AND CAP MASSING DESIGNATIONS. SEE BELOW FOR PERCENTAGE OF FACADE HEIGHT
BASE = 25%
MIDDLE = 62% - GREATER THAN THE 50% REQUIRED
TOP = 13%

VERTICAL VARIATION
1. ALONG THE MAJORITY OF THE BUILDING WE HAVE BRICK COLUMNS FROM GROUND FLOOR TO THE ROOF AT DIFFERING WIDTHS APART BUT NONE LARGER THAN THE 75' MAX. THERE ARE CHANGES IN PLANE OVER 2" AT ALL WINDOW OPENINGS ALOGN THESE VERTICAL ELEMENTS

ROOF EXPRESSION
1. ROOF LINE STANDARDS DO NOT APPLY TO ROOF LINE OF A BUILDING 3 STORIES OR TALLER

FACADE ACTIVATION
1. THERE ARE NO BLANK WALLS OVER 20'

2. PRIMARY BUILDING ENTRANCE IS VISIBLE FROM A PUBLIC RIGHT OF WAY AND IS EASILY IDENTIFIABLE DUE TO A CHANGE IN MATERIAL AND A DROP OFF CANOPY

HUMAN SCALE ELEMENTS
1. A COMBINATION OF PUNCHED OPENINGS AND BRICK DETAILING (CHANGES IN COURSING) ARE PROVIDED VERTICALLY IN THE FIRST 15' OF THE FACADE

ALL OTHER FACADE STANDARDS
1. ALL ELEVATIONS ARE DESIGNED TO MEET THE STANDARDS

SCREENING
1. A ROOF SCREEN SHALL BE INSTALLED ON THE ROOF TO BLOCK ALL VIEWS TO HVAC EQUIPMENT

TRANSPARENCY
SEE ELEVATIONS FOR HATCHED AREAS SHOWING VISION GLASS. ALL UNHATCHED GLASS IS SPANDREL AND IS NOT TRANSPARENT

GROUND FLOOR - 20% TRANSPARENCY REQUIRED
UPPER LEVELS - 15% TRANSPARENCY REQUIRED

NORTH ELEVATION GROUND FLOOR TRANSPARENCY = 50%
NORTH ELEVATION SECOND FLOOR TRANSPARENCY = 20%
NORTH ELEVATION THIRD FLOOR TRANSPARENCY = 16%

EAST ELEVATION GROUND FLOOR TRANSPARENCY = 48%
EAST ELEVATION SECOND FLOOR TRANSPARENCY = 30%
EAST ELEVATION THIRD FLOOR TRANSPARENCY = 24%

SOUTH ELEVATION GROUND FLOOR TRANSPARENCY = 57%
SOUTH ELEVATION SECOND FLOOR TRANSPARENCY = 24%
SOUTH ELEVATION THIRD FLOOR TRANSPARENCY = 20%

WEST ELEVATION GROUND FLOOR TRANSPARENCY = 50%
WEST ELEVATION SECOND FLOOR TRANSPARENCY = 26%
WEST ELEVATION THIRD FLOOR TRANSPARENCY = 20%

SIGNAGE AND ADDRESS
1. ALL SIGNAGE TO BE PERMITTED SEPERATLY WITH A SIGN PERMIT
2. PROVIDE 6" MIN TALL ADDRESS/SUITE NUMBERS ON BUILDING. COORDINATE FINAL LOCATION WITH OWNER AND TOWN

HAGERSMITH
ARCHITECTURE | INTERIOR DESIGN
LANDSCAPE ARCHITECTURE

300 S. DAWSON STREET
RALEIGH, NC 27601 | 919.821.5547
www.hagersmith.com
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SEALS





PROJECT 000-000

HOLLY SPRINGS MEDICAL OFFICE BUILDING

SPORTSMANSHIP WAY
HOLLY SPRINGS, NC

CONSULTANTS

CLIENT

CAPITAL ASSOCIATES

DRAWING TITLE

EXTERIOR ELEVATIONS

REVISIONS

NUMBER	DESCRIPTION	DATE
1	Development Plan Amendment 2nd Submittal	4/24/25

DRAWN BY CML
CHECKED BY BDG
DATE ISSUED 3/6/25 ___ OF ___

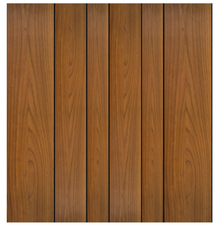
A-201



CANOPY
ALUMINUM COMPOSITE METAL PANEL CLAD
DROP OFF CANOPY - CHARCOAL GRAY



1" LOW-E GLASS
GUARDIAN GLASS SUNGUARD SNX 62/27
CLEAR IN BLACK ANODIZED ALUMINUM FRAMING



WOOD CLADDING
LONGBOARD ARCH PRODUCTS - ALUM WOOD GRAIN LOOK CLADDING - LIGHT CHERRY

TYPE 2 MATERIAL



LIGHT GRAY MODULAR BRICK
BELDEN - SMOKY GRAY VELOUR

TYPE 1 - PRIMARY MATERIAL



BLACK MODULAR BRICK
BELDEN - BLACK DIAMMOND VELOUR

TYPE 1 - PRIMARY MATERIAL



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SEALS





PROJECT 000-000

HOLLY SPRINGS MEDICAL OFFICE BUILDING

SPORTSMANSHIP WAY
HOLLY SPRINGS, NC

CONSULTANTS

CLIENT

CAPITAL ASSOCIATES

DRAWING TITLE
EXTERIOR BUILDING MATERIALS

REVISIONS

NUMBER	DESCRIPTION	DATE

DRAWN BY CML
CHECKED BY BDG
DATE ISSUED 3/6/25 ___ OF ___

A-202

Holly Springs Planning Board

Planning Board Meeting Agenda Cover Sheet

Agenda Item#: 20.

New Business
Title: 4016 Berman Edge Rd Rezoning (25-REZ-03)
Strategic Priority Area: Growth Management & Economic Vitality
Staff Resource: Conor Ryan, Development Services, Elliot Blonshine, Development Services

Action(s):

- Adopt Rezoning Ordinance RZ25-05 to adopt the Plan Consistency Statement, Statement of Reasonableness, and approve / deny / defer rezoning 25-REZ-03.
- Approve / deny / defer Utility Allocation Request for 4016 Berman Edge Rd.

Explanation:

- The Town has received a Rezoning request to rezone a 1-acre site at 4016 Berman Edge Road from RR Rural Residential to SR Suburban Residential to allow for a two-lot subdivision.
- The request is for a general-use rezoning from one Unified Development Ordinance (UDO) zoning district to another and not a Conditional Zoning District, which allows modified standards. Future subdivision and development of the site will adhere to all UDO requirements.

Staff Recommendation: Approve

Town Council Public Hearing:

- The legislative public hearing process for Type 6 (Legislative Action - Town Council) reviews, including rezoning, is prior to the Planning Board review and recommendation.
- The public hearing was held on June 17, 2025. A link to the public hearing video is included in the staff report.
- A summary of the issues raised at the public hearing and feedback provided to the applicant is included in the staff report.

Planning Board Recommendation: Approve 8-0 (1 absent)
A summary of the Planning Board discussion can be found in the Planning Board Action Report.

Background:

- The Town Council adopted an amendment to the Unified Development Ordinance (UDO) in 2024 that updated the process for legislative cases such as rezoning and UDO amendments.

- Included in this update was a change to the timing of the public hearing - changing the public hearing to occur prior to the Planning Board meeting instead of immediately prior to the Town Council decision.
- In accordance with the updated process, consideration of these amendments has occurred and will occur on the following schedule:
    - Tuesday, June 17 - Town Council Public Hearing
    - Tuesday, June 24 - Planning Board review and recommendation
    - Tuesday, July 15 - Town Council consideration and decision
- The site zoning was reassigned from R-20 Residential to RR Rural Residential as part of the UDO zoning district updates (March 1, 2022).

Funding Source(s):

N/A

Attachment(s):

1. 25REZ03_4016BermanEdge_StaffReport
2. 25REZ03_4016BermanEdge_PlanningBoardReport
3. 25REZ03_4016BermanEdge_REZOrdinance
4. 25REZ03_4016BermanEdge_Application
5. 25REZ03_4016BermanEdge_Plans

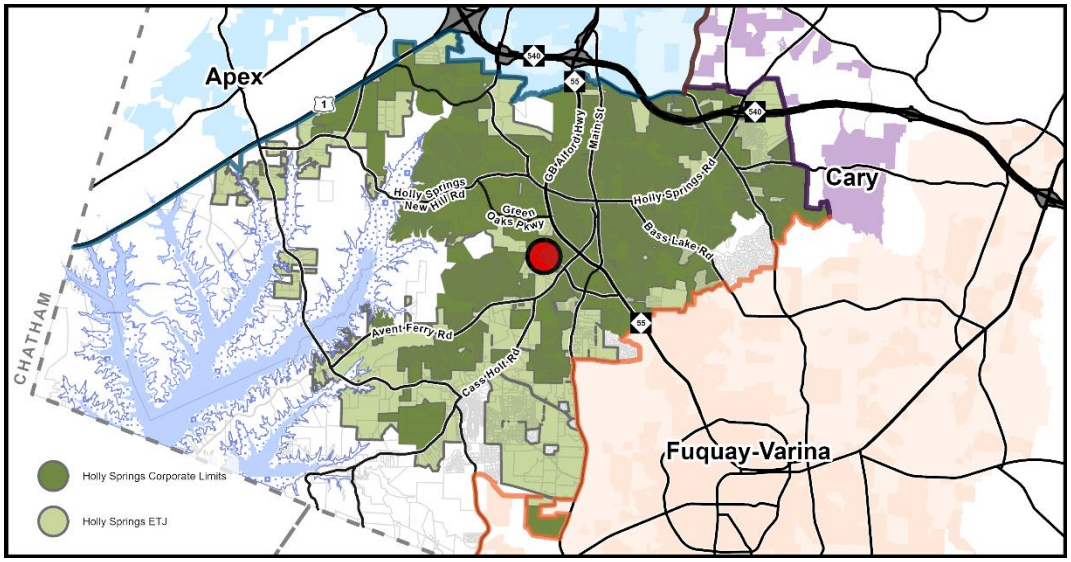
Project Type: Zoning Map Amendment (Rezoning)

Concurrent Applications:
☐ Waiver / SUP/ VAR/ CPA

Applicant / Petitioner:
John Teel
150 Collins Crossing Rd
Holly Springs, NC 27540

Property Address: 4016 Berman Edge Rd

Property Area: 1.00 ac.



Located in: ☒Holly Springs Corporate Limits ☐Holly Springs ETJ ☐Annexation Pending

Project Summary:

A General Rezoning of 1 acre from RR – Rural Residential to SR – Suburban Residential located at 4016 Berman Edge Rd, adjacent to the Bluffs at Morgan Park subdivision, with the intent to create 1 additional lot for a detached residential dwelling.

Requested Action:

Legislative Decision: Having previously held a Legislative Public Hearing, the Town Council must make a determination on whether or not to approve the policy or modification.

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Community Facilities Information	Page 9
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Natural Resources & Open Space Information	Page 11
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Decision-Making Information	Page 14

Case Summary

Current Zoning:
RR Rural Residential
☐ Conditional Zoning District

Proposed Zoning:
SR Suburban Residential
☐ Conditional Zoning District



Aerial Photograph

Growth Strategy Map:
Places to Enhance

Small Area Plan Designation:
N/A

Future Land Use Plan Designation:
Residential Neighborhood

Staff Analysis:

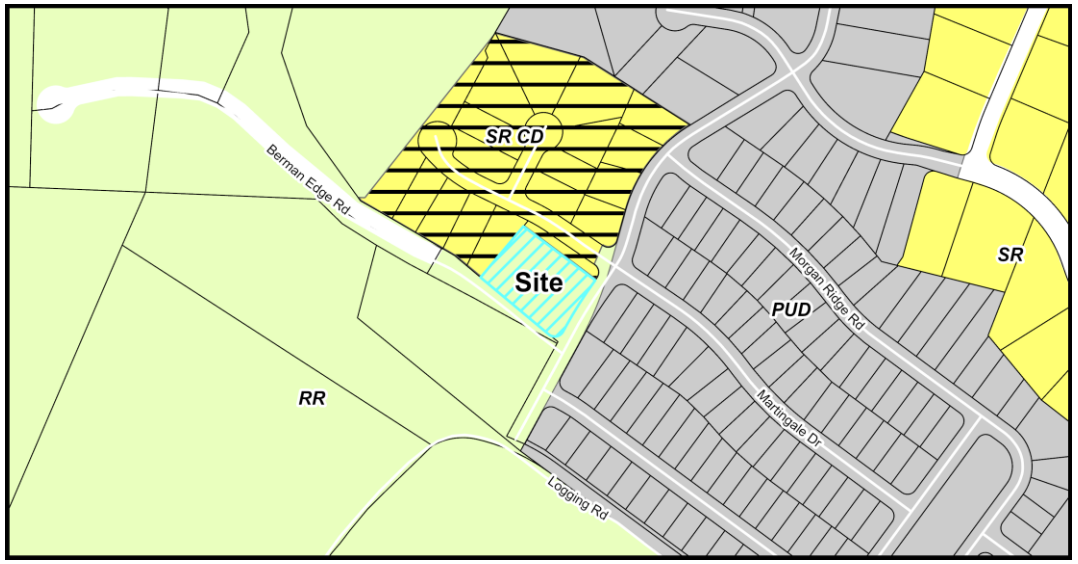
The Zoning Map Amendment is: ☒ Consistent with Adopted Plans/Ordinances ☐ Inconsistent with Adopted Plans/Ordinances

The proposed SR zoning district is consistent with the Residential Neighborhood Future Land Use designation. The proposed use of the property, single-family detached dwellings, is consistent with the goals of the Residential Neighborhood Future Land Use Designation, as well as the themes of the Comprehensive Plan as a whole, including the need for context-sensitive infill development. The proposed rezoning will allow for the construction of new housing consistent with the existing development around it, as well as a continuation of elements that are present in the adjacent development, including a 20' undisturbed perimeter buffer extending along Lot 17's property line adjacent to Berman Edge Rd.

Staff Recommendation: ☒ Approve ☐ Deny

Current Zoning Information

Parcel #	Zoning	Area
0648488641	RR	1.00 ac.
	Total Area	**1.00 ac.**



Current Zoning Map

Adjacent Property Current Zoning Information

	Zoning	Existing Land Use
Subject Property	RR	Single Family Detached
North	SR-CD	Single Family Detached
South	RR & PUD	Single Family Detached
East	SR-CD & PUD	Single Family Detached
West	SR-CD & RR	Single Family Detached

Parcel Rezoning History

Rezoning Number: 22-REZ-01
Original Zoning: R-20 Residential
Approved Zoning: RR
Approval Date: 3/1/2022

Land Use & Character Information

Vision Holly Springs Comprehensive Plan Section 1

Growth Strategy Map: Places to Enhance

Future Land Use: Residential Neighborhood

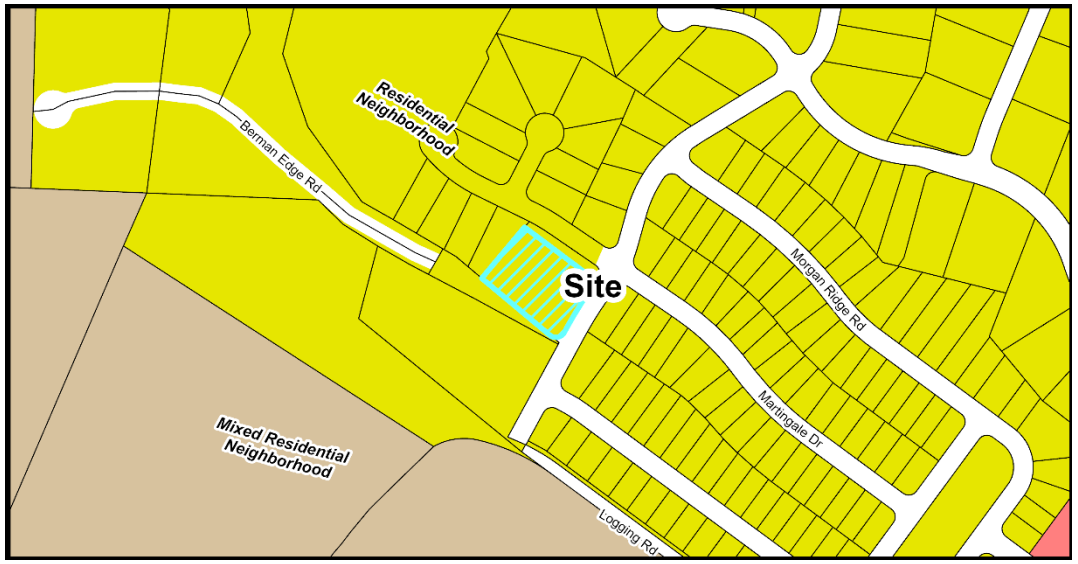
Small Area Plan: N/A

The Requested Zoning Map Amendment is:

☒ **Consistent with the Future Land Use Map**

☐ **Inconsistent with the Future Land Use Map**

If a Zoning Map Amendment is adopted and the action is deemed inconsistent with the Future Lane Use Map, the Zoning Map Amendment has the effect of also amending the Future Land-use Map.



Future Land Use Map

Important Themes for Transforming Holly Springs:

Eight important themes for Holly Springs are highlighted as high-priority principles for transforming the Town. The following theme(s) should be considered with this request:

Theme	Description
☐ Establish Mixed-Use Activity Centers Throughout Holly Springs	Mixed-use and walkable development
☐ Suburban Remix	Activate neighborhood centers
☐ Suburban Retrofit	Redevelop existing centers into mixed-use, multi-modal, activated centers
☒ Context-Sensitive Infill Development Choices	Infill around single use residential areas
☐ Transitions	Complement existing development and avoid incompatibilities
☐ Increase Home & Neighborhood Choices in Holly Springs	Variety of integrated housing products
☐ Increase Diversity & Affordability of Housing in Holly Springs	Adequate supply of affordable housing
☐ More Transportation-Land Use Coordination in the Community	Equal emphasis on land use (demand), transportation (supply) and urban design (character)

Land Use & Character Information (cont.)

Growth Strategy Map: Places to Enhance
Places to enhance in Holly Springs celebrate existing and future residential neighborhoods, and the small activity centers that serve them, as the building blocks for a strong community. They generally include Conservation Neighborhoods, Residential Neighborhoods with single dwelling detached homes on varying lot sizes, or Mixed Residential Neighborhoods with two or more home types (single dwelling detached, single dwelling attached, and multi dwelling) in the same development. Future infill development in the enhancement areas should be sensitive to the uses and densities along the perimeter of adjacent neighborhoods.

Future Land Use: Residential Neighborhood
A Residential Neighborhood area includes one housing type — single dwelling detached — on different lot sizes that vary enough to provide a range of home choices in the same neighborhood. Homes are oriented toward streets with rear yards larger than front yards. Some Residential Neighborhood areas may mix lot and house sizes on the same block, or provide accessory dwelling units.

Key Characteristics Include:

- Front-facing garages should be avoided. Where garages face the street, they should be set back significantly from the facade of the building.
- Residential building types are limited to single dwelling detached residential, including accessory dwelling units, in a variety of sizes. Single dwelling attached and multi-dwelling are not allowed.
- Buildings may be up to 3 stories in height.

Small Area Plan: N/A

Historic Structures: ☒ None

Land Use & Character Staff Analysis:

The Zoning Map Amendment is: ☒ Consistent ☐ Inconsistent with the Land Use & Character Plan/Ordinances

The applicant has proposed the SR zoning district, which is consistent with the adjacent parcels and the existing development abutting the property. The proposed use, single-family detached dwellings, is compatible with the land use expectations of the Residential Neighborhood Future Land Use designation, incorporates smaller-scale detached housing adjacent to an existing neighborhood, and provides an undisturbed buffer to help transition to the low-density residential uses adjacent to the property.

Transportation Information

Vision Holly Springs Comprehensive Plan Section 2

Comprehensive Transportation Plan

Road Widening along Project Frontage	☐ Required ☒ Not Required
New Location Roadways	☐ Required ☒ Not Required
Hotspot/Safety Study Location	☐ Yes ☒ No



Roadway Map

Comprehensive Transportation Plan Summary

Road Widening along Project Frontage:
The project is on the corner of Martingale Drive and Utley Bluffs Drive, which are residential neighborhood streets. These streets were constructed with the adjacent subdivisions and do not require widening per the Comprehensive Transportation Plan.

New Location Roadways:
There are no new roadways impacting the subject property shown on the Comprehensive Transportation Plan.

Hotspot/Safety Study Location:
There are no Hotspot/Safety studies adjacent to this parcel.

Improvement Prioritization:
N/A

Transportation Information (cont.)

Traffic Study Policy

☐Traffic Study Required ☐Tier 1
☐Tier 2
☐Tier 3
☐Traffic Verification Memo

Traffic Study Summary
The rezoning did not warrant a traffic study per the Town's Traffic Study Policy.

Transportation Staff Analysis:

The Zoning Map Amendment is: ☒ Consistent ☐ Inconsistent with the Comprehensive Transportation Plan/Ordinances.

The proposed rezoning is consistent with the Comprehensive Transportation Plan and Traffic Study Policy.

Parks, Recreation, & Greenways Information

Vision Holly Springs Comprehensive Plan Section 3

Park Search Area ☒ Yes ☐ No



Active Transportation Map

Required Active Transportation Improvements

☐ Greenway ☐ Sidepath

There are no active transportation improvements required for this project per the Parks, Recreation & Greenways Master Plan.

Parks, Recreation, & Greenways Summary

The project is in a park search area. Due to project's small scale, a fee-in-lieu for parkland dedication will be collected at time of Final Plat.

Parks, Recreation, & Greenways Staff Analysis:

The Zoning Map Amendment is: ☒ Consistent ☐ Inconsistent with the Parks, Recreation & Greenways Master Plan/Ordinances

The project is consistent with the Parks, Recreation, & Greenways Master Plan.

Community Facilities Information

Vision Holly Springs Comprehensive Plan Section 4

Population growth increases demand for public services. In order to fulfill this demand, community facilities must be appropriately planned for and constructed. These facilities may range from additional public safety stations, such as police and fire, to new schools to handle the influx of school-aged children into an area.



No identified Facilities

Community Facilities Map

WCPSS Coordination

A Letter of Impact from Wake County Public School System (WCPSS) was received for this rezoning and is included in the attachments.

Schools at the following grade levels within the current assignment area for the proposed rezoning are anticipated to have insufficient capacity for future students; transportation to schools outside of the current assignment area should be anticipated:

☐ Elementary ☐ Middle ☐ High School ☒ N/A: All grade levels are anticipated to have sufficient capacity

The following mitigation of capacity concerns due to school construction or expansion is anticipated:

☐ School expansion or construction within the next five years is not anticipated to address concerns.

☐ School expansion or construction within the next five years may address concerns at these grade levels:

☐ Elementary ☐ Middle ☐ High School

☒Not applicable – existing school capacity is anticipated to be sufficient.

Community Facilities Staff Analysis:

The requested Zoning Map Amendment is: ☒ Consistent ☐ Inconsistent with the Community Facilities Plan

The subject property is outside of a search area for a public safety station as designated on the Community Facilities Map. As a project proposing residential units, the applicant is required to report the potential number of units to the Wake County Public School System for their facility planning.

Infrastructure & Utility Information

Vision Holly Springs Comprehensive Plan Section 5

Utility Availability

Water	☒ Yes ☐ No ☐ Study Required
Sanitary Sewer	☒ Yes ☐ No ☐ Study Required
Reclaim	☐ Yes ☒ No ☐ Study Required



Utility Map

Infrastructure & Utility Summary

Water:

The project has direct access to watermains within Martingale Drive and Utley Bluffs Drive to provide water service.

Sanitary Sewer:

The project has direct access to sewer mains within Martingale Drive to provide sewer service.

Reclaim:

The project is outside of the Town's reclaimed water service area.

Infrastructure & Utility Information (cont.)

Water Resource Management (WRMP) Policy

☒ WRMP Applicable	☐Tier 1	Allocation Elements	☐ Public Infrastructure Improvements
☐ WRMP Not Applicable	☒Tier 2		☒ Sustainable Design
	☐Tier 3		☐ Work Force Housing
			☒ Open Space/Tree Preservation

Water Resource Management Policy Summary
This project is subject to the Water Resource Management Policy and has provided a Utility Allocation Request to be considered by Town Council. This development has committed to two allocation elements as required by the Policy as a Priority Level 2. The first is Sustainable Design, which includes energy efficient building elements added to the homebuilding such as energy efficient windows and insulation. The second is Open Space and Tree Preservation, with a commitment to increase tree preservation area by 25% by providing a 20' Undisturbed Buffer across the rear of the new lot.

Utility Allocation Summary

Priority Level: Priority Level 2
Allocation Assignment: Residential – Single Family
Allocation Requested: 510 GPD

Staff Determination: Sufficient allocation is remaining in the Residential – Single Family assignment to support this project for the proposed build out year of 2026.

Infrastructure & Utility Staff Analysis:

The Zoning Map Amendment is: ☒ Consistent ☐ Inconsistent with the Infrastructure & Utilities Plan/Ordinances

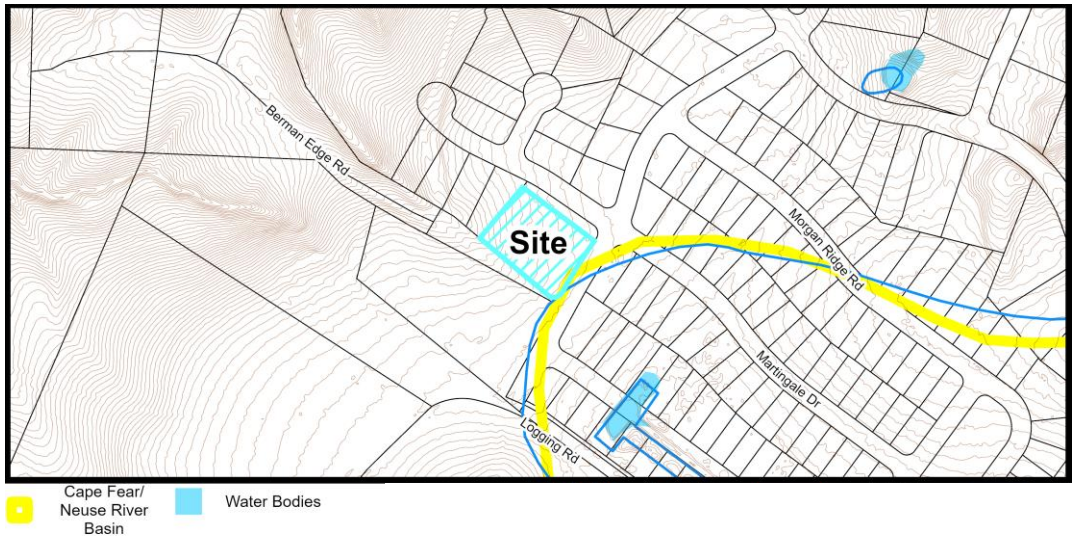
The project has direct access to water and sewer utilities for service. The allocation elements selected and committed by the applicant are proportionate with the scale of the project and are consistent with the intent of the Water Resource Management Policy.

Natural Resources & Open Space Information

Vision Holly Springs Comprehensive Plan Section 6

Total Required Open Space*	**30% (.3 ac.)**
Tree Preservation Area	25% (.25 ac.)
Active Recreation Area	0%
Flexible Space	5% (.05 ac)

** The lot area requirements for the SR District would only permit the creation of 1 additional residential dwelling lot, which can be created through a minor subdivision process. A minor subdivision does not require dedicated open space.*



Natural Resources Map

Natural Resources & Open Space Summary

Open Space:

The applicant is voluntarily providing a 20' undisturbed perimeter buffer along the rear lot line of the parcel that is to be created. Per UDO Table 2.2.1-A, the lot area requirements for the SR District would only permit the creation of 1 additional residential dwelling lot, which can be created through a minor subdivision process. A minor subdivision does not require dedicated open space. UDO Section 4.1.2.C.2, Minor Residential Subdivisions and individual Buildings not a part of a larger Project or Subdivision (e.g., infill Project on previously subdivided Lot) with 4 or fewer units (i.e., quadplex/small multifamily Building) are exempt from all On-Site Private Open Space requirements.

Stormwater:

This project will disturb less than 1-acre and therefore does not require stormwater control measures to treat impervious surfaces per NPDES permit requirements. The project will be responsible for erosion control during construction.

Natural Resources & Open Space Staff Analysis:

The Zoning Map Amendment is: ☒ Consistent ☐ Inconsistent with the Natural Resources Plan/Ordinances

The project is not required to provide any on-site private open space and is voluntarily including a 20' undisturbed buffer through the use of an easement on the Final Plat to aid use transitions and preserve existing tree canopies.

Decision-Making Information

Comprehensive Plan and Conditional Zoning District Consistency Summary Table

Vision Holly Springs Comprehensive Plan	
Land Use & Character Plan/Ordinances (Section 1)	☒ Consistent ☐ Inconsistent
Comprehensive Transportation Plan/Ordinances (Section 2)	☒ Consistent ☐ Inconsistent
Parks, Recreation & Greenways Master Plan/Ordinances (Section 3)	☒ Consistent ☐ Inconsistent
Community Facilities Plan/Ordinances (Section 4)	☒ Consistent ☐ Inconsistent
Infrastructure & Utilities Plan/Ordinances (Section 5)	☒ Consistent ☐ Inconsistent
Natural Resources Plan/Ordinances (Section 6)	☒ Consistent ☐ Inconsistent
Unified Development Ordinance	
Conditional Zoning District Standards/Ordinances	☐ Consistent ☐ Inconsistent ☒ Not Applicable

Zoning Map Amendment (Rezoning) Staff Analysis
The applicant must demonstrate that the proposed Zoning Map Amendment and property owner offered conditions (if any) or unique conditions associated with this request support the Town's Comprehensive Plan objectives and/or Ordinances and why the proposed zoning change is reasonable and in the public interest. The applicant has provided a statement in the petition.

Staff has reviewed the application and has determined the requested Zone Map Change is:

☒ Consistent with Adopted Plans/Ordinances ☐ Inconsistent with Adopted Plans/Ordinances
☒ Reasonable and in the Public Interest ☐ Not Reasonable and in the Public Interest

The proposed SR zoning district is consistent with the Residential Neighborhood Future Land Use designation. The use of the property, single-family detached dwellings, is consistent with the goals of the Residential Neighborhood Future Land Use Designation, as well as the themes of the Comprehensive Plan as a whole, including the need for context-sensitive infill development. The proposed rezoning will allow for the construction of new housing consistent with the existing development around it, as well as a continuation of elements that are present in the adjacent development, including a 20' undisturbed perimeter buffer extending along Lot 17's property line adjacent to Berman Edge Rd. The proposed rezoning is reasonable and in the public interest since the proposed zoning district fulfills the Future Land Use Designation, allows for the creation of infill housing not possible under the current zoning district, and the proposed use and design will complement and remain consistent with the existing development pattern in the area.

Staff Recommendation: ☒ Approve ☐ Deny

Planning Board Consideration & Action

Planning Board Meeting Date: 6/24/2025

A summary of the Planning Board discussion, the adopted Plan Consistency Statement, and final recommendation can be found in the Planning Board Action Report attached with the agenda item.

Town Council Consideration & Action

Zoning Map Amendment Plan Consistency Statement, Statement of Reasonableness, & Zoning Map Amendment Decision

Per NCGS 160D-605, when adopting or rejecting any Zoning Map Amendment, the Town Council must approve a brief statement describing whether its action is consistent or inconsistent with an adopted comprehensive or land-use plan. In addition, a statement analyzing the reasonableness of the proposed Zoning Map Amendment shall be approved by the Town Council. This statement of reasonableness may consider, among other factors:

- The size, physical conditions, and other attributes of the area proposed to be rezoned
- The benefits and detriments to the landowners, the neighbors, and the surrounding community
- The relationship between the current actual and permissible development on the tract and adjoining areas and the development that would be permissible under the proposed amendment
- Why the action taken is in the public interest
- Any changed conditions warranting the amendment.

Town Council Decision Type: Legislative Decision

Legislative Decision:
Legislative public hearings are held prior to a change in policy that may affect the entire community, including decisions on land use. The public hearing allows the Town Council to receive public comments regarding the proposal and then have discussion and deliberation. Based on the information provided on the proposal, the Town Council will make a determination on whether or not to approve the policy or modification.

Potential Zoning Map Amendment Petition Motion(s)
Adopt Rezoning Ordinance RZ25-05 to adopt the Plan Consistency Statement, Statement of Reasonableness, and approve / deny / defer rezoning 25-REZ-03.

Motion to Approve Utility Allocation for 4016 Berman Edge Road.

Planning Board Meeting Date: 6/24/2025

Per NCGS §160D-604(b), all proposed amendments to the Unified Development Ordinance (UDO) or Zoning Map shall be submitted to the Planning Board for review and comment. If no written report is received from the Planning Board within 30 days of referral of the amendment to the Planning Board, the Town Council may act on the amendment without the Planning Board report. The Town Council is not bound by the recommendations, if any, of the Planning Board.

Planning Board Decision Type: Advisory Decision

Advisory Decision
The Planning Board must review the application and make a recommendation to the Town Council.
The Planning Board should consider whether or not the land use standards and densities allowed in the proposed zoning district are appropriate for the property and consistent with the Vision of Holly Springs Comprehensive Plan. Technical standards of the Unified Development Ordinance are addressed once a Development Plan or Subdivision Plan is submitted for review.

The Planning Board discussed the following issues and concerns:
- None.

Zoning Map Amendment Plan Consistency Statement
Per NCGS §160D-604(d), the Planning Board shall advise and comment on whether the proposed action is consistent with all applicable officially adopted plans, and provide a written recommendation to the Town Council that addresses plan consistency and other matters as deemed appropriate by the Planning Board, but a comment by the Planning Board that a proposed amendment is inconsistent with the officially adopted plans shall not preclude consideration or approval of the proposed amendment by the Town Council.

The Planning Board adopted the following Plan Consistency Statement (8 - 0) *[1 absent]*

The requested Zoning Map Amendment from RR Rural Residential to SR Suburban Residential is consistent with the Vision Holly Springs Comprehensive Plan since the Future Land Use Plan Map indicates this property as Residential Neighborhood and the SR District supports the vision of a Residential Neighborhood by restricting the use of the property to single-family detached dwellings where homes are oriented toward streets with rear yards larger than front yards. The requested rezoning is reasonable and in the public interest because the proposed use of the property, single-family detached dwellings, is consistent with the goals of the Residential Neighborhood Future Land Use Designation, as well as the themes of the Comprehensive Plan as a whole, including the need for context-sensitive infill development.

Zoning Map Amendment Petition Motion
The Planning Board recommends the Town Council approve Zoning Map Amendment 25-REZ-03 to change the zoning of 1.00 acres of Wake County PIN # 0648488641 from RR: Rural Residential to SR: Suburban Residential as submitted by John Teel.

The Planning Board voted in favor of the recommendation (8 - 0) *[1 absent]*

Ordinance No. 25-05
Date Submitted: June 17, 2025
Date Adopted: July 15, 2025

AN ORDINANCE TO AMEND SECTIONS OF THE CODE OF ORDINANCES TO MODIFY APPENDIX A: UNIFIED DEVELOPMENT ORDINANCE: OFFICIAL ZONING MAP AND ADOPT THE ZONING MAP AMENDMENT PLAN CONSISTENCY STATEMENT & STATEMENT OF REASONABLENESS REQUIRED BY NORTH CAROLINA GENERAL STATUTES 160D-605

WHEREAS, the Town of Holly Springs Town Council adopted Vision Holly Springs: Town of Holly Springs Comprehensive Plan in November 2007; and

WHEREAS, the Town of Holly Springs Town Council has maintained and updated Vision Holly Springs: Town of Holly Springs Comprehensive Plan by adopting Section 1: Land Use & Character Plan in 2019; Section 2: Comprehensive Transportation Plan in 2022, and Section 3: Parks, Recreation and Greenways Master Plan in 2021; and

WHEREAS, the Town of Holly Springs has received a request to modify the Official Zoning Map for 1.00 acres of Wake County PIN 0648488641 from RR: Rural Residential to SR: Suburban Residential; and

WHEREAS, the *Vision Holly Springs: Town of Holly Springs Comprehensive Plan* designates said parcels on the *Future Land Use Map* as Residential Neighborhood; and

WHEREAS, in accordance with NCGS § 160D-601, the Town of Holly Springs held a legislative hearing on June 17, 2025 to consider the proposed changes to the Official Zoning Map; and

WHEREAS, the Holly Springs Planning Board reviewed this request at a Public Meeting on June 24, 2025 and recommended approval by a vote of 8-0; and

WHEREAS, after considering the recommendation of the Holly Springs Planning Board and the public input offered in a public hearing before the Town Council, the Town Council adopts the following Zoning Map Amendment Plan Consistency Statement as required by NCGS §160D-605:

SUPPORTING APPROVAL

The requested Zoning Map Amendment from RR Rural Residential to SR Suburban Residential is consistent with the Vision Holly Springs Comprehensive Plan since the Future Land Use Plan Map indicates this property as Residential Neighborhood and the SR District

supports the vision of a Residential Neighborhood by restricting the use of the property to single-family detached dwellings where homes are oriented toward streets with rear yards larger than front yards.

SUPPORTING DENIAL

The requested Zoning Map Amendment from RR Rural Residential to SR Suburban Residential is inconsistent with the Vision Holly Springs Comprehensive Plan as it does not mitigate the use of front-facing garages by restricting garage access to the side, rear, or set back behind the front building line.

WHEREAS, the Town of Holly Springs Town Council adopts the following Statement of Reasonableness as required by as required by NCGS §160D-605:

SUPPORTING APPROVAL

The requested rezoning is reasonable and in the public interest because the proposed use of the property, single-family detached dwellings, is consistent with the goals of the Residential Neighborhood Future Land Use Designation, as well as the themes of the Comprehensive Plan as a whole, including the need for context-sensitive infill development.

SUPPORTING DENIAL

The requested rezoning is neither reasonable nor in the public interest as it fails to comprehensively promote the goals and vision of a Residential Neighborhood as defined in the Vision Holly Springs Comprehensive Plan.

IF VOTE TO APPROVE

THEREFORE, BE IT ORDAINED by the Holly Springs Town Council of the Town of Holly Springs, North Carolina, that the proposed Zoning Map Amendment is **APPROVED,** and the Unified Development Ordinance of the Town is amended as follows:

Amend Unified Development Ordinance Section 1.7 Official Zoning Map with the following rezoning request: #25-REZ-03 to change the zoning of PIN# 0648488641 from RR Rural Residential to SR Suburban Residential.

IF VOTE TO DENY

THEREFORE, BE IT ORDAINED by the Holly Springs Town Council of the Town of Holly Springs, North Carolina, that the that the proposed Zoning Map Amendment is **DENIED**.

Part 1:
REPEAL OF CONFLICTING ORDINANCES
All ordinances or parts of the Unified Development Ordinance of the Town of Holly Springs conflicting or inconsistent with the provisions of this rezoning ordinance are hereby repealed.

Part 2:

INCLUSION IN UDO
It is the intention of the Town Council entered as hereby ordained, that the provisions of this Ordinance shall become and be made part of the Unified Development Ordinance of the Town of Holly Springs, North Carolina; that the Section(s) of this Ordinance may be renumbered or relettered to accomplish such intention, and that the word "Ordinance" may be changed to "Section, or "Article" or other word.

Part 3:
SEVERABILITY
If any section, part of a section, paragraph, sentence, clause, phrase, or word of this Ordinance, or application of this Ordinance to any one parcel or group of parcels is for any reason held or declared to be unconstitutional, inoperative or void, such holdings shall not affect the remaining portion of this Ordinance or application of this Ordinance to other parcels and it shall be construed to have been the legislative intent to pass the Ordinance without such unconstitutional, invalid or inoperative part therein, and the remainder of this Ordinance after the exclusion of such part or parts shall be deemed to be held valid as if such part or parts had not been included therein, or if this Ordinance or any of the provisions thereof shall be held inapplicable to any person, group of persons, property, kind of property, circumstances, or set of circumstances, such holdings shall not affect the applicability thereof to any other person, property or circumstances.

Part 4:
EFFECTIVE DATE
The provisions of this ordinance shall become effective July 15, 2025 in accordance with the laws of the State of North Carolina.

Adopted this, the 15th day of July, 2025.

Town of Holly Springs by

_____
Sean Mayefskie, Mayor

ATTEST:

_____
Linda McKinney, Town Clerk

HOLLY SPRINGS
North Carolina

REZONING PETITION

Rezoning, Comprehensive Plan Amendment, UDO Amendment

DPM Appendix #A.02 Supplement 20 September 2024

PETITION CONTACT INFORMATION *(Attach additional sheets if needed)* **Applicant and Financially Responsible Party will need to register for an account on the Portal.**	
Project Applicant Check One: ☒ Owner ☐ Owner's Agent ☐ Design Professional ☐ Developer ☐ Other	
Name: Jeff Rider	Company: Sire Development LLC
Mailing Address: 5509 Den Heider Way	
City, State, Zip: Raleigh, NC, 27606	
Telephone:	E-Mail: jrider1@nc.rr.com
Design Professional	
Name: Michael Stewart	Company: Stewart-Proctor PLLC
Mailing Address: 319 Chapanoke Road	
City, State, Zip: Raleigh, NC, 27603	
Telephone: 919-779-1855	E-Mail: stewartpe@aol.com
Developer	
Name: Jeff Rider	Company: Sire Development LLC
Mailing Address: 5509 Den Heider Way	
City, State, Zip: Raleigh, NC 27606	
Telephone:	E-Mail: jrider1@nc.rr.com
Architect	
Name:	Company:
Mailing Address:	
City, State, Zip:	
Telephone:	E-Mail:
Landscape Architect	
Name:	Company:
Mailing Address:	
City, State, Zip:	
Telephone:	E-Mail:
Financially Responsible Party (REQUIRED)	
Name: Jeff Rider	Company: Sire Development LLC
Mailing Address: 5509 Den Heider Way	
City, State, Zip: Raleigh, NC 27606	
Telephone:	E-Mail: jrider1@nc.rr.com
Property Owner (REQUIRED)	
Name: Jeff Rider	Company: Sire Development LLC
Mailing Address: 5509 Den Heider Way	
City, State, Zip: Raleigh, NC 27606	
Telephone:	E-Mail: jrider1@nc.rr.com

REZONING PETITION

Rezoning, Comprehensive Plan Amendment, UDO Amendment

DPM Appendix #A.02 Supplement 20 September 2024

PETITION TYPE – each request must be a separate application in the Portal	
☑	Zoning Map Change – General Use District
☐	Zoning Map Change – Conditional Zoning District ☐ Option 1 Plan: Development Plan or Subdivision Plan (Preliminary Plat) ☐ Option 2 Plan: Master Plan
☐	Comprehensive Plan Amendment ☐ Text Amendment ☐ Future Land Use Map Amendment ☐ Small Area Plan Map Amendment
☐	UDO Text Amendment – UDO Section:

PROJECT INFORMATION
https://www.hollyspringsnc.gov/742/Maps

Project Name	Sire Development LLC
Project Location *Use street address. If none, use closest intersection*	4016 Berman Edge Rd
	☐Within Corporate Limits ☑ Within Holly Springs ETJ ☐ Pending Annexation
PIN(s)	0648488641
Real Estate ID	0358983
Project Acreage	1.00 Partial Parcel? ☐ Yes ☒ No
Current Zoning	RR Rural Residential
Proposed Zoning	SR Suburban Residential
Current Future Land Use Designation	*RESIDENTIAL NEIGHBORHOOD*
Proposed Future Land Use Designation	*RESIDENTAIL NEIGHBORHOOD*
Small Area Plan Designation *(if applicable)*	N/A
Special Study Scoping Meeting Dates	N/A
Sketch Plan Review *(pre-submittal)* Meeting Date:	NOVEMBER 6, 2024
Neighborhood Meeting Date:	FEBRUARY 13, 2025

CERTIFICATE OF COMPLETION

I certify that all information presented in this petition is accurate to the best of my knowledge and belief.

Signature of Applicant: [signature] Date: 1/26/25

SUBMITTAL CHECKLIST: ZONING MAP CHANGE – GENERAL USE DISTRICT

A copy of this checklist and the following items must be submitted with the Rezoning Petition to be deemed a complete submittal:

Initial or N/A	Requirement
MS	Complete Petition Form. Applicant, all design professionals and financially responsible party must be completed.
MS	Vicinity Map
MS	Owner Affidavit
N/A	Affidavit of Owner Notification *Required if Applicant is not the property owner*
MS	Property Survey including legal description *(required only if the request does not include the entire tax parcel)* in PDF and WORD format.
N/A	Plan Consistency Statement
Scheduled 2-13-25	Neighborhood Meeting report
N/A	Statement of Comprehensive Plan – Future Land Use Plan Compatibility *If the proposed Zone Map Change is inconsistent with the Future Land Use designation of the property*
N/A	Certificate of Plan Revisions if submitting a revision to approved plans

~ The remainder of this page is intentionally left blank ~

NOTIFICATION TO PROPERTY OWNER

Dear Property Owner;

I am requesting the Holly Springs Town Council to rezone your property described by:

Wake County Real Estate ID No.: 0358983

and PIN: 0648-48-9641

located at: 4016 BERMAN EDGE ROAD

Existing Zoning District: RR

Proposed Zoning District: SR

The public hearing before the Holly Springs Town Council on the matter will be heard on _____(date) at 7:00 PM.

Additional information can be obtained by contacting Holly Springs Development Services Planning Division at (919)557-3111 or email DSIntake@hollyspringsnc.gov.

Thank you,

_____ 1/24/25

Applicant Signature Date

Applicant Printed Name: JEFF RIDER

Company: SIRE DEVELOPMENT LLC

Mailing Address: 5509 DEN HELDER WAY RALEIGH N.C. 27606

Telephone Number: _____

E-Mail: jrider@nc.rr.com

AFFIDAVIT OF OWNER'S CONSENT

Before me personally appeared JEFF RIDER who, being duly sworn, hereby proclaims that they are the owner of the property legally described as the specified Wake County Parcel Identification Number(s) listed below:

PIN: 0648-43-8641	
REID: 0358983	

and does hereby authorize MICHAEL STEWART to act
(name of representative/applicant)

on their behalf as their agent with regard to the processing of said Development Project.

Signature of Owner

Print Name
Address
City, State, Zip

Sworn to or affirmed and subscribed before me this 27th day of January, 2025.

NOTARY PUBLIC:

Karen N Davis
Official Signature of Notary

(Official Seal)

KAREN H DAVIS
NOTARY
PUBLIC
WAKE COUNTY, NC

KAREN H. DAVIS, Notary Public
Print Name

My commission expires: 4/25/25

AFFIDAVIT OF OWNER NOTIFICATION

The following Affidavit of owner Notification shall be provided at time of petition submittal if the Applicant is requesting a Zoning Map Change for the property(s) they do not own at the time of the petition submission.

This form may be used for submitting the Notice of the requested Zoning Map Change and the public hearing in association with a request for a Zoning Map Change to the property owner(s). The form must be sent to the owner(s) via certified mail. This Affidavit is to be signed by the Applicant of the requested Zoning Map Change and have attached thereto the USPS green certified mail receipt and a copy of the form sent to the owner(s) to ensure that all record owners of the property have been notified by the Applicant(s).

AFFIDAVIT

I hereby certify to the Town of Holly Springs that the owner of the property described by Wake County Real Estate ID: 0358983 and PIN: 0649-48-8641 was served the notification attached to this Affidavit indicating the requested zoning map change petition and public hearing date and time. As evidence of the service of the notification, I hereby attach the return receipt from the certified mailing of this notice.

Signature of Applicant

<Print Name>

<Entity Name>

<Address>

<City, State Zip>

Sworn to or affirmed and subscribed before me this 27th day of January, 2025.

NOTARY PUBLIC:

Karen H. Davis
Official Signature of Notary

(Official Seal)

KAREN H. DAVIS, Notary Public
Print Name

My commission expires: 4/25/2025

PLAN CONSISTENCY STATEMENT

Describe how the proposed Zone Map Change request is consistent or supported by the objectives and policies of *Vision Holly Springs: Town of Holly Springs Comprehensive Plan* and how it is inconsistent with the Plan.

You must respond to each section. Please use additional sheets as needed.

PLAN CONSISTENCY STATEMENT

In accordance with NCGS §160D-605 when adopting or rejecting any Zoning Map Amendment or UDO Text Amendment, the Town Council must approve a brief statement describing whether its action is consistent or inconsistent with an adopted comprehensive or land-use plan. In addition, a statement analyzing the reasonableness of a proposed Zoning Map Amendment shall be approved by the Town Council. This statement of reasonableness may consider, among other factors:

- The size, physical conditions, and other attributes of the area proposed to be rezoned
- The benefits and detriments to the landowners, the neighbors, and the surrounding community
- The relationship between the current actual and permissible development on the tract and adjoining areas and the development that would be permissible under the proposed amendment
- Why the action taken is in the public interest
- Any changed conditions warranting the amendment.

Please provide detailed documentation to assist the Council in making their determination.

EXECUTIVE SUMMARY

The executive summary provides goals and objectives for new growth. The request is consistent with those goals.
The 1 ac tract is already bordered by existing development with town streets and utilities. This prevents increased urban sprawl. The property is bordered on 3 sides by town limits and would not require new infrastructure to be developed.

SECTION 1: LAND USE & CHARACTER

The zoning request is consistent with the adjoining neighborhood that is developed and which this tract would become a part. This makes a consistent contiguous neighborhood which is the goal of the comprehensive plan.

SECTION 2: COMPREHENSIVE TRANSPORTATION PLAN

The request is consistent with the transportation plan.
No new street would be required. The existing streets were developed to town standards.
This project could be looked at as an infill project that best uses the existing infrastructure.

SECTION 3: PARKS, RECREATION

Green ways were dedicated previously to meet future requirements of the tract.

SECTION 4: COMMUNITY FACILITIES

The plan is consistent in as much it meets the access needs of the community facilities. Roadways and sidewalks are in place and designed to meet the fire, police and EMS access.

SECTION 5: INFRASTRUCTURE & UTILITIES

This site has direct access to water and sewer without extending main lines.
The site impact on existing lines is insignificant to the capacities of those existing lines.

SECTION 8: NATURAL RESOURCES

This development would make 2 lots out of the 1 ac.
This would be considered a low density.
The project would minimize grading and work with existing topographic and save mature trees as much as feasible.

STATEMENT OF REASONABLENESS

This project conforms to existing and future land plans.
The size of the project limits the expansion to 1 additional lot and best conforms to the existing subdivision which it will join.

PUBLIC BENEFITS STATEMENT

A written statement that demonstrates how the proposed Project provides sufficient benefits to the general public. Public benefit may include:

1. Infrastructure improvements such as improvements to existing Streets, intersections, medians, Sidewalks, greenways, sidepaths, pedestrian crossings, and public utilities.
2. Publicly accessible Open Space such as Parks and Playgrounds, dog parks, Urban Civic Spaces, Plazas, Squares, public art, and similar outdoor amenities.
3. Sustainable design and/or architecture such as adaptive reuse of existing buildings, preservation of significant on-site environmental features, on-site renewable energy generation, compliance with established standards such as Leadership in Energy and Environmental Design (LEED), Energy Star, Earthcraft, etc., or other actions that further sustainability of the project.
4. Additional public benefits not listed above may be considered by the decision-making body.

This project by bing annexed will benefit the town by gaining tax base for the property that is already using town infrastructure.
Environmentally looking at the project it would remove an existing septic and well from use and thereby reduce possible soil and water contamination.

WAKE COUNTY PUBLIC SCHOOL SYSTEM

Office of Student Assignment
5625 Dillard Dr.
Cary, NC 27518
studentassignment@wcpss.net

tel: (919) 431-7333
fax: (919) 694-7753

May 6, 2025

Chris Hills, AICP
Director, Development Services
Town of Holly Springs
Chris.hills@hollyspringsnc.gov

Dear Chris,

The Wake County Public School System (WCPSS) Office of School Assignment received information about a proposed rezoning/development within the Town of Holly Springs planning area. We are providing this letter to share information about WCPSS's capacity related to the proposal. The following information about the proposed rezoning/development was provided through the Wake County Residential Development Notification database:

- Date of application: 02/19/2025
- Name of development: 4016 Berman Edge Road Rezoning
- Address of rezoning: 4016 Berman Edge Rd (PIN) 0648488641
- Total number of proposed residential units: 1
- Type(s) of residential units proposed: Single-family detached

Based on the information received at the time of application, the Office of School Assignment is providing the following assessment of possible impacts to the Wake County Public School System:

- [X] Schools at all grade levels within the current assignment area for the proposed rezoning/development are anticipated to have sufficient capacity for future students.
- [ ] Schools at the following grade levels within the current assignment area for the proposed rezoning/development are anticipated to have insufficient capacity for future students; transportation to schools outside of the current assignment area should be anticipated:

  [ ] Elementary [ ] Middle [ ] High

The following mitigation of capacity concerns due to school construction or expansion is anticipated:

- [X] Not applicable – existing school capacity is anticipated to be sufficient.
- [ ] School expansion or construction within the next five years is not anticipated to address concerns.
- [ ] School expansion or construction within the next five years may address concerns at these grade levels:

  [ ] Elementary [ ] Middle [ ] High

Thank you for sharing this information with the Town of Holly Springs Planning Board and Town Council as they consider the proposed rezoning/development.

Sincerely,

Susan W. Pullium, MSA
Senior Director

HOLLY SPRINGS
North Carolina

REZONING PETITION

Rezoning, Comprehensive Plan Amendment, UDO Amendment

DPM Appendix #A.02 Supplement 20 September 2024

NEIGHBORHOOD MEETING REPORT

A Neighborhood Meeting is required to occur prior to your submittal. The requirements for this meeting can be found in section 11.5 of the Unified Development Ordinance (UDO). The Neighborhood Meeting shall take place no more than 12 weeks prior to the application date and can be held virtually. A copy of the Neighborhood Meeting Notice must be sent to DSIntake@hollyspringsnc.gov prior to mailing for review and approval along with a copy of the mailing list.

Notification of Owners:

1. The Petitioner (or agent) shall prepare a Neighborhood Meeting Notification to be sent via first class mail to the owner(s) of the land specified on the petition within a 500' radius of the subject property. Mailing notices shall include surrounding property owners and property owner's association (or equivalent), and the Town of Holly Springs (Attn: Development Services). Where the tax records reflect a mailing address for an owner of property to be different than the address of the property owned, notification shall also be mailed to all addresses of the property itself, including apartment or suite addresses.
2. The notice shall include the date, time and location of the Neighborhood Meeting, the name of the Petitioner and the location of the proposed request (address, tax property, identification number or metes and bounds description), and an explanation of the nature of the request.
3. The notice shall be mailed not less than ten (10) days nor more than twenty-five (25) days before the date of the Neighborhood Meeting.

NEIGHBORHOOD MEETING INFORMATION	
Meeting Date:	February 13, 2025
Meeting Time:	6pm
Meeting Location:	4016 Berman Edge Road

CONDUCT OF MEETINGS *(Attach additional sheets if needed)*

At the Neighborhood Meeting, the Petitioner shall explain the proposal and petition, answer any questions, respond to concerns neighbors have about the petition and proposed resolutions to these concerns. Town Staff will not attend the Neighborhood Meeting.

Summary of Issues:

1 Neighbor ATTENDED – ASKED ABOUT EXISTING LOT COMMITTMENT TO PRIVATE RD. UPKEEP

Changes made to the Petition as a result of the meeting:

NONE

Additional attachments required:

- A listing of those persons and organizations that were sent notification about the Neighborhood Meeting.
- A copy of the signed attendance list that includes the names and addresses of those in attendance.
- A copy of the mailed notice.

Preparer's Signature: [signature] Date: 2/17/25

Stewart-Proctor, PLLC
319 Chapanoke Rd, #106
Raleigh, NC 27603
919-779-1855

JOB _____
SHEET NO _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

FEB 13

NEIGHBORHOOD MTG.

	NAME	EMAIL
1)	MIKE STEWART	STEWARTPE@AOL.COM
2)	CHUCK PHELAN	cdpfly@aol.com

STEWART-PROCTOR
ENGINEERING & SURVEYING

May 12, 2025

Dear Neighbor:

Sire Development LLC is proposing to rezone and create two lots as shown on the map from an existing parcel at the intersection of Berman Edge Road and Utley Bluffs Drive (4016 Berman Edge Rd.). The project will include the construction of one new single-family residence. If you have any questions, please reach out to me at 919-779-1855.

Best regards,

Michael Stewart, P.E.
STEWART-PROCTOR, PLLC

319 CHAPANOKE ROAD, SUITE 106, RALEIGH, NC 27603 PHONE 919-779-1855 FAX 919-779-1661

STEWART-PROCTOR
ENGINEERING & SURVEYING

May 12, 2025

Dear Neighbor:

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Michael Stewart, P.E.
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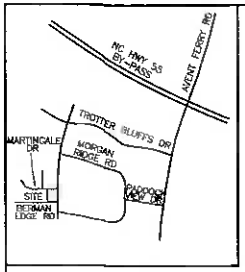
319 CHAPANOKE ROAD, SUITE 106, RALEIGH, NC 27603 PHONE 919-779-1855 FAX 919-779-1661



VICINITY MAP NTS

CURVE	RADIUS	LENGTH	DELTA	CHORD	CH.BEARING
C-1	474.50'	60.40'	7°17'35"	60.36'	S 59°07'04"E
C-2	25.00'	39.28'	90°02'44"	35.36'	S 08°50'50"E
C-3	1024.99'	143.08'	7°59'52"	142.96'	S 32°47'03"W
C-4	25.00'	44.17'	101°14'45"	38.64'	S 79°26'35"W

COURSE	BEARING	DISTANCE
L-1	N 40°05'25"E	19.33'
L-2	S 35°44'55"W	6.95'
L-3	S 28°49'47"W	14.60'

Certificate of Review Officer:
State of North Carolina
County of Wake

I, _____, Review Officer of Wake County, certify that that the map or plat to which this certification is affixed meets all statutory requirements for recording.

_____ Review Officer _____ Date

CERTIFICATE OF APPROVAL FOR RECORDING

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREIN HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE TOWN OF HOLLY SPRINGS, NORTH CAROLINA, AND THAT THE FILING FEE OF $_____ HAS BEEN PAID, AND THAT THIS HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE REGISTER OF DEEDS OF WAKE COUNTY.

_____ SUBDIVISION ADMINISTRATOR _____ DATE

CERTIFICATE OF OWNERSHIP AND DEDICATION

I HEREBY CERTIFY THAT I AM THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED HEREON, WHICH IS LOCATED IN THE SUBDIVISION JURISDICTION OF THE TOWN OF HOLLY SPRINGS AND THAT I HEREBY ADOPT THIS PLAN OF OF SUBDIVISION WITH MY FREE CONSENT, ESTABLISH MINIMUM BUILDING SETBACK LINES, AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS AND OTHER SITES AND EASEMENTS TO PUBLIC OR PRIVATE USE AS NOTED. FURTHERMORE, I HEREBY DEDICATE ALL SANITARY SEWER, AND WATER LINES TO THE TOWN OF HOLLY SPRINGS.

_____ (COMPANY/LLC NAME)

_____ _____ (SIGNATURE) DATE

_____ _____ (PRINT NAME) TITLE

NOTARY STATEMENT

SWORN TO AND SUBSCRIBED TO ME THE _____ DAY OF _____, 20____ NOTARY PUBLIC IN AND FOR THE STATE OF NORTH CAROLINA.

MY COMMISSION EXPIRES: _____

_____ / _____
NOTARY PUBLIC PRINTED

NOTES

AREA BY COORDINATES
NC GRID COORDINATES OBTAINED USING A SPECTRA PRECISION SP80 GPS UNIT, REFERENCED TO NAD 83(2018) IN FEET.
ALL DISTANCES GROUND HORIZONTAL UNLESS NOTED OTHERWISE.

THIS SURVEY DID NOT HAVE THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO ANY MATTERS ONE MAY DISCLOSE.
PROPERTY SUBJECT TO BOTH ABOVE AND/OR BELOW GROUND UTILITIES AND/OR EASEMENTS.
CALL 811 BEFORE ANY DIGGING OR CONSTRUCTION.

THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA PER F.E.M.A. MAP #3720084800K. EFF. DATE: 7/19/2022 ZONE X

CURRENTLY ZONED RR – HOLLY SPRINGS
PROPOSED ZONING SR – HOLLY SPRINGS

EXISTING SEPTIC SYSTEM TO BE ABANDONDED PRIOR TO FINAL PLAT APPROVAL.

EXISTING SHEDS TO BE MOVED OR REMOVED PRIOR TO FINAL PLAT APPROVAL.

I, BENTON W. DEWAR, CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY SUPERVISION FROM AN ACTUAL FIELD SURVEY OF DESCRIPTION(S) AS RECORDED IN _____, PAGE _____; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS SUCH AND WERE PLOTTED FROM INFORMATION AS REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED WAS _____ AND THAT THE GLOBAL NAVIGATIONAL SATELLITE SYSTEM(GNSS) WAS USED TO PERFORM A PORTION OF THIS SURVEY AND THE FOLLOWING INFORMATION WAS USED:

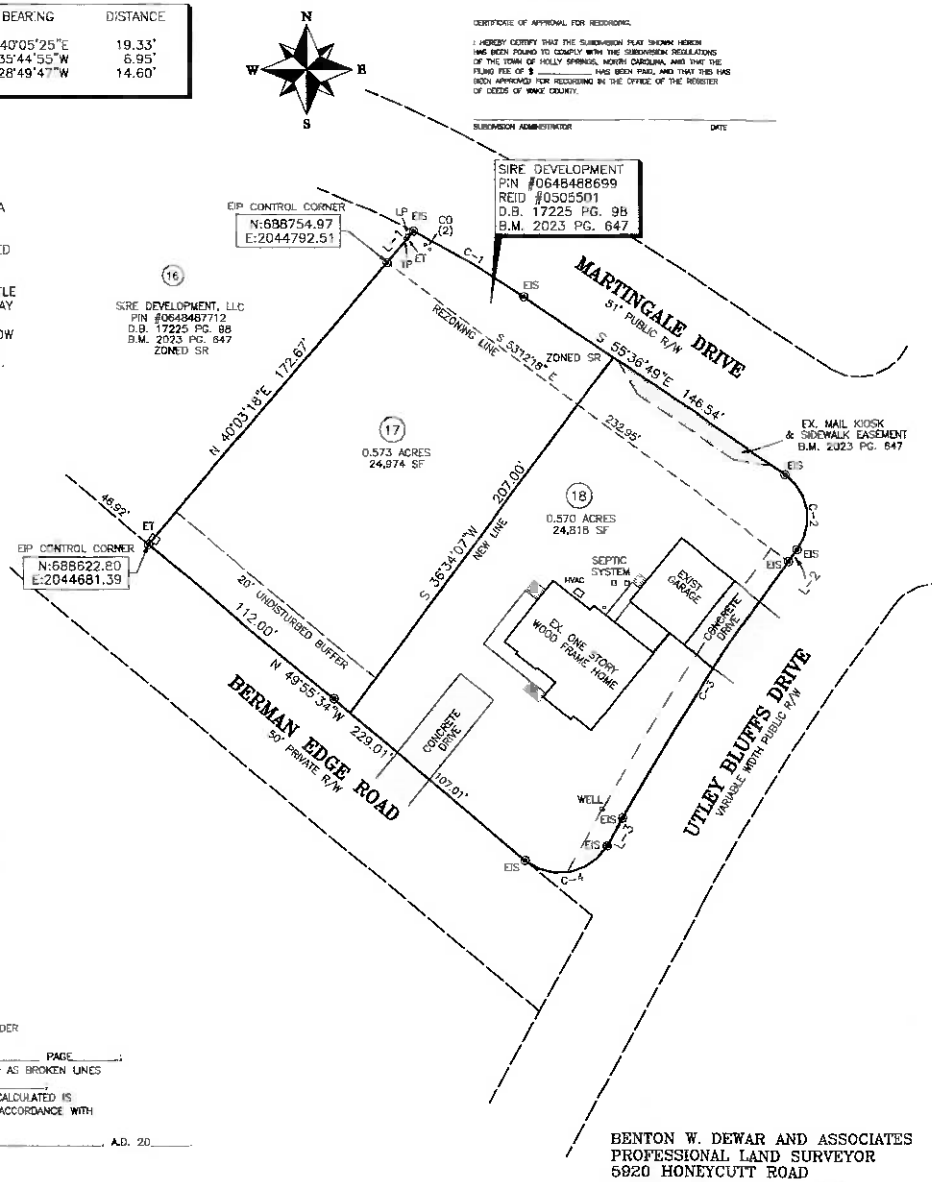
CLASS OF SURVEY: _____
POSITIONAL ACCURACY: _____
TYPE OF GPS FIELD PROCEDURE: _____
DATUM/EPOCH: _____
DATES OF SURVEY: _____
PUBLISHED/FIXED-CONTROL USE: _____
GEOID MODEL: _____
COMBINED GRID FACTOR: _____
UNITS: _____

I, BENTON W. DEWAR, PROFESSIONAL LAND SURVEYOR NO. 3040, CERTIFY: THAT THIS SURVEY IS OF ANOTHER CATEGORY, SUCH AS RECOMBINATION OF EXISTING PARCELS, A COURT-ORDERED SURVEY, OR OTHER EXEMPTION OR EXCEPTION TO THE DEFINITION OF SUBDIVISION.

_____
BENTON W. DEWAR, NCPLS – 3040

I, BENTON W. DEWAR CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION DEED BOOK _____ PAGE _____ MAP #_____ PAGE_____; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS BROKEN LINES DRAWN FROM INFORMATION FOUND IN BOOK _____ PAGE_____; THAT THE RATIO OF PRECISION OR POSITIONAL ACCURACY AS CALCULATED IS _____, THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47-30 AS AMMENDED. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL THIS _____ DAY OF _____, A.D. 20_____

_____
BENTON W. DEWAR, NCPLS – 3040



LEGAL DESCRIPTION

Being Lot 1 of the Hockaday property, recorded in Book of Maps 2007 Page 1228; having Wake County Pin #0648488641; and being more particularly described as follows:

Beginning at an EIP, being the Southeastern corner of Lot 16 the Bluffs at Morgan Park, having NC Grid Coordinates N – 688622.80' E – 2044681.39'; and being the Point and place of beginning;

THENCE North 40 degrees 03 minutes 18 seconds East for a distance of 172.67 feet along the Eastern line of Lot 16 to an EIP;
THENCE South 53 degrees 12 minutes 15 seconds East for a distance of 232.97 feet to an EIS on the Right of Way of Utley Bluffs Drive;
THENCE along a curve to the left having a radius of 1024.99 feet and an arc length of 143.08 feet, being subtended by a chord of South 32 degrees 47 minutes 03 seconds West for a distance of 142.96 feet along said Right of Way to an EIS;
THENCE South 28 degrees 49 minutes 47 seconds West for a distance of 14.60 feet along said Right of Way to an EIS at the turnout with Berman Edge Road;
THENCE along a curve to the right having a radius of 25.00 feet and an arc length of 44.17 feet, being subtended by a chord of South 79 degrees 26 minutes 35 seconds West for a distance of 38.64 feet to an EIS on the Right of Way of Berman Edge Road;
THENCE North 49 degrees 55 minutes 34 seconds West for a distance of 229.01 feet along said Right of Way to the Point and Place of beginning.

Together with and subject to covenants, easements, and restrictions of record.

Said property contains 1.00 acres more or less.

AREA CHART

PIN #0648488641
REID #0358883
D.B. 19582 PG. 2370
B.M. 2007 PG. 1228

AREA
1.000 ACRES
43,542 SF

OWNER/DEVELOPER

SIRE DEVELOPMENT, LLC
5509 DEN HEDDER WAY
RALEIGH, NC 27606

40 0 20 40 80 160

PLAT OF REZONNING FOR:

SIRE DEVELOPMENT, LLC
4016 BERMAN EDGE ROAD – HOLLY SPRINGS, NC 27540

LOT 1 – BOOK OF MAPS 2007 PAGE 1228
DEED BOOK 19582 PAGE 2370
HOLLY SPRINGS TOWNSHIP
WAKE COUNTY – NORTH CAROLINA

PIN #0648488641

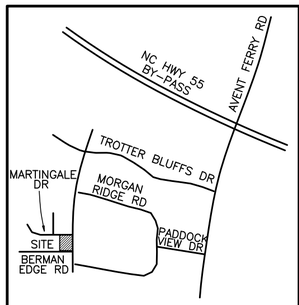
REID #0358383

SCALE: 1" = 40'
DATE: JUNE 4, 2024

24-44L
RIDER24/24/650

BENTON W. DEWAR AND ASSOCIATES
PROFESSIONAL LAND SURVEYOR
5920 HONEYCUTT ROAD
HOLLY SPRINGS, NC 27540
PH. # (919) 552-9813
FAX # (919) 557-2255

RECORDED IN BOOK OF MAPS 2024 PAGE_____ WAKE COUNTY REG.



VICINITY MAP NTS

CURVE	RADIUS	LENGTH	DELTA	CHORD	CH.BEARING
C–1	474.50'	60.40'	7°17'35"	60.36'	S 59°07'04"E
C–2	25.00'	39.28'	90°02'44"	35.36'	S 08°50'50"E
C–3	1024.99'	143.08'	7°59'52"	142.96'	S 32°47'03"W
C–4	25.00'	44.17'	101°14'45"	38.64'	S 79°26'35"W

COURSE	BEARING	DISTANCE
L–1	N 40°05'25"E	19.33'
L–2	S 35°44'55"W	6.95'
L–3	S 28°49'47"W	14.60'

Certificate of Review Officer:
State of North Carolina
County of Wake

I, _____, Review Officer of Wake County, certify that that the map or plat to which this certification is affixed meets all statutory requirements for recording.

_____ Review Officer

_____ Date

CERTIFICATE OF APPROVAL FOR RECORDING.

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HERON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE TOWN OF HOLLY SPRINGS, NORTH CAROLINA, AND THAT THE FILING FEE OF $ _____ HAS BEEN PAID, AND THAT THIS HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE REGISTER OF DEEDS OF WAKE COUNTY.

_____ SUBDIVISION ADMINISTRATOR

_____ DATE

CERTIFICATE OF OWNERSHIP AND DEDICATION
I HEREBY CERTIFY THAT I AM THE OWNER OF THE PROPERY SHOWN AND DESCRIBED HERON, WHICH IS LOCATED IN THE SUBDIVISION JURISDICTION OF THE TOWN OF HOLLY SPRINGS AND THAT I HEREBY ADOPT THIS PLAN OF OF SUBDIVISION WITH MY FREE CONSENT, ESTABLISH MINIMUM BUILDING SETBACK LINES, AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS AND OTHER SITES AND EASEMENTS TO PUBLIC OR PRIVATE USE AS NOTED. FURTHERMORE, I HEREBY DEDICATE ALL SANITARY SEWER, AND WATER LINES TO THE TOWN OF HOLLY SPRINGS.

_____ (COMPANY/LLC NAME)

_____ (SIGNATURE) _____ DATE

_____ (PRINT NAME) _____ TITLE

NOTARY STATEMENT

SWORN TO AND SUBSCRIBED TO ME THE_____DAY OF_____, 20_____. NOTARY PUBLIC IN AND FOR THE STATE OF NORTH CAROLINA.

MY COMMISSION EXPIRES:_____

_____/_____
NOTARY PUBLIC PRINTED

NOTES

AREA BY COORDINATES
NC GRID COORDINATES OBTAINED USING A SPECTRA PRECISION SP80 GPS UNIT, REFERENCED TO NAD 83(2018) IN FEET.
ALL DISTANCES GROUND HORIZONTAL UNLESS NOTED OTHERWISE.

THIS SURVEY DID NOT HAVE THE BENEFIT OF A TITLE REPORT AND IS SUBJECT TO ANY MATTERS ONE MAY DISCLOSE.
PROPERTY SUBJECT TO BOTH ABOVE AND/OR BELOW GROUND UTILTIES AND/OR EASEMENTS.
CALL 811 BEFORE ANY DIGGING OR CONSTRUCTION.

THIS PROPERTY IS NOT LOCATED IN A FLOOD HAZARD AREA PER F.E.M.A. MAP #3720064800K. EFF. DATE: 7/19/2022 ZONE X

CURRENTLY ZONED RR – HOLLY SPRINGS
PROPOSED ZONING SR – HOLLY SPRINGS

EXISTING SEPTIC SYSTEM TO BE ABANDONDED PRIOR TO FINAL PLAT APPROVAL.

EXISITNG SHEDS TO BE MOVED OR REMOVED PRIOR TO FINAL PLAT APPROVAL.

THE MAIL KIOSK AND SIDEWALK EASEMENT IS TO BE DEEDED TO THE BLUFFS AT MORGAN PARK HOA. THE BLUFFS AT MORGAN PARK HOA IS TO BE RESPONSIBLE FOR THE MAINTENANCE OF SAID EASEMENT.

I, BENTON W. DEWAR, CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY SUPERVISION FROM AN ACTUAL FIELD SURVEY OF DESCRIPTION(S) AS RECORDED IN_____ PAGE_____; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS SUCH AND WERE PLOTTED FROM INFORMATION AS REFERENCED HEREON; THAT THE RATIO OF PRECISION AS CALCULATED WAS _____ AND THAT THE GLOBAL NAVIGATIONAL SATELLITE SYSTEM(GNSS) WAS USED TO PERFORM A PORTION OF THIS SURVEY AND THE FOLLOWING INFORMATION WAS USED:

CLASS OF SURVEY_____
POSITIONAL ACCURACY_____
TYPE OF GPS FIELD PROCEDURE_____
DATUM/EPOCH_____
DATES OF SURVEY_____
PUBLISHED/FIXED–CONTROL USE_____
GEOID MODEL_____
COMBINED GRID FACTOR_____
UNITS_____

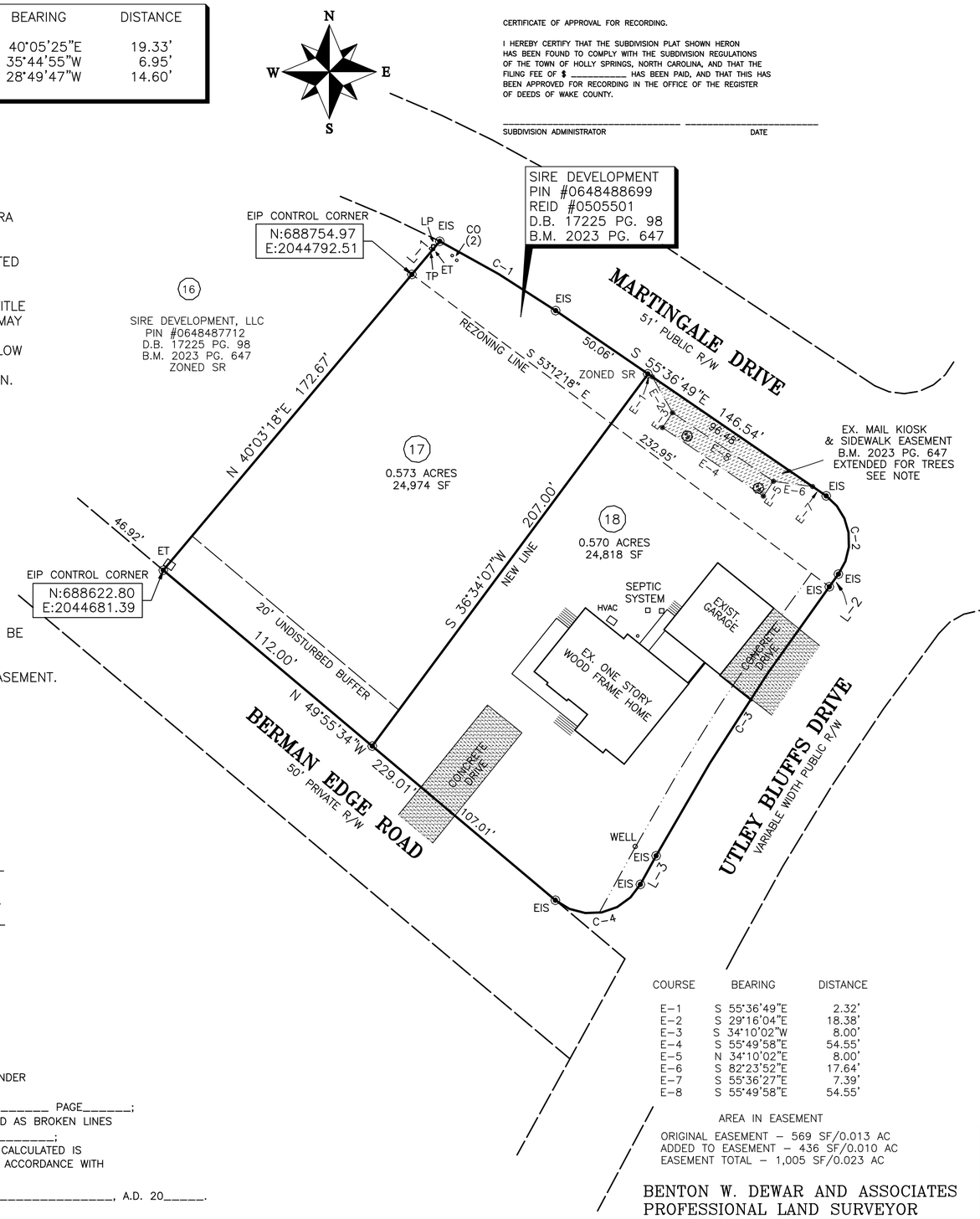
I, BENTON W. DEWAR, PROFESSIONAL LAND SURVEYOR NO. 3040, CERTIFY:
THAT THIS SURVEY IS OF ANOTHER CATEGORY, SUCH AS RECOMBINATION OF EXISTING PARCELS, A COURT–ORDERED SURVEY, OR OTHER EXEMPTION OR EXCEPTION TO THE DEFINITION OF SUBDIVISION.

_____
BENTON W. DEWAR, NCPLS – 3040

I, BENTON W. DEWAR CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION DEED BOOK _____ PAGE _____ MAP #_____ PAGE_____; THAT THE BOUNDARIES NOT SURVEYED ARE CLEARLY INDICATED AS BROKEN LINES DRAWN FROM INFORMATION FOUND IN BOOK _____ PAGE_____; THAT THE RATIO OF PRECISION OR POSITIONAL ACCURACY AS CALCULATED IS _____, THAT THIS PLAT WAS PREPARED IN ACCORDANCE WITH G.S. 47–30 AS AMMENDED. WITNESS MY ORIGINAL SIGNATURE, LICENSE NUMBER AND SEAL THIS _____DAY OF_____, A.D. 20_____.

_____
BENTON W. DEWAR, NCPLS – 3040

RECORDED IN BOOK OF MAPS 2024 PAGE_____ WAKE COUNTY REG.



COURSE	BEARING	DISTANCE
E–1	S 55°36'49"E	2.32'
E–2	S 29°16'04"E	18.38'
E–3	S 34°10'02"W	8.00'
E–4	S 55°49'58"E	54.55'
E–5	N 34°10'02"E	8.00'
E–6	S 82°23'52"E	17.64'
E–7	S 55°36'27"E	7.39'
E–8	S 55°49'58"E	54.55'

AREA IN EASEMENT
ORIGINAL EASEMENT – 569 SF/0.013 AC
ADDED TO EASEMENT – 436 SF/0.010 AC
EASEMENT TOTAL – 1,005 SF/0.023 AC

BENTON W. DEWAR AND ASSOCIATES
PROFESSIONAL LAND SURVEYOR
5920 HONEYCUTT ROAD
HOLLY SPRINGS, NC 27540
PH. # (919) 552–9813
FAX # (919) 557–2255

LEGAL DESCRIPTION

Being Lot 1 of the Hockaday property, recorded in Book of Maps 2007 Page 1228; having Wake County Pin #0648488641; and being more particularly described as follows:

Beginning at an EIP, being the Southeastern corner of Lot 16 the Bluffs at Morgan Park, having NC Grid Coordinates N – 688622.80' E – 2044681.39'; and being the Point and place of beginnig;

THENCE North 40 degrees 03 minutes 18 seconds East for a distance of 172.67 feet along the Eastern line of Lot 16 to an EIP;
THENCE South 53 degrees 12 minutes 18 seconds East for a distance of 232.97 feet to an EIS on the Right of Way of Utley Bluffs Drive;
THENCE along a curve to the left having a radius of 1024.99 feet and an arc length of 143.08 feet, being subtended by a chord of South 32 degrees 47 minutes 03 seconds West for a distance of 142.96 feet along said Right of Way to an EIS;
THENCE South 28 degrees 49 minutes 47 seconds West for a distance of 14.60 feet along said Right of Way to an EIS at the turnout with Berman Edge Road;
THENCE along a curve to the right having a radius of 25.00 feet and an arc length of 44.17 feet, being subtended by a chord of South 79 degrees 26 minutes 35 seconds West for a distance of 38.64 feet to an EIS on the Right of Way of Berman Edge Road;
THENCE North 49 degrees 55 minutes 34 seconds West for a distance of 229.01 feet along said Right of Way to the Point and Place of beginning.

Together with and subject to covenants, easements, and restrictions of record.

Said property contains 1.00 acres more or less.

AREA CHART

PIN #0648488641
REID #0358983
D.B. 19582 PG. 2370
B.M. 2007 PG. 1228

AREA
1.000 ACRES
43,542 SF

OWNER/DEVELOPER

SIRE DEVELOPMENT, LLC
5509 DEN HEIDER WAY
RALEIGH, NC 27606

40 0 20 40 80 160

PLAT OF REZONNING FOR:

SIRE DEVELOPMENT, LLC
4016 BERMAN EDGE ROAD – HOLLY SPRINGS, NC 27540

LOT 1 – BOOK OF MAPS 2007 PAGE 1228
DEED BOOK 19582 PAGE 2370
HOLLY SPRINGS TOWNSHIP
WAKE COUNTY – NORTH CAROLINA

PIN #0648488641

REID #0358983

SCALE: 1" = 40'
DATE: JUNE 4, 2024

24–44L
RIDER24/24/650

Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 21.

New Business
Title: Eagles Landing Park - Building & Site Amenities, Guaranteed Maximum Price Amendment 02 (GMP-02)
Strategic Priority Area: Vibrant Community
Staff Resource: Carrie Kennedy, Utilities and Infrastructure, LeeAnn Plumer, Parks & Recreation

Action(s):

- Approve the Construction Services Guaranteed Maximum Price (GMP) Amendment 02 with Frank L. Blum Construction Company (BLUM), Construction Manager at Risk (CMAR), in the amount of $63,977,292 for the Eagles Landing Park buildings and site amenities.
- Authorize the Town Manager to enter into various service and purchasing contracts for equipment, materials, and services for the completion of Eagles Landing Park and recreation center as long as items are within the approved scope and budget of the existing project, and are consistent with the Town Purchasing Policy.

Explanation:

- On January 21, 2025, Town Council approved GMP-01 for Eagles Landing Park site grading, onsite and offsite utilities, widening of Cass Holt Rd along the site frontage, a new traffic signal, and general conditions. The final contract award value for GMP-01 is $19,993,844. To date, most of the site grading has been completed, installation of utilities is underway and site preparation for buildings and amenities included in GMP-02.
- At the April 8, 2025, Town Council Workshop, staff presented updates on the bidding process for GMP-02 and received input on prioritizing bid alternates.
- Staff now recommends approval of GMP-02 with bid alternates in the amount of $63,977,292, which includes the following:
    - Site hardscapes, finishes, amenities (fields, courts, splash pad, all wheels park)
    - Electrical work, landscaping and irrigation
    - Recreation center building, walkways, parking
    - Greenway trail
    - Restroom building and shelter areas
    - Renovations to the park maintenance barn
- GMP-02 does not include specialized features, equipment, and services that will be procured under separate contracts that include:
    - Power line relocation and burial
    - Construction materials testing and special inspections
    - Artificial turf
    - Sports lighting
    - Outdoor playground and indoor play features

    - Solar (PV) panels
    - Furniture, fixtures, and equipment
- Project expenses, including land, design services, GMP-01, GMP-02, and allowances for specialized products and services remain within the approved project budget.
- Work under GMP-02 will begin upon approval and execution of the contract. The project schedule forecasts a late fall 2027 completion date.

Background:

- The Town purchased 56 acres in 2020 to develop the first park west of Hwy 55.
- In 2023, Holly Springs voters approved a $100M Parks Bond to fund this park, its recreation center and other park improvements.
- CLH Design and Davis Kane Architects were retained and led master planning, site/civil, and architectural design after extensive public engagement.
- The final program includes:
    - Multi-generational recreation center with gyms/courts, fitness areas, technology lounge, meeting rooms, indoor play, cafe, and staff offices
    - Splash pad, multipurpose turf fields, all wheels skate park
    - Pickleball, basketball and sand volleyball courts
    - Accessible trails and greenways
    - Playground and shelters
- Frank L. Blum Construction Company was selected as Construction Manager at Risk (CMAR) in December 2023 through a qualifications-based process.
- A ground-breaking event for Eagles Landing Park was held on May 1, 2025.

Funding Source(s):

Community Investment Plan - Parks and Recreation General Obligation Bond

Attachment(s):

1. Blum-Cass Holt Park A133-2019 Exhibit A GMP #2_wDeliverable

AIA® Document A133® – 2019 Exhibit A

Guaranteed Maximum Price Amendment

This Amendment dated the Eighth day of July in the year Two Thousand Twenty-Five , is incorporated into the accompanying AIA Document A133™–2019, Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price dated the Nineth day of February in the year Two Thousand Twenty-four (the "Agreement"). This Amendment shall supersede that certain Guaranteed Maximum Price Amendment dated the Twenty-first day of February 2025, entered into for the Site portion of the Project, and performance per that Amendment shall be deemed provided pursuant to this Amendment.
(In words, indicate day, month, and year.)

for the following **PROJECT:**
(Name and address or location)

Cass Holt Road Park and Indoor Recreation Center
"Eagle's Landing Park"
5420 & 5508 Cass Holt Road
Holly Springs, NC 27540
TOHS Project No. 23-013

THE OWNER:
(Name, legal status, and address)

Town of Holly Springs
128 S. Main Street
Holly Springs, NC 27540

THE CONSTRUCTION MANAGER:
(Name, legal status, and address)

Frank L. Blum Construction Company
2601 Pilgrim Court
Winston-Salem NC 27106

TABLE OF ARTICLES

A.1 GUARANTEED MAXIMUM PRICE

A.2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

A.3 INFORMATION UPON WHICH AMENDMENT IS BASED

A.4 CONSTRUCTION MANAGER'S CONSULTANTS, CONTRACTORS, DESIGN PROFESSIONALS, AND SUPPLIERS

ARTICLE A.1 GUARANTEED MAXIMUM PRICE

§ A.1.1 Guaranteed Maximum Price

Pursuant to Section 3.2.6 of the Agreement, the Owner and Construction Manager hereby amend the Agreement to establish a Guaranteed Maximum Price. As agreed by the Owner and Construction Manager, the Guaranteed Maximum Price is an amount that the Contract

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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User Notes: (2017752427)

Sum shall not exceed. The Contract Sum consists of the Construction Manager's Fee plus the Cost of the Work, as that term is defined in Article 6 of the Agreement.

§ A.1.1.1 The Contract Sum for the Building portion of the Work is guaranteed by the Construction Manager not to exceed Sixty-Three Million Nine Hundred Seventy-Seven Thousand Two Hundred Ninety Two Dollars ($ 63,977,292), subject to additions and deductions by Change Order as provided in the Contract Documents.

The Contract Sum for the Site portion of the Work was guaranteed not to exceed Nineteen Million Nine Hundred Ninety-three Thousand Eight Hundred Forty-Four Dollars ($19,993,844) and was entered into under the initial GMP Amendment dated the Twenty-first day of February in the year Two Thousand Twenty-five.

The Guaranteed Maximum Price for the Entire Work is Eighty-Three Million Nine Hundred Seventy-One Thousand One Hundred Thirty-Six Dollars ($83,971,136).

This amount is in addition to the original contract for Preconstruction Services of Four Hundred Sixty-three Thousand Two Hundred Ten Dollars ($463,210).

§ A.1.1.2 Itemized Statement of the Guaranteed Maximum Price. Provided below is an itemized statement of the Guaranteed Maximum Price organized by trade categories, including allowances; the Construction Manager's contingency; alternates; the Construction Manager's Fee; and other items that comprise the Guaranteed Maximum Price as defined in Section 3.2.1 of the Agreement.
(Provide itemized statement below or reference an attachment.)

Detailed in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Building – GMP Deliverable dated July 8, 2025

§ A.1.1.3 The Construction Manager's Fee shall be three percent (3.00%) of the Cost of the Work.

§ A.1.1.4 The method of adjustment of the Construction Manager's Fee for changes in the Work shall be the fee plus cost of SDI, Insurance, IT, and bond costs as set forth in Section 7 of the Agreement.

§ A.1.1.5 Alternates
§ A.1.1.5.1 Alternates, if any, included in the Guaranteed Maximum Price:

Item	Price
None.	

§ A.1.1.5.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Exhibit A. Upon acceptance, the Owner shall issue a Modification to the Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
Detailed in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Building – GMP Deliverable dated July 8, 2025, Revised Page 14-18		

§ A.1.1.6 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)
Detailed in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Site – GMP Deliverable dated July 8, 2025		

§ A.1.1.7 Tariffs, Levies, Duties, and Other Laws/Regulations

The parties acknowledge and agree that tariffs, levies, duties, taxes or laws/regulations of similar effect (collectively,

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"Tariffs") may go into effect after the date hereof. The Construction Manager has included an allowance for the impact of any Tariffs in the Contract Sum as detailed in Section A.3.1.5 below, which shall be governed in accordance with Article 3.8 of the AIA A201-2017 General Conditions of the Agreement.

§ A.1.1.7.1 In the event that the cost of materials or equipment to be incorporated into the Work escalates prior to the expiration of the Contract Time due to Tariffs which were not reasonably foreseeable as of the date this Amendment is signed, whether such escalation is the result of direct Tariff assessments or the impact of Tariffs on demand and price for domestically produced materials or equipment, Contractor shall (i) inform the Owner of such escalation, (ii) provide back-up documentation establishing such direct escalation costs, and (iii) shall utilize the allowance to cover the costs associated with such impact after written notice to the Owner. If the need for the use of the allowance exceeds the allowance amount, the Town shall consider an increase to the allowance by a written Change Order to cover such cost. Such additional increases in allowance for tariffs, if needed, shall not increase the Contract Sum for application of the Construction Manager's fee.

§ A.1.1.7.2 If materials or equipment are delayed in delivery due to the imposition of a Tariff not reasonably foreseeable as of the date this Contract is signed, and Contractor is unable to reasonably mitigate that delay through other suppliers or types of materials or equipment, then Contractor shall be entitled to an extension of the Contract Time and related General Conditions resulting from reasonably unavoidable delays to the critical path of the Schedule.

ARTICLE A.2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ A.2.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[ ] The date of execution of this Amendment.

[X] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

The date of the commencement of the Construction Phase shall be after the latest of: (1) once formal bids are received and accepted, a Notice to Proceed can be issued by the Owner, (2) the date all governmental permits and approvals necessary to begin the Work are received, or (3) the date on which satisfactory evidence is provided if Contractor submits a written request of Owner's financial arrangements pursuant to Section 2.2.1 of A201-2017 no less than seven days prior to the anticipated day of commencement.

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of execution of this Amendment.

§ A.2.2 Unless otherwise provided, the Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work. The Contract Time shall be measured from the date of commencement of the Work.

§ A.2.3 Substantial Completion

§ A.2.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Construction Manager shall achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

[X] Not later than nine hundred eighty-two (982) calendar days from the date of commencement of the Work.

[ ] By the following date:

§ A.2.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Construction Manager shall achieve Substantial Completion of such portions by the following dates:

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Portion of Work	Substantial Completion Date
N/A	

§ A.2.3.3 If the Construction Manager fails to achieve Substantial Completion as provided in this Section A.2.3, liquidated damages, if any, shall be assessed as set forth in Section 6.1.6 of the Agreement.

ARTICLE A.3 INFORMATION UPON WHICH AMENDMENT IS BASED

§ A.3.1 The Guaranteed Maximum Price and Contract Time set forth in this Amendment are based on the Contract Documents and the following:

§ A.3.1.1 The following Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
None.			

§ A.3.1.2 The following Specifications:
(Either list the Specifications here, or refer to an exhibit attached to this Amendment.)

Specs related to Drawings include in Drawing Log in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Building – GMP Deliverable dated July 8, 2025

Section	Title	Date	Pages

§ A.3.1.3 The following Drawings:
(Either list the Drawings here, or refer to an exhibit attached to this Amendment.)

See Drawing Log included in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Site – GMP Deliverable dated July 8, 2025

Number	Title	Date

§ A.3.1.4 The Sustainability Plan, if any:
(If the Owner identified a Sustainable Objective in the Owner's Criteria, identify the document or documents that comprise the Sustainability Plan by title, date and number of pages, and include other identifying information. The Sustainability Plan identifies and describes the Sustainable Objective; the targeted Sustainable Measures; implementation strategies selected to achieve the Sustainable Measures; the Owner's and Construction Manager's roles and responsibilities associated with achieving the Sustainable Measures; the specific details about design reviews, testing or metrics to verify achievement of each Sustainable Measure; and the Sustainability Documentation required for the Project, as those terms are defined in Exhibit C to the Agreement.)

Title	Date	Pages
N/A		

Other identifying information:

§ A.3.1.5 Allowances, if any, included in the Guaranteed Maximum Price:
(Identify each allowance.)

Item	Price
Detailed in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Building – GMP Deliverable dated July 8, 2025	

§ A.3.1.6 Assumptions and clarifications, if any, upon which the Guaranteed Maximum Price is based:
(Identify each assumption and clarification.)

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Included in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Building – GMP Deliverable dated July 8, 2025

§ A.3.1.7 The Guaranteed Maximum Price is based upon the following other documents and information:
(List any other documents or information here, or refer to an exhibit attached to this Amendment.)

None.

§ A.3.1.8 The address for the project is amended by execution of this Guaranteed Maximum Price Amendment as follows:
From: 4520 and 4408 Cass Holt Rd. Holly Springs, NC 27540
To: 5420 and 5508 Cass Holt Rd. Holly Springs, NC 27540

ARTICLE A.4 CONSTRUCTION MANAGER'S CONSULTANTS, CONTRACTORS, DESIGN PROFESSIONALS, AND SUPPLIERS

§ A.4.1 The Construction Manager shall retain the consultants, contractors, design professionals, and suppliers, identified below:
(List name, discipline, address, and other information.)

This Amendment to the Agreement entered into as of the day and year first written above.

See Attached Signature Page

OWNER *(Signature)*	**CONSTRUCTION MANAGER** *(Signature)*
	Michael Lancaster, President & CEO
(Printed name and title)	*(Printed name and title)*

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Additions and Deletions Report for

AIA® Document A133® – 2019 Exhibit A

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 10:10:39 ET on 07/10/2025.

PAGE 1

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...

Cass Holt Road Park and Indoor Recreation Center
"Eagle's Landing Park"
5420 & 5508 Cass Holt Road
Holly Springs, NC 27540
TOHS Project No. 23-013

...

Town of Holly Springs
128 S. Main Street
Holly Springs, NC 27540

...

Frank L. Blum Construction Company
2601 Pilgrim Court
Winston-Salem NC 27106

PAGE 2

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The Guaranteed Maximum Price for the Entire Work is Eighty-Three Million Nine Hundred Seventy-One Thousand One Hundred Thirty-Six Dollars ($83,971,136).

This amount is in addition to the original contract for Preconstruction Services of Four Hundred Sixty-three Thousand Two Hundred Ten Dollars ($463,210).

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...

Detailed in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Building – GMP Deliverable dated July 8, 2025

§ A.1.1.3 The Construction Manager's Fee ~~is set forth in Section 6.1.2 of the Agreement.~~shall be three percent (3.00%) of the Cost of the Work.

§ A.1.1.4 The method of adjustment of the Construction Manager's Fee for changes in the Work ~~is set forth in Section 6.1.3~~ shall be the fee plus cost of SDI, Insurance, IT, and bond costs as set forth in Section 7 of the Agreement.

...

None.

...

Detailed in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Building – GMP Deliverable dated July 8, 2025, Revised Page 14-18

...

Detailed in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Site – GMP Deliverable dated July 8, 2025

§ A.1.1.7 Tariffs, Levies, Duties, and Other Laws/Regulations

The parties acknowledge and agree that tariffs, levies, duties, taxes or laws/regulations of similar effect (collectively, "Tariffs") may go into effect after the date hereof. The Construction Manager has included an allowance for the impact of any Tariffs in the Contract Sum as detailed in Section A.3.1.5 below, which shall be governed in accordance with Article 3.8 of the AIA A201-2017 General Conditions of the Agreement.

§ A.1.1.7.1 In the event that the cost of materials or equipment to be incorporated into the Work escalates prior to the expiration of the Contract Time due to Tariffs which were not reasonably foreseeable as of the date this Amendment is signed, whether such escalation is the result of direct Tariff assessments or the impact of Tariffs on demand and price for domestically produced materials or equipment, Contractor shall (i) inform the Owner of such escalation, (ii) provide back-up documentation establishing such direct escalation costs, and (iii) shall utilize the allowance to cover the costs associated with such impact after written notice to the Owner. If the need for the use of the allowance exceeds the allowance amount, the Town shall consider an increase to the allowance by a written Change Order to cover such cost. Such additional increases in allowance for tariffs, if needed, shall not increase the Contract Sum for application of the Construction Manager's fee.

§ A.1.1.7.2 If materials or equipment are delayed in delivery due to the imposition of a Tariff not reasonably foreseeable as of the date this Contract is signed, and Contractor is unable to reasonably mitigate that delay through other suppliers or types of materials or equipment, then Contractor shall be entitled to an extension of the Contract Time and related General Conditions resulting from reasonably unavoidable delays to the critical path of the Schedule.

PAGE 3

[X] Established as follows:

...

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The date of the commencement of the Construction Phase shall be after the latest of: (1) once formal bids are received and accepted, a Notice to Proceed can be issued by the Owner, (2) the date all governmental permits and approvals necessary to begin the Work are received, or (3) the date on which satisfactory evidence is provided if Contractor submits a written request of Owner's financial arrangements pursuant to Section 2.2.1 of A201-2017 no less than seven days prior to the anticipated day of commencement.

...

[X] Not later than nine hundred eighty-two (982) calendar days from the date of commencement of the Work.

PAGE 4

N/A

...

None.

...

Specs related to Drawings include in Drawing Log in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Building – GMP Deliverable dated July 8, 2025

...

See Drawing Log included in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Site – GMP Deliverable dated July 8, 2025

...

N/A

...

Detailed in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Building – GMP Deliverable dated July 8, 2025

PAGE 5

Included in Exhibit A-1: Town of Holly Springs Eagles Landing Park – Building – GMP Deliverable dated July 8, 2025

...

None.

§ A.3.1.8 The address for the project is amended by execution of this Guaranteed Maximum Price Amendment as follows:
From: 4520 and 4408 Cass Holt Rd. Holly Springs, NC 27540
To: 5420 and 5508 Cass Holt Rd. Holly Springs, NC 27540

...

See Attached Signature Page

...

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Michael Lancaster, President & CEO

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Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Morgan Perry, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 10:10:39 ET on 07/10/2025 under Order No. 4104250623 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A133™ – 2019 Exhibit A, Guaranteed Maximum Price Amendment, other than those additions and deletions shown in the associated Additions and Deletions Report.

_____

(Signed)

_____

(Title)

_____

(Dated)

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User Notes: (2017752427)

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Trusted Builders. Exceptional Experience.

Town of Holly Springs
Eagles Landing Park



GMP 2 Deliverable

July 8, 2025

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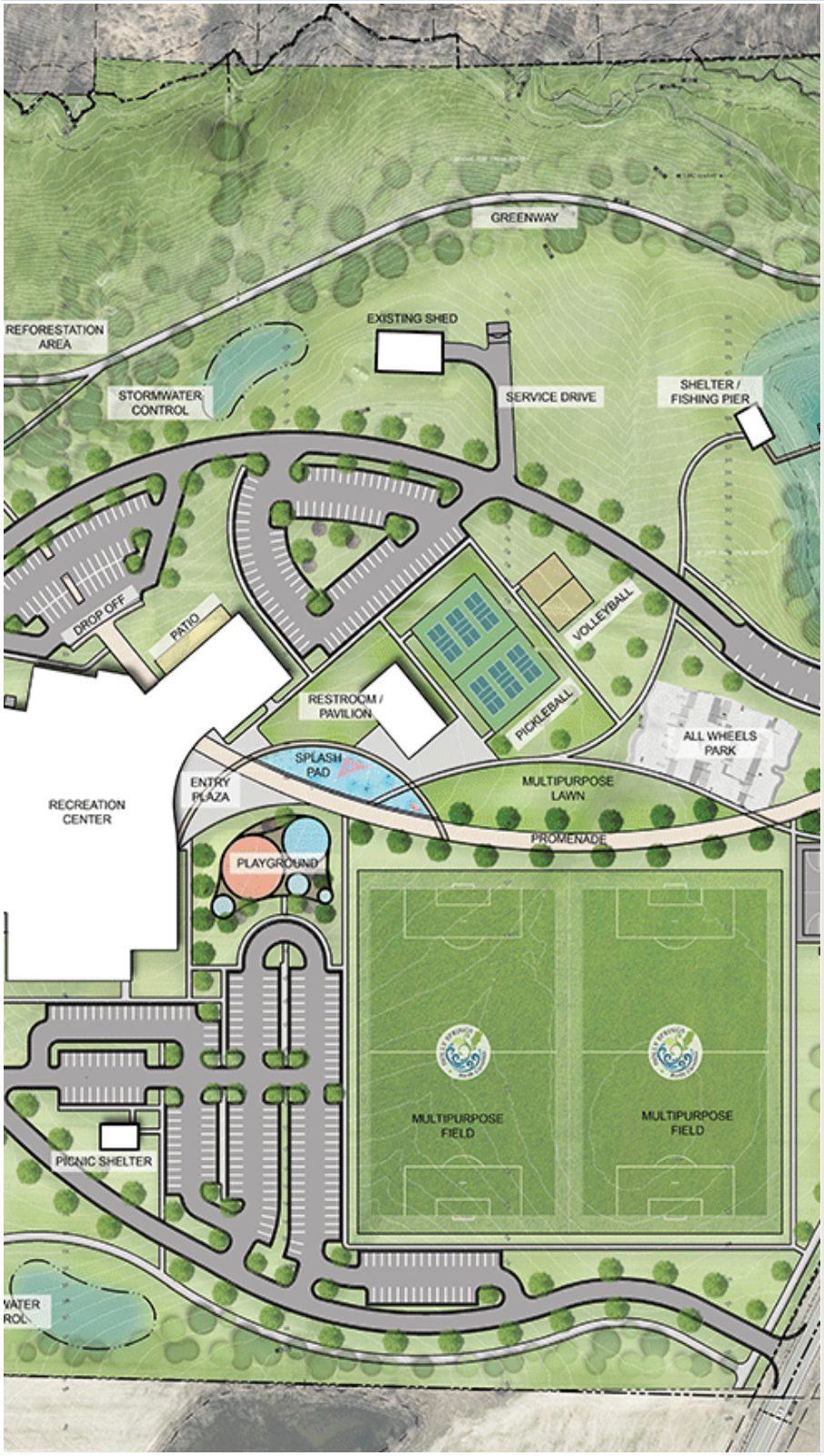

Section 1
Executive Summary

Section 2
Scope of Work
Clarifications

Section 3
GMP Cost Summary

Section 4
Project Schedule

Section 5
Site Logistics

Section 6
Documents Log

BLUM

Section 1
Executive Summary

BLUM CONSTRUCTION

Eagles Landing Park
Buildings and Site Phase Two
Holly Springs, NC

GMP 02
Executive Summary

July 8, 2025

Construction Estimate Summary

Our preconstruction team thoroughly evaluated the CD level construction drawings and associated documents. Our process for developing the CD level estimate associated with these documents included:

1. Obtain GMP pricing for major trade packages as feasible based on the documents provided.
2. Scope reviews with each major trade package to ensure scope/pricing completeness as well as gather information regarding lead times, escalation, and current market concerns.

Based on the outcomes of this process, our construction costs for the CD Eagles Landing Park Buildings and Site Phase Two are as follows. This construction estimate is detailed in Section 3 – *Summary Estimate.*

Eagles Landing Park GMP 02 ……	**$63,977,292**

Construction Indirect Costs

Included within our indirect cost are our percentage-based costs such as contingencies, insurance packages and contractor fee. A breakdown of the percentages and the associated costs can be found on the second to last page of Section 3 – *Summary Estimate*.

- Owner's Contingency – Included within this GMP for any unforeseen scope changes.
- Estimating/Design Contingency – Not included within this GMP.
- Tariff Allowance – Included within GMP.
- Construction Contingency - Included to cover unforeseen circumstances and unexpected costs during the construction process. All unused funds will be returned to the owner at the end of the project.

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Section 2

Scope of Work Clarifications

Eagles Landing Park and Rec Center Scope Clarifications
GMP 02 Deliverable
07/08/2025

Main Building

General:

- A 2.00% construction contingency has been included.
- We have included sub default, general liability, and builder's risk insurances.
- Owner's contingency has been included for any unforeseen scope changes.
- Includes tariff allowance.
- The schedule is based on delivery of a building pad for the rec center construction to start August of 2025.
- Standard jobsite work hours are assumed to be 7:00 am to 5:00 pm Monday – Friday with Saturday as a make-up day due to weather or schedule requirements.
- General conditions are included for GMP #2. This includes project staff and temporary facilities to oversee the building and site amenity construction for the duration of the project. Support staff to provide QA/QC services and oversight of safety policies are included in the scope of this GMP #2.
- Third party testing for envelope systems has been included per CD specifications.
- Commissioning services to be provided by owner.
- Substantial completion date shifted to October 25, 2027, based on NTP date of July 21, 2025 reference project schedule.

Allowances:

- Allowance balances are fluid between allowance scopes based on approval of their use by ToHS.
- 48 individual Signage letter and/or characters: $5,882.90
- 4 additional card reader locations: $3,275
- 4 additional camera locations: $4,175
- 4 additional signs type D: $1,027.12
- 4 additional signs type N: $262.20
- Unit cost for Brick masonry: $750/1,000 brick
- Recreation Center Building Emergency Responder Communication Enhancement System: $100,000
- Maintenance building interior renovations: $350,000
- Restroom shelter structure allowance for re-bid: $652,332

Unit Prices:

- Individual signage letter – $122.56
- Additional card reader location- $819
- Additional camera locations - $1,044

Division 3 – Concrete:

- Structural precast panels are included for the gymnasium area only. No insulation or drywall is included for the interior facing structural panel faces.
- We have not included any deep foundations. Foundations are included to the depths and sizes depicted on the drawings.
- No post tension concrete has been included because none is shown on the drawings.
- CFRP has been excluded because none is shown on the drawings.

Division 4 – Masonry:

- A single color of pigmented mortar is assumed in the brick veneer design.
- Final brick selection will be reconciled via the brick allowances provided in the bid documents.
- Architectural precast concrete has been included only where specified in documents.

Division 5 – Metals:

- All guardrails have been included as indicated in plans.
- Structural steel reinforcements are included for the operable partitions and the gym dividing curtains.

Division 6 – Wood, Plastics, and Composites:

- We have excluded any glulam structures or beams because none is shown on the drawings.
- Interior wood blocking has been included at perimeters of precast window openings as well as at casework, accessories, and fixtures for support.
- Reception desk details for quartz radius will be modified by the designer to allow for quartz or comparable material use.

Division 7 – Thermal and Moisture Protection:

- TPO roof system has been included as the main roof of the recreation center.
- Foundation and elevator pit waterproofing is included.
- We have included an exterior applied air/weather barrier as part of the cavity wall construction.
- Pedestal systems have been included over the roofing at the exercise terrace over a slightly sloped concrete slab on metal deck.
- We have included spray applied fireproofing where specified in plans.
- Prefabricated aluminum canopies have been included where shown in the plans.
- A perforated metal screen around roof top air handler units has been included.

Division 8 – Openings:

- All wood and hollow metal doors, frames, and hardware have been included per the door schedule.
- No fire rated aluminum systems are included because none are shown on the drawings.
- Gymnasium curtainwall systems include metal fins as shown in plans.
- Wall mirrors in exercise rooms have been included.
- Coiling doors of any kind have been excluded because none are shown on the drawings.

Division 9 – Drywall:

- Drywall finish levels up to level 04 have been included. No surfaces with a level 05 finish have been assumed. No level 05 finishes are indicated in the drawings or specifications.
- Drywall systems caulked with standard sealants and rated caulking where life/safety sheets illustrate rated assemblies.

Division 9 – Flooring:

- Wall, floor, and base tile have been included as specified.
- All athletic floorings have been included per plan specifications.

Division 9 – ACT and Acoustical Panels:

- ACP ceilings have been included where shown in plans.

Division 9 – Painting:

- We have included painting all drywall, exposed steel, wood doors, hollow metal door frames, and stair risers and handrails.
- Painting of exposed ceiling areas has been included.

Division 10 – Specialties:

- Lockers have been included as specified.
- Manually operated operable partitions have been included between the multi-purpose rooms.
- Bathroom partitions and necessary bracing have been included.
- Fire extinguishers and cabinets have been included throughout the building.
- We have included a Knox box for the main building as required by the fire marshal.
- Interior signage for the rooms, stairs, back of house and exits have been included.
- Toilet accessories have been included as specified.
    - Toilet paper dispensers.
    - Grab bars (18" 36" and 42").
    - Soap dispensers.
    - Trash cans.
    - Sink mirrors.
    - Robe hooks.
    - Sanitary napkin disposals.
    - Paper towel dispensers.
    - Full length mirrors.

Division 11 – Equipment:

- Playground equipment and associated flooring have not been included.
- We have included three folding gym demising curtains to separate the basketball courts in the gym.
- Athletic Equipment included in gym.
    - Ceiling mounted electrically operated basketball goals.
    - Ceiling suspended electrically operated volleyball systems.

Division 12 – Furnishings:

- Window Treatments included per plans and specs.

Division 14 – Elevator:

- A single two stop passenger elevator has been included for the building.
- Includes standard cab finishes and lighting.
- Fire command center annunciator panel reference in elevator specification is not included. Per clarification provided by Davis-Kane, the fire command center annunciator panel reference in 142400, 2.9.I is not required for the project.

Division 21 – Fire Suppression:

- We have not included a fire pump because none is shown on the drawings.

Division 22 – Plumbing:

- Backfill with onsite materials is included.

Division 23 – HVAC:

- Permanent equipment will be permitted to be used during construction provided temporary filtration and management protocols are in place.

Division 26 – Electrical:

- Excludes site, roadway, and lighting, this will be provided and installed by Duke Energy. Building interior and building mounted lighting is included per the drawings.
- Excludes security wiring for card readers and monitoring hardware. Security system wiring, card readers, and monitoring hardware are Owner provided.
- Excludes security head end and programming. Security system is Owner provided.

Division 27 – Communications:

- Low voltage/communication system included per plans and specs.
- Includes CCT system per plans and specifications.
- Excludes head end rack network switches and equipment provided by Owner's IT department.

Restroom Building & Picnic Shelter

Division 3 – Concrete:

- No deep foundations have been included. Foundations are included to the depths and sizes depicted on the drawings.
- Includes concrete slabs and footings as designed.
- Includes an allowance for coordination of splash pad pump room slab details overflow pit details, to be provided by Designer.

Division 4 – Masonry:

- All walls have been included as CMU framed walls.
- All exterior wall veneer to be brick.

Division 5 – Metals:

- Lintels, embeds, and inserts defined for the building have been included.
- Includes tube steel framing for concrete benches.

Division 6 – Wood, Plastics, and Composites:

- No glulam has been included because none is shown on the drawings.
- Picnic shelter and restroom roof to be prefabricated system as designed.

Division 7 – Thermal and Moisture Protection:

- Standing seam metal roofing has been included in 18" or 24" sizes. A 12" width size is not available.
- No metal panels have been included because none are shown on the drawings.
- Gutters and downspouts included.

- Misc. caulking and sealants are included.
- Includes weather barrier and dampproofing.

Division 8 – Openings:

- Includes restroom windows.
- We have included hollow metal doors, frames, and hardware as specified in plans.

Division 9 – Finishes:

- No drywall has been included in the restroom building because none is shown on the drawings.
- No tile has been included within the restroom interior. Stand alone tile wall outside of the restroom shelter is included per the drawings.

Division 10 – Specialties:

- We have included toilet stalls/compartment and three urinal screens.
- Toilet accessories included.
    - Toilet paper dispensers.
    - Grab bars (18" 36" and 42").
    - Soap dispensers.
    - Trash cans.
    - Sink mirrors.
    - Robe hooks.
    - Sanitary napkin disposals.
    - Paper towel dispensers.

Division 21 – Fire Suppression:

- The restroom building does not include any fire suppression systems because none is shown on the drawings.

Division 22 – Plumbing:

- An allowance of $25,000 has been included for the pump room.
- Includes all specified fixtures.

Division 23 – HVAC:

- Includes heaters and exhaust fans per drawings.
- HVAC cooling equipment is included per drawings.

Division 26 – Electrical:

- The restroom building does not include any fire alarm systems.
- Includes all lighting and power specified in restroom and shelter.

Site Improvements and Maintenance Building

Division 3 – Concrete:

- No deep foundations have been included. Foundations are included to the depths and sizes depicted on the drawings.

- Includes an allowance for retaining wall adjacent to maintenance building and splash pad holding tank slab.

Division 4 – Masonry:

- No masonry work has been included at the maintenance building because none is shown on the drawings.

Division 6 – Wood, Plastics, and Composites:

- Interior renovation scope of the maintenance building is included as an allowance.

Division 7 – Thermal and Moisture Protection:

- New lean-to standing seam metal roof structure included at the maintenance building.

Division 26 – Electrical:

- Fire alarm has not been included in maintenance building because none is shown on the drawings.
- Costs for buried overhead power along Cass Holt Road are not included in this budget. See global budget for utility provided costs.
- Athletic Stadium Lighting
    - Musco lighting is furnished and installed by the Owner. Scope delineation between Musco and electrical contractor is included via pre con RFI response representative of scope separation.

Division 32 – Exterior Improvements:

- Exterior playground equipment and associated flooring have not been included.
- Sports lighting for the multi-purpose fields, pickleball courts, volleyball, and basketball courts as shown by Musco is owner furnished.
- Includes all site furnishings as specified in the 100% site specs.
- Includes boulders at the playground.
- All landscaping included as specified.
- Splash Pad
    - Includes equipment, fixtures, and labor for recirculating system.
    - Includes pump, reservoir, control panel and necessary valves for system.
    - Includes necessary rough-in for water distribution and sanitary return.
    - Includes concrete prep & placement.
- Pickleball Courts
    - Includes six (6) asphalt pickleball courts.
    - Excludes rough grading.
    - Includes 6" stone base and (2) – 1 ½" lifts of asphalt (total of 3" of asphalt).
    - Includes acrylic resurfacer coats and acrylic coating finish (textured and non-textured).
    - Includes applying and sealing playing lines.
    - Includes net posts and netting.
- Exterior Basketball Courts
    - Includes two (2) asphalt basketball courts.
    - Excludes rough grading.
    - Includes four (4) basketball goal systems with necessary concrete footings.
    - Includes subgrade and asphalt.
    - Includes acrylic resurfacer coats and acrylic coating finish (textured and non-textured).
    - Includes applying and sealing playing lines.
- Soccer Fields/Multi-Purpose Fields

    - Fields and field equipment package to be Owner furnished and installed.
- Fencing/Gates
    - Includes all specified fence types.
    - Includes top, mid, and bottom rails.
    - Includes core-drilled posts with concrete footings.
    - Excludes wind screening. Sports netting system is included.
    - Fences included multipurpose fields, volleyball courts, basketball courts, and pickleball courts.
- Fishing pier is not included.

Division 27 – Communications:

- Costs for site fiber for building service is not included. See global budget for utility provided costs.

Division 33 – Utilities:

- Utility system new construction fees are not included in this budget.
- No gas line relocation work or location costs of utility systems are included within the scope of this GMP.

Exclusions:

- Job wide background checks.
- Removal or relocation of unknown utility lines.
- Special inspections.
- Hazardous materials.
- Furniture purchase, installation, relocation or moving expenses.
- Phone & data final connections and equipment.
- Emergency call boxes.
- Artwork & graphics.
- Duke Energy fees including meters, services, etc.

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Section 3

GMP Cost Summary

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July 8, 2025

Eagles Landing Buildings and Site Phase 2 GMP
Initial
Town of Holly Springs
Estimator: Lucas Anderson
Total Building Area (SF):

DESCRIPTION	QUANTITY	UNIT	TOTAL
Alternate 02 Sand Volleyball			
26 00 00 ELECTRICAL			
260000.000 Electrical - Sand Volleyball	1.00 ls	$10,000.00	$10,000
Subtotal - 26 00 00 ELECTRICAL			**$10,000**
32 00 00 EXTERIOR IMPROVEMENTS			
320000.000 Establish Subgrade	1.00 ls	$8,000.00	$8,000
320000.000 Volleyball Site Work	1.00 ls	$25,438.00	$25,438
321800.000 Volleyball Courts	1.00 ls	$278,110.00	$278,110
321800.115 Volleyball Fence - 10'	1.00 ls	$30,000.00	$30,000
329219.000 Landscaping Sand Volleyball	1.00 ls	($4,200.00)	($4,200)
Subtotal - 32 00 00 EXTERIOR IMPROVEMENTS			**$337,348**
Subtotal - Alternate 02 Sand Volleyball	**0 SQFT**	**$0.00**	**$347,348**
Alternate 03 All Wheels Skatepark			
26 00 00 ELECTRICAL			
260000.000 Electrical - All Wheels Park	1.00 ls	$157,850.00	$157,850
Subtotal - 26 00 00 ELECTRICAL			**$157,850**
32 00 00 EXTERIOR IMPROVEMENTS			
320000.000 All Wheels Park Sitework	2.00 ls	$1,820.00	$3,640
320000.000 Establish Subgrade at Beginner Bowl	1.00 ls	$11,000.00	$11,000
320000.000 Establish Subgrade at Pump Track	1.00 ls	$8,000.00	$8,000
321313.000 All Wheels Park Concrete Sidewalks	1.00 ls	$98,600.00	$98,600
329219.000 Landscaping All Wheels Park	1.00 ls	($25,000.00)	($25,000)
329300.000 All Wheels Park	1.00 ls	$1,498,264.00	$1,498,264
Subtotal - 32 00 00 EXTERIOR IMPROVEMENTS			**$1,594,504**
Subtotal - Alternate 03 All Wheels Skatepark	**0 SQFT**	**$0.00**	**$1,752,354**
Alternate 04 Maintenance Building Sitework			
01 00 00 GENERAL REQUIREMENTS			
018010.000 Maintenance Building Interior Renovations Allowance	1.00 ls	$350,000.00	$350,000
Subtotal - 01 00 00 GENERAL REQUIREMENTS			**$350,000**
03 00 00 CONCRETE			
033000.120 Maintenance Building Concrete	1.00 ls	$16,000.00	$16,000
Subtotal - 03 00 00 CONCRETE			**$16,000**
10 00 00 SPECIALTIES			
101400.000 Maintenance Building Signage	1.00 ls	$286.00	$286
Subtotal - 10 00 00 SPECIALTIES			**$286**
26 00 00 ELECTRICAL			
260000.000 Electrical - Maintenance Building Site Work	1.00 ls	$22,560.00	$22,560
Subtotal - 26 00 00 ELECTRICAL			**$22,560**
32 00 00 EXTERIOR IMPROVEMENTS			
320000.000 Maintenance Building Site Work	1.00 ls	$52,244.79	$52,245
321300.110 Maintenance Building Site Work	1.00 ls	$55,000.00	$55,000
321800.115 Maintenance Building Fence	1.00 ls	$64,000.00	$64,000

BLUM CONSTRUCTION

www.flblum.com
July 8, 2025

Eagles Landing Buildings and Site Phase 2 GMP
Initial
Town of Holly Springs
Estimator: Lucas Anderson
Total Building Area (SF):

DESCRIPTION	QUANTITY	UNIT	TOTAL
Subtotal - 32 00 00 EXTERIOR IMPROVEMENTS			**$171,245**
Subtotal - Alternate 04 Maintenance Building Sitework	**0 SQFT**	**$0.00**	**$560,091**
Alternate 05 Prefab Shelter South of Playground			
03 00 00 CONCRETE			
033000.120 Picnic Shelter Concrete	1.00 ls	$25,900.00	$25,900
Subtotal - 03 00 00 CONCRETE			**$25,900**
04 00 00 MASONRY			
040000.010 Picnic Shelter Masonry	1.00 ls	$36,470.00	$36,470
Subtotal - 04 00 00 MASONRY			**$36,470**
06 00 00 WOOD, PLASTICS, AND COMPOSITES			
061100.000 PreFab Picnic Shelter	1.00 ls	$217,636.00	$217,636
Subtotal - 06 00 00 WOOD, PLASTICS, AND COMPOSITES			**$217,636**
26 00 00 ELECTRICAL			
260000.000 Electrical - Picnic Shelter	1.00 ls	$17,080.00	$17,080
Subtotal - 26 00 00 ELECTRICAL			**$17,080**
32 00 00 EXTERIOR IMPROVEMENTS			
320000.000 Establish Subgrade	1.00 ls	$2,000.00	$2,000
Subtotal - 32 00 00 EXTERIOR IMPROVEMENTS			**$2,000**
Subtotal - Alternate 05 Prefab Shelter South of Playground	**0 SQFT**	**$0.00**	**$299,086**
Alternate 06 Sidewalk at Parking Lot South of Rec Center			
32 00 00 EXTERIOR IMPROVEMENTS			
320000.000 Establish Subgrade	1.00 ls	$2,000.00	$2,000
321313.000 Concrete Sidewalk to Parking Lot South	1.00 ls	$8,000.00	$8,000
Subtotal - 32 00 00 EXTERIOR IMPROVEMENTS			**$10,000**
Subtotal - Alternate 06 Sidewalk at Parking Lot South of Rec Center	**0 SQFT**	**$0.00**	**$10,000**
Alternate 07 Sidewalk at Parking Lot West of Rec Center			
32 00 00 EXTERIOR IMPROVEMENTS			
320000.000 Establish Subgrade	1.00 ls	$7,500.00	$7,500
321313.000 Concrete Sidewalk to Parking Lot West	1.00 ls	$38,000.00	$38,000
Subtotal - 32 00 00 EXTERIOR IMPROVEMENTS			**$45,500**
Subtotal - Alternate 07 Sidewalk at Parking Lot West of Rec Center	**0 SQFT**	**$0.00**	**$45,500**
Alternate 08 Greenway Trail			
05 00 00 METALS			
051000.000 Greenway Trail Site Handrails	1.00 ls	$23,355.00	$23,355
Subtotal - 05 00 00 METALS			**$23,355**
10 00 00 SPECIALTIES			
101400.000 Greenway Signage	1.00 ls	$28,980.00	$28,980
Subtotal - 10 00 00 SPECIALTIES			**$28,980**
32 00 00 EXTERIOR IMPROVEMENTS			
320000.000 Greenway Sitework	2.00 ls	$15,136.69	$30,273

BLUM CONSTRUCTION

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Eagles Landing Buildings and Site Phase 2 GMP
Initial
Town of Holly Springs
Estimator: Lucas Anderson
Total Building Area (SF):

DESCRIPTION	QUANTITY	UNIT	TOTAL
321300.110 Asphalt Greenway Trail 10' W	1.00 ls	$261,000.00	$261,000
321313.000 Concrete at Greenway Trail	1.00 ls	$69,700.00	$69,700
321800.500 Greenway Boardwalk	1.00 ls	$23,120.00	$23,120
Subtotal - 32 00 00 EXTERIOR IMPROVEMENTS			**$384,093**
Subtotal - Alternate 08 Greenway Trail	**0 SQFT**	**$0.00**	**$436,428**
Alternate 09 Sidewalk to Greenway Trail			
32 00 00 EXTERIOR IMPROVEMENTS			
321313.000 Concrete Sidewalk to Greenway Trail	1.00 ls	$16,200.00	$16,200
Subtotal - 32 00 00 EXTERIOR IMPROVEMENTS			**$16,200**
Subtotal - Alternate 09 Sidewalk to Greenway Trail	**0 SQFT**	**$0.00**	**$16,200**
Alternate 10 Horizontal Sunshade			
08 00 00 OPENINGS			
084300.000 Horizontal Sunshade	1.00 ls	$205,000.00	$205,000
Subtotal - 08 00 00 OPENINGS			**$205,000**
Subtotal - Alternate 10 Horizontal Sunshade	**0 SQFT**	**$0.00**	**$205,000**
Alternate 11 Dispenser by Bobrick Classic B-357			
10 00 00 SPECIALTIES			
102813.000 Provide Dispenser by Bobrick Classic Series B-357	1.00 ls	$0.00	$0
Subtotal - 10 00 00 SPECIALTIES			**$0**
Subtotal - Alternate 11 Dispenser by Bobrick Classic B-357	**0 SQFT**	**$0.00**	**$0**
Alternate 12 Dispenser by Bobrick Classic B-347			
10 00 00 SPECIALTIES			
102813.000 Provide Dispenser by Bobrick Classic Series B-347	1.00 ls	$0.00	$0
Subtotal - 10 00 00 SPECIALTIES			**$0**
Subtotal - Alternate 12 Dispenser by Bobrick Classic B-347	**0 SQFT**	**$0.00**	**$0**
Alternate 13 Dispenser by Bobrick Classic B-2012			
10 00 00 SPECIALTIES			
102813.000 Provide Dispenser by Bobrick Classic Series B-2012	1.00 ls	$0.00	$0
Subtotal - 10 00 00 SPECIALTIES			**$0**
Subtotal - Alternate 13 Dispenser by Bobrick Classic B-2012	**0 SQFT**	**$0.00**	**$0**
Alternate 14 Dispenser Unit FFE #01A by Bobrick B-29744			
10 00 00 SPECIALTIES			
102813.000 Provide Semi-Recessed Automatic Universal Roll Paper Towel Dispenser Unit FFE #01A by Bobrick B-29744	1.00 ls	$0.00	$0
Subtotal - 10 00 00 SPECIALTIES			**$0**
Subtotal - Alternate 14 Dispenser Unit FFE #01A by Bobrick B-29744	**0 SQFT**	**$0.00**	**$0**
Alternate 15 Dispenser by Bobrick B-3974			
10 00 00 SPECIALTIES			
102813.000 Provide Dispenser by Bobrick B-3974	1.00 ls	$0.00	$0

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Initial
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Total Building Area (SF):

DESCRIPTION	QUANTITY	UNIT	TOTAL
Subtotal - 10 00 00 SPECIALTIES			**$0**
Subtotal - Alternate 15 Dispenser by Bobrick B-3974	**0 SQFT**	**$0.00**	**$0**
Alternate 16 Dispenser by Bobrick Classic B-30919			
10 00 00 SPECIALTIES			
102813.000 Provide Dispenser by Bobrick Classic Series B-30919	1.00 ls	$0.00	$0
Subtotal - 10 00 00 SPECIALTIES			**$0**
Subtotal - Alternate 16 Dispenser by Bobrick Classic B-30919	**0 SQFT**	**$0.00**	**$0**
Alternate 17 Dispenser by Bobrick Classic B-30929			
10 00 00 SPECIALTIES			
102813.000 Provide Dispenser by Bobrick Classic Series B-30929	1.00 ls	$0.00	$0
Subtotal - 10 00 00 SPECIALTIES			**$0**
Subtotal - Alternate 17 Dispenser by Bobrick Classic B-30929	**0 SQFT**	**$0.00**	**$0**
Alternate 18-21 Athletic Equipment			
11 00 00 EQUIPMENT			
116500.000 Athletic Equipment	1.00 ls	$130,147.00	$130,147
116500.009 Folding Partition, Basketball Backstops, and Goals by Porter Model 90956000	1.00 ls	$0.00	$0
116500.009 Gym Equipment Controller by Porter Power-Touch 4	1.00 ls	$15,000.00	$15,000
116500.009 Scoreboard by Daktronics Model BB 2103	1.00 ls	$3,950.00	$3,950
116500.009 Volleyball Net Assembly by Porter Model 91920100	1.00 ls	$0.00	$0
Subtotal - 11 00 00 EQUIPMENT			**$149,097**
Subtotal - Alternate 18-21 Athletic Equipment	**0 SQFT**	**$0.00**	**$149,097**
Alternate 22 Door Closers by Norton UNI7500 33-41			
08 00 00 OPENINGS			
081800.000 Door Closers by Norton Model UNI7500 33-41	1.00 ls	$0.00	$0
Subtotal - 08 00 00 OPENINGS			**$0**
Subtotal - Alternate 22 Door Closers by Norton UNI7500 33-41	**0 SQFT**	**$0.00**	**$0**
Alternate 23 Exit Devices by Detex 1003WS			
08 00 00 OPENINGS			
081800.000 Exit Devices by Detex Model 1003WS	1.00 ls	$5,543.00	$5,543
Subtotal - 08 00 00 OPENINGS			**$5,543**
Subtotal - Alternate 23 Exit Devices by Detex 1003WS	**0 SQFT**	**$0.00**	**$5,543**
Alternate 24 Lock Cylinders by Yale			
08 00 00 OPENINGS			
081800.000 Lock Cylinders by Yale	1.00 ls	$0.00	$0
084300.000 Lock Cylinders by Yale	1.00 ls	$0.00	$0
Subtotal - 08 00 00 OPENINGS			**$0**
Subtotal - Alternate 24 Lock Cylinders by Yale	**0 SQFT**	**$0.00**	**$0**
Alternate 25 Diaper Changing Table by Koala KB300-01			

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Eagles Landing Buildings and Site Phase 2 GMP
Initial
Town of Holly Springs
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Total Building Area (SF):

DESCRIPTION		QUANTITY		UNIT	TOTAL
10 00 00 SPECIALTIES					
102813.000	Provide Diaper Changing Table by Koala Model KB300-01	1.00	ls	($16,539.00)	($16,539)
Subtotal - 10 00 00 SPECIALTIES					**($16,539)**
Subtotal - Alternate 25 Diaper Changing Table by Koala KB300-01		**0**	**SQFT**	**$0.00**	**($16,539)**
Alternate 26 Toilets Kohler highcliff Ultra K-PR96057-T4H					
22 00 00 PLUMBING					
220000.000	***Requires Design Change***	1.00	ls	$0.00	$0
220000.000	Toilets by Kohler Highcliff Ultra K-PR96057-T4H	1.00	ls	($4,163.00)	($4,163)
Subtotal - 22 00 00 PLUMBING					**($4,163)**
Subtotal - Alternate 26 Toilets Kohler highcliff Ultra K-PR96057-T4H		**0**	**SQFT**	**$0.00**	**($4,163)**
Alternate 27 Faucets by Moen M-Power Align 8560					
22 00 00 PLUMBING					
220000.000	Faucets by Moen M-Power Align Model 8560	1.00	ls	$11,000.00	$11,000
Subtotal - 22 00 00 PLUMBING					**$11,000**
Subtotal - Alternate 27 Faucets by Moen M-Power Align 8560		**0**	**SQFT**	**$0.00**	**$11,000**
Alternate 28 Faucets by Moen M-Power Align 8559					
22 00 00 PLUMBING					
220000.000	Faucets by Moen M-Power Align Model 8559	1.00	ls	($1,100.00)	($1,100)
Subtotal - 22 00 00 PLUMBING					**($1,100)**
Subtotal - Alternate 28 Faucets by Moen M-Power Align 8559		**0**	**SQFT**	**$0.00**	**($1,100)**
Base Bid					
01 00 00 GENERAL REQUIREMENTS					
018010.000	Final Cleaning	1.00	ls	$88,000.00	$88,000
018010.000	General Conditions	29.00	mo	$133,564.48	$3,873,370
018010.000	General Trades	1.00	ls	$1,182,700.00	$1,182,700
018010.000	Pre Cleaning	1.00	ls	$75,000.00	$75,000
Subtotal - 01 00 00 GENERAL REQUIREMENTS					**$5,219,070**
02 00 00 EXISTING CONDITIONS					
022100.000	Building Protection	1.00	ls	$69,896.00	$69,896
022100.000	Dumpsters	208.00	ea	$692.31	$144,000
022100.000	On Site Storage	1.00	ls	$24,000.00	$24,000
022100.000	Safety Equipment	1.00	ls	$17,414.00	$17,414
022100.000	Weather Protection	1.00	ls	$19,000.00	$19,000
Subtotal - 02 00 00 EXISTING CONDITIONS					**$274,310**
03 00 00 CONCRETE					
033000.000	Concrete	1.00	ls	$1,921,900.00	$1,921,900
033000.110	As Built Survey	1.00	ls	$45,000.00	$45,000
033000.120	Crane Pads	2,340.00	sy	$75.00	$175,500
033000.130	Concrete Placement Equipment	1.00	ls	$80,000.00	$80,000
033000.140	Cold Weather Concrete Provisions	1.00	ls	$42,500.00	$42,500
033000.140	Mud Slabs	151.00	cy	$375.00	$56,625

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Eagles Landing Buildings and Site Phase 2 GMP

Initial

Town of Holly Springs

Estimator: Lucas Anderson

Total Building Area (SF):

DESCRIPTION		QUANTITY		UNIT	TOTAL
039100.000	Precast Bracing Rental	3.00	mo	$27,000.00	$81,000
039100.000	Precast Wall Panels	1.00	ls	$1,875,000.00	$1,875,000
Subtotal - 03 00 00 CONCRETE					**$4,277,525**
04 00 00 MASONRY					
042000.000	Cold Weather Masonry Provisions	1.00	ls	$42,500.00	$42,500
042000.000	Masonry	1.00	ls	$1,148,977.00	$1,148,977
042000.000	Temp Construction Water Usage	1.00	ls	$50,000.00	$50,000
Subtotal - 04 00 00 MASONRY					**$1,241,477**
05 00 00 METALS					
051000.000	Steel	1.00	ls	$5,147,215.00	$5,147,215
Subtotal - 05 00 00 METALS					**$5,147,215**
06 00 00 WOOD, PLASTICS, AND COMPOSITES					
061100.000	Prefabricated Shelter and Restroom Structure Allowance	1.00	ls	$1,304,664.12	$1,304,664
061100.100	Covered Exterior Storage Wood Framing	1,065.00	sf	$50.00	$53,250
064100.000	Casework	1.00	ls	$309,878.00	$309,878
Subtotal - 06 00 00 WOOD, PLASTICS, AND COMPOSITES					**$1,667,792**
07 00 00 THERMAL AND MOISTURE PROTECTION					
072000.000	Waterproofing, Air Barriers, and Sealants	1.00	ls	$402,450.00	$402,450
076100.000	Canopies	1.00	ls	$55,000.00	$55,000
076100.000	Roofing	1.00	ls	$1,618,000.00	$1,618,000
076200.100	3rd Party Envelope Testing	1.00	ls	$128,200.00	$128,200
076200.100	Metal Panels	1.00	ls	$1,593,000.00	$1,593,000
078100.000	Applied Fireproofing at Structure/Gym	1.00	ls	$360,743.00	$360,743
079000.000	Environmental Controls	1.00	ls	$62,000.00	$62,000
Subtotal - 07 00 00 THERMAL AND MOISTURE PROTECTION					**$4,219,393**
08 00 00 OPENINGS					
081800.000	Doors, Frames, and Hardware	1.00	ls	$173,308.00	$173,308
084300.000	Storefront	1.00	ls	$1,887,000.00	$1,887,000
Subtotal - 08 00 00 OPENINGS					**$2,060,308**
09 00 00 FINISHES					
092100.000	Drywall and Ceilings	1.00	ls	$1,993,350.00	$1,993,350
093013.100	Floor Tile	1.00	ls	$187,411.00	$187,411
096000.000	Floor Protection	1.00	ls	$96,500.00	$96,500
096000.000	Resilient Flooring	1.00	ls	$986,524.00	$986,524
096400.000	Athletic Wood Gym Flooring	1.00	ls	$495,242.46	$495,242
099123.000	Interior and Exterior Painting	1.00	ls	$415,000.00	$415,000
Subtotal - 09 00 00 FINISHES					**$4,174,027**
10 00 00 SPECIALTIES					
101400.000	Signage	1.00	ls	$130,000.00	$130,000
102226.000	Operable Partitions	1.00	ls	$54,350.00	$54,350
102813.000	Restroom Accessories	1.00	ls	$173,880.00	$173,880
105100.000	Lockers	1.00	ls	$41,000.00	$41,000
Subtotal - 10 00 00 SPECIALTIES					**$399,230**
11 00 00 EQUIPMENT					

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Eagles Landing Buildings and Site Phase 2 GMP

Initial

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Total Building Area (SF):

DESCRIPTION		QUANTITY	UNIT	TOTAL
113000.050	French Door Refrigerator	1.00 ea	$2,179.43	$2,179
113000.051	Undercounter Refrigerator/Freezer	1.00 ea	$763.73	$764
113000.052	Dishwasher	2.00 ea	$1,482.30	$2,965
113000.053	Microwave OFCI	2.00 ea	$250.00	$500
114000.000	Kitchen Equipment	1.00 ls	$77,000.00	$77,000
116500.000	Athletic Equipment	1.00 ls	$457,853.00	$457,853
	Subtotal - 11 00 00 EQUIPMENT			**$541,261**
	12 00 00 FURNISHINGS			
122000.000	Window Treatments	1.00 ls	$38,250.00	$38,250
	Subtotal - 12 00 00 FURNISHINGS			**$38,250**
	14 00 00 CONVEYING EQUIPMENT			
142000.000	Elevators	1.00 ls	$265,000.00	$265,000
	Subtotal - 14 00 00 CONVEYING EQUIPMENT			**$265,000**
	21 00 00 FIRE SUPPRESSION			
210000.000	Fire Suppression	1.00 ls	$598,450.00	$598,450
	Subtotal - 21 00 00 FIRE SUPPRESSION			**$598,450**
	22 00 00 PLUMBING			
220000.000	Plumbing	1.00 ls	$1,463,000.00	$1,463,000
220000.000	Splash Pad Coordination	1.00 ls	$30,000.00	$30,000
220000.005	Temp Water Usage - Building	24.00 mo	$1,708.33	$41,000
	Subtotal - 22 00 00 PLUMBING			**$1,534,000**
	23 00 00 HEATING, VENTILATING, AND AIR CONDITIONING			
230000.000	HVAC	1.00 ls	$4,715,185.00	$4,715,185
230000.000	Temp Heat and Cooling	102,655.00 sf	$2.44	$250,000
	Subtotal - 23 00 00 HEATING, VENTILATING, AND AIR CONDITIONING			**$4,965,185**
	26 00 00 ELECTRICAL			
260000.000	Electrical, Lighting, and Fire Alarm	1.00 ls	$4,980,335.00	$4,980,335
260000.000	Temp Electric	102,655.00 sf	$0.83	$85,000
260000.000	Temp Electric Restroom	5,535.00 sf	$5.06	$28,000
	Subtotal - 26 00 00 ELECTRICAL			**$5,093,335**
	27 00 00 COMMUNICATIONS			
270000.000	Telecom	1.00 ls	$937,749.77	$937,750
	Subtotal - 27 00 00 COMMUNICATIONS			**$937,750**
	32 00 00 EXTERIOR IMPROVEMENTS			
320000.000	Decorative Crosswalks	1.00 ls	$108,580.70	$108,581
320000.000	Retaining Wall Allowance	1.00 ls	$44,800.00	$44,800
320000.000	Sitework Changes	1.00 ls	$146,798.90	$146,799
321300.110	Asphalt Paving	1.00 ls	$1,297,000.00	$1,297,000
321313.000	Site Concrete	1.00 ls	$856,593.00	$856,593
321313.000	Site Concrete Sealant	1.00 ls	$78,000.00	$78,000
321400.000	Unit Pavers	1.00 ls	$566,435.00	$566,435
321800.000	Court Surfacing	1.00 ls	$480,050.00	$480,050
321800.112	Soccer Goals - By Owner	4.00 ea	$0.00	$0

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Eagles Landing Buildings and Site Phase 2 GMP

Initial

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Total Building Area (SF):

DESCRIPTION	QUANTITY	UNIT	TOTAL
321800.194 Splash Pad/Pump and Piping/Equipment	1.00 ls	$1,152,990.00	$1,152,990
321800.194 Water Containment Slab	1.00 ls	$9,800.00	$9,800
321800.500 Site Deterants	1.00 ls	$21,500.00	$21,500
321800.500 Site Furnishings	1.00 ls	$1,603,580.00	$1,603,580
321810.111 Fencing	1.00 ls	$250,000.00	$250,000
329219.000 Landscaping	1.00 ls	$1,711,600.00	$1,711,600
329219.000 Trailer Area Restoration	1.00 ls	$56,500.00	$56,500
Subtotal - 32 00 00 EXTERIOR IMPROVEMENTS			**$8,384,228**
33 00 00 UTILITIES			
337000.001 EV 3rd Party Coordination	1.00 ls	$48,500.00	$48,500
337000.002 Additional Site Sleeving	1.00 ls	$29,500.00	$29,500
337000.004 Duke Power Coordination	1.00 ls	$51,000.00	$51,000
Subtotal - 33 00 00 UTILITIES			**$129,000**
Subtotal - Base Bid	**0 SQFT**	**$0.00**	**$51,166,806**

Total	**$54,982,651**

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Total Building Area (SF):

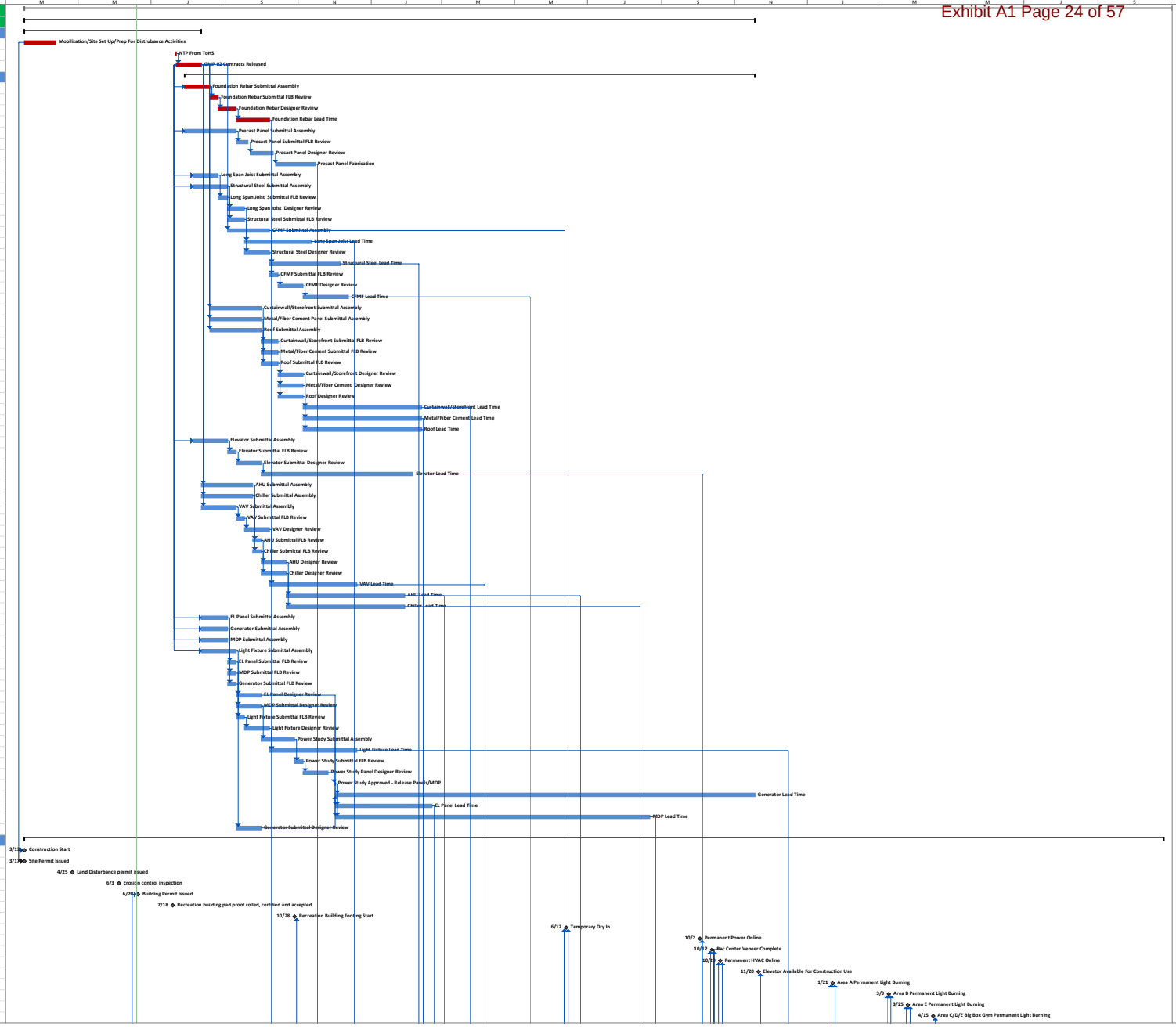
DESCRIPTION		QUANTITY	UNIT	TOTAL
Sub Default Insurance	1.25%			$323,754
Insurance Package	1.00%			$639,773
Builder's Risk Insurance	0.35%			$223,921
Project IT Cost	0.40%			$221,226
Surety Bond	0.65%			$415,852
Owner's Contingency	3.00%			$1,659,192
Construction Contingency	2.00%			$1,106,128
VE Add Back Allowance				$1,000,000
Fee	3.00%			$1,817,175
Tariff Allowance				$1,587,621
Total		**SQFT**	**$0.00**	**$63,977,292**

Fee calculated against all costs expended on the project but not to exceed the GMP

Section 4
Project Schedule

EAGLES LANDING PARK -Town Of Holly Springs

ID	WBS	Task Name	Duration	Start	Finish
0	0	EAGLES LANDING PARK - Town of Holly Springs	646 days	Mon 3/17/25	Mon 11/1/27
1	0.1	Construction	433 days	Mon 3/17/25	Tue 11/17/26
2	1.1	Contracts	102 days	Mon 3/17/25	Mon 8/11/25
3	1.1.1	Mobilization/Site Set Up/Prep For Distrubance Activities	20 days	Mon 3/17/25	Fri 4/11/25
4	1.1.1	NTP From ToHS	1 day	Mon 7/21/25	Mon 7/21/25
5	1.1.1	GMP 02 Contracts Released	15 days	Tue 7/22/25	Mon 8/11/25
6	1.2	Submittal Review/Procurement	321 days	Tue 7/29/25	Tue 11/17/26
7	1.2.3.1	Foundation Rebar Submittal Assembly	15 days	Tue 7/29/25	Mon 8/18/25
8	1.2.3.1	Foundation Rebar Submittal FLB Review	5 days	Tue 8/19/25	Mon 8/25/25
9	1.2.3.1	Foundation Rebar Designer Review	10 days	Tue 8/26/25	Tue 9/9/25
10	1.2.3.1	Foundation Rebar Lead Time	20 days	Wed 9/10/25	Tue 10/7/25
11	1.2.3.2	Precast Panel Submittal Assembly	30 days	Tue 7/29/25	Tue 9/9/25
12	1.2.3.2	Precast Panel Submittal FLB Review	8 days	Wed 9/10/25	Fri 9/19/25
13	1.2.3.2	Precast Panel Designer Review	15 days	Mon 9/22/25	Fri 10/10/25
14	1.2.3.2	Precast Panel Fabrication	25 days	Mon 10/13/25	Fri 11/14/25
15	1.2.5	Long Span Joist Submittal Assembly	15 days	Tue 8/5/25	Mon 8/25/25
19	1.2.5	Structural Steel Submittal Assembly	20 days	Tue 8/5/25	Tue 9/2/25
16	1.2.5	Long Span Joist Submittal FLB Review	5 days	Tue 8/26/25	Tue 9/2/25
17	1.2.5	Long Span Joist Designer Review	10 days	Wed 9/3/25	Tue 9/16/25
20	1.2.5	Structural Steel Submittal FLB Review	10 days	Wed 9/3/25	Tue 9/16/25
23	1.2.5	CFMF Submittal Assembly	25 days	Wed 9/3/25	Tue 10/7/25
18	1.2.5	Long Span Joist Lead Time	40 days	Wed 9/17/25	Tue 11/11/25
21	1.2.5	Structural Steel Designer Review	15 days	Wed 9/17/25	Tue 10/7/25
22	1.2.5	Structural Steel Lead Time	40 days	Wed 10/8/25	Fri 12/5/25
24	1.2.5	CFMF Submittal FLB Review	5 days	Wed 10/8/25	Tue 10/14/25
25	1.2.5	CFMF Designer Review	15 days	Wed 10/15/25	Tue 11/4/25
26	1.2.5	CFMF Lead Time	25 days	Wed 11/5/25	Fri 12/12/25
27	1.2.7	Curtainwall/Storefront Submittal Assembly	30 days	Tue 8/19/25	Tue 9/30/25
31	1.2.7	Metal/Fiber Cement Panel Submittal Assembly	30 days	Tue 8/19/25	Tue 9/30/25
35	1.2.7	Roof Submittal Assembly	30 days	Tue 8/19/25	Tue 9/30/25
28	1.2.7	Curtainwall/Storefront Submittal FLB Review	10 days	Wed 10/1/25	Tue 10/14/25
32	1.2.7	Metal/Fiber Cement Submittal FLB Review	10 days	Wed 10/1/25	Tue 10/14/25
36	1.2.7	Roof Submittal FLB Review	10 days	Wed 10/1/25	Tue 10/14/25
29	1.2.7	Curtainwall/Storefront Designer Review	15 days	Wed 10/15/25	Tue 11/4/25
33	1.2.7	Metal/Fiber Cement Designer Review	15 days	Wed 10/15/25	Tue 11/4/25
37	1.2.7	Roof Designer Review	15 days	Wed 10/15/25	Tue 11/4/25
30	1.2.7	Curtainwall/Storefront Lead Time	60 days	Wed 11/5/25	Wed 2/11/26
34	1.2.7	Metal/Fiber Cement Lead Time	60 days	Wed 11/5/25	Wed 2/11/26
38	1.2.7	Roof Lead Time	60 days	Wed 11/5/25	Wed 2/11/26
71	1.2.14	Elevator Submittal Assembly	20 days	Tue 8/5/25	Tue 9/2/25
72	1.2.14	Elevator Submittal FLB Review	5 days	Wed 9/3/25	Tue 9/9/25
73	1.2.14	Elevator Submittal Designer Review	15 days	Wed 9/10/25	Tue 9/30/25
74	1.2.14	Elevator Lead Time	80 days	Wed 10/1/25	Wed 2/4/26
39	1.2.23	AHU Submittal Assembly	30 days	Tue 8/12/25	Tue 9/23/25
43	1.2.23	Chiller Submittal Assembly	30 days	Tue 8/12/25	Tue 9/23/25
47	1.2.23	VAV Submittal Assembly	20 days	Tue 8/12/25	Tue 9/9/25
48	1.2.23	VAV Submittal FLB Review	5 days	Wed 9/10/25	Tue 9/16/25
49	1.2.23	VAV Designer Review	15 days	Wed 9/17/25	Tue 10/7/25
40	1.2.23	AHU Submittal FLB Review	5 days	Wed 9/24/25	Tue 9/30/25
44	1.2.23	Chiller Submittal FLB Review	5 days	Wed 9/24/25	Tue 9/30/25
41	1.2.23	AHU Designer Review	15 days	Wed 10/1/25	Tue 10/21/25
45	1.2.23	Chiller Designer Review	15 days	Wed 10/1/25	Tue 10/21/25
50	1.2.23	VAV Lead Time	50 days	Wed 10/8/25	Fri 12/19/25
42	1.2.23	AHU Lead Time	60 days	Wed 10/22/25	Wed 1/28/26
46	1.2.23	Chiller Lead Time	60 days	Wed 10/22/25	Wed 1/28/26
51	1.2.26	EL Panel Submittal Assembly	15 days	Tue 8/12/25	Tue 9/2/25
53	1.2.26	Generator Submittal Assembly	15 days	Tue 8/12/25	Tue 9/2/25
57	1.2.26	MDP Submittal Assembly	15 days	Tue 8/12/25	Tue 9/2/25
63	1.2.26	Light Fixture Submittal Assembly	20 days	Tue 8/12/25	Tue 9/9/25
52	1.2.26	EL Panel Submittal FLB Review	5 days	Wed 9/3/25	Tue 9/9/25
58	1.2.26	MDP Submittal FLB Review	5 days	Wed 9/3/25	Tue 9/9/25
59	1.2.26	Generator Submittal FLB Review	5 days	Wed 9/3/25	Tue 9/9/25
54	1.2.26	EL Panel Designer Review	15 days	Wed 9/10/25	Tue 9/30/25
61	1.2.26	MDP Submittal Designer Review	15 days	Wed 9/10/25	Tue 9/30/25
64	1.2.26	Light Fixture Submittal FLB Review	5 days	Wed 9/10/25	Tue 9/16/25
65	1.2.26	Light Fixture Designer Review	15 days	Wed 9/17/25	Tue 10/7/25
67	1.2.26	Power Study Submittal Assembly	20 days	Wed 10/1/25	Tue 10/28/25
66	1.2.26	Light Fixture Lead Time	50 days	Wed 10/8/25	Fri 12/19/25
68	1.2.26	Power Study Submittal FLB Review	5 days	Wed 10/29/25	Tue 11/4/25
69	1.2.26	Power Study Panel Designer Review	15 days	Wed 11/5/25	Tue 11/25/25
70	1.2.26	Power Study Approved - Release Panels/MDP	1 day	Mon 12/1/25	Mon 12/1/25
55	1.2.26	Generator Lead Time	235 days	Tue 12/2/25	Tue 11/17/26
56	1.2.26	EL Panel Lead Time	50 days	Tue 12/2/25	Fri 2/20/26
62	1.2.26	MDP Lead Time	175 days	Tue 12/2/25	Fri 8/21/26
60	1.2.54	Generator Submittal Designer Review	15 days	Wed 9/10/25	Tue 9/30/25
75	2	Milestone / Inspections	641 days	Mon 3/17/25	Mon 10/25/27
84	2	**Construction Start**	**0 days**	**Mon 3/17/25**	**Mon 3/17/25**
86	2	**Site Permit Issued**	**0 days**	**Mon 3/17/25**	**Mon 3/17/25**
87	2	**Land Disturbance permit issued**	**0 days**	**Fri 4/25/25**	**Fri 4/25/25**
88	2	**Erosion control inspection**	**0 days**	**Tue 6/3/25**	**Tue 6/3/25**
90	2	**Building Permit Issued**	**0 days**	**Fri 6/20/25**	**Fri 6/20/25**
89	2	**Recreation building pad proof rolled, certified and accepted**	**0 days**	**Fri 7/18/25**	**Fri 7/18/25**
92	2	**Recreation Building Footing Start**	**0 days**	**Tue 10/28/25**	**Tue 10/28/25**
91	2	**Temporary Dry In**	**0 days**	**Fri 6/12/26**	**Fri 6/12/26**
77	2	**Permanent Power Online**	**0 days**	**Fri 10/2/26**	**Fri 10/2/26**
85	2	**Rec Center Veneer Complete**	**0 days**	**Mon 10/12/26**	**Mon 10/12/26**
76	2	**Permanent HVAC Online**	**0 days**	**Mon 10/19/26**	**Mon 10/19/26**
83	2	**Elevator Available For Construction Use**	**0 days**	**Fri 11/20/26**	**Fri 11/20/26**
78	2	**Area A Permanent Light Burning**	**0 days**	**Thu 1/21/27**	**Thu 1/21/27**
79	2	**Area B Permanent Light Burning**	**0 days**	**Tue 3/9/27**	**Tue 3/9/27**
80	2	**Area E Permanent Light Burning**	**0 days**	**Thu 3/25/27**	**Thu 3/25/27**
81	2	**Area C/D/E Big Box Gym Permanent Light Burning**	**0 days**	**Thu 4/15/27**	**Thu 4/15/27**



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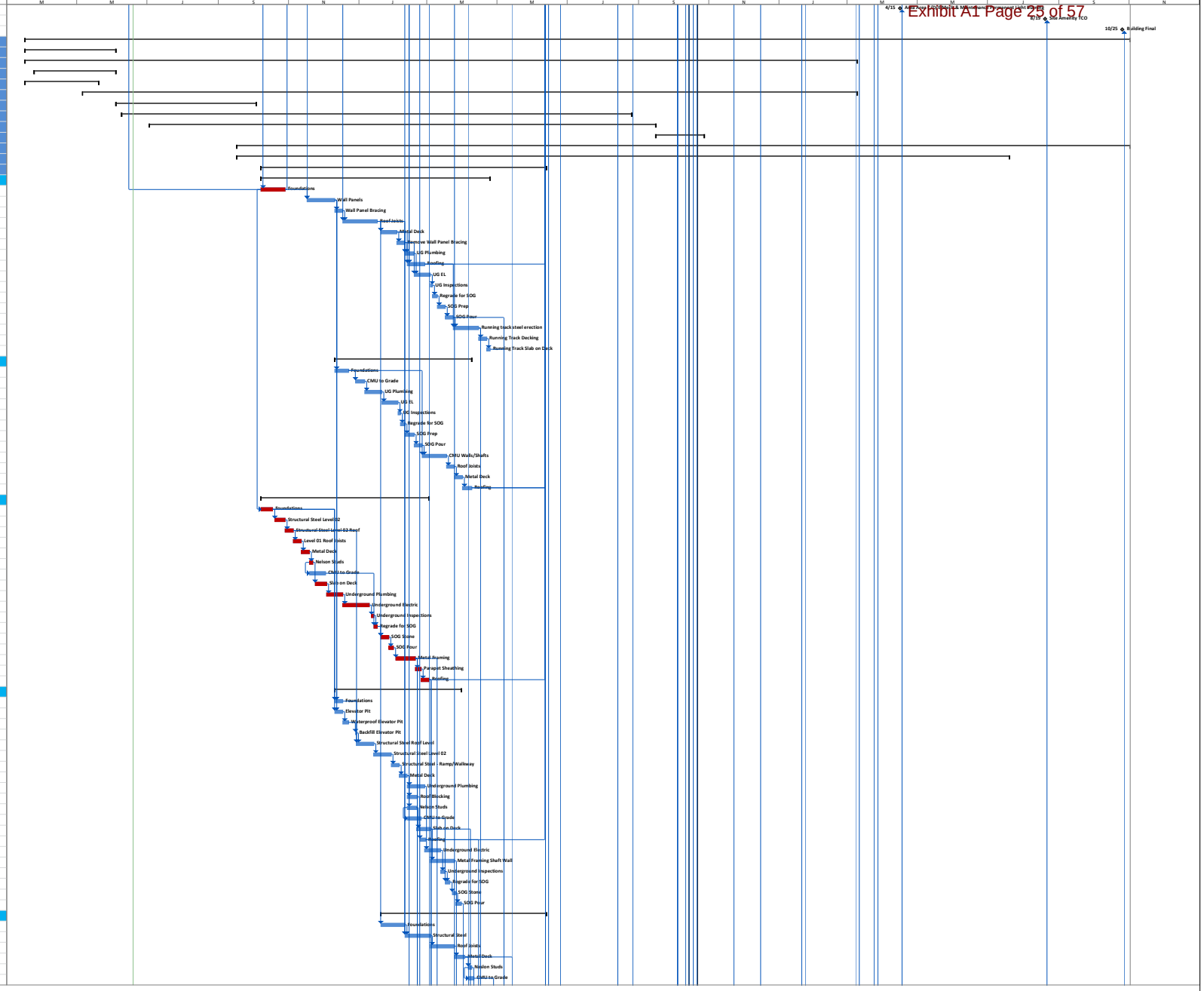
ID	WBS	Task Name	Duration	Start	Finish
82	2	**Area Area C/D/E Mech & Maintenance Permanent Light Burn**	**0 days**	**Thu 4/15/27**	**Thu 4/15/27**
93	2	**Site Amenity TCO**	**0 days**	**Thu 8/19/27**	**Thu 8/19/27**
94	2	**Building Final**	**0 days**	**Mon 10/25/27**	**Mon 10/25/27**
95	3	Phase 01 Site Construction	646 days	Mon 3/17/25	Mon 11/1/27
96	3.1	Mobilization Activities	55 days	Mon 3/17/25	Tue 6/3/25
103	3.2	Site Activities	481 days	Mon 3/17/25	Tue 3/9/27
104	3.2.1	Erosion Control Initial Activities	49 days	Tue 3/25/25	Tue 6/3/25
123	3.2.2	Demolition Activities	45 days	Mon 3/17/25	Mon 5/19/25
132	3.2.3	Road Widening & Right of Way Activities	446 days	Tue 5/6/25	Tue 3/9/27
149	3.2.4	Mass Grading Activities	85 days	Wed 6/4/25	Fri 10/3/25
157	3.2.5	Utility Activities	297 days	Mon 6/9/25	Tue 8/25/26
168	3.2.6	Fine Grading Activities	292 days	Wed 7/2/25	Tue 9/15/26
171	3.2.7	Stone Base, Curb & Gutter, Sidewalks	30 days	Tue 9/15/26	Tue 10/27/26
227	5.0	Building Activities	519 days	Wed 9/17/25	Mon 11/1/27
228	5.1	Recreation Building	445 days	Wed 9/17/25	Mon 7/19/27
229	5.1	Structural / Foundations - Rec Bldg	160 days	Wed 10/8/25	Fri 6/12/26
230	5.1	Area C/D/E Big Box Gym	130 days	Wed 10/8/25	Fri 4/24/26
231	5.1	Foundations	15 days	Wed 10/8/25	Tue 10/28/25
232	5.1	Wall Panels	15 days	Mon 11/17/25	Wed 12/10/25
233	5.1	Wall Panel Bracing	5 days	Thu 12/11/25	Wed 12/17/25
234	5.1	Roof Joists	15 days	Thu 12/18/25	Fri 1/16/26
235	5.1	Metal Deck	10 days	Tue 1/20/26	Mon 2/2/26
242	5.1	Remove Wall Panel Bracing	5 days	Tue 2/3/26	Mon 2/9/26
236	5.1	UG Plumbing	5 days	Tue 2/10/26	Tue 2/17/26
243	5.1	Roofing	10 days	Thu 2/12/26	Thu 2/26/26
237	5.1	UG EL	10 days	Wed 2/18/26	Tue 3/3/26
238	5.1	UG Inspections	2 days	Wed 3/4/26	Thu 3/5/26
239	5.1	Regrade for SOG	2 days	Fri 3/6/26	Mon 3/9/26
240	5.1	SOG Prep	5 days	Tue 3/10/26	Mon 3/16/26
241	5.1	SOG Pour	5 days	Tue 3/17/26	Mon 3/23/26
244	5.1	Running track steel erection	15 days	Tue 3/24/26	Tue 4/14/26
245	5.1	Running Track Decking	5 days	Wed 4/15/26	Tue 4/21/26
246	5.1	Running Track Slab on Deck	3 days	Wed 4/22/26	Fri 4/24/26
264	5.2	Area C/D/E - Mechanical/Storage/Maintenance	75 days	Thu 12/11/25	Wed 4/8/26
265	5.2	Foundations	8 days	Thu 12/11/25	Mon 12/22/25
266	5.2	CMU to Grade	3 days	Mon 12/29/25	Mon 1/5/26
267	5.2	UG Plumbing	10 days	Tue 1/6/26	Tue 1/20/26
268	5.2	UG EL	10 days	Wed 1/21/26	Tue 2/3/26
269	5.2	UG Inspections	2 days	Wed 2/4/26	Thu 2/5/26
270	5.2	Regrade for SOG	2 days	Fri 2/6/26	Mon 2/9/26
271	5.2	SOG Prep	5 days	Tue 2/10/26	Tue 2/17/26
272	5.2	SOG Pour	5 days	Wed 2/18/26	Tue 2/24/26
273	5.2	CMU Walls/Shafts	15 days	Wed 2/25/26	Tue 3/17/26
274	5.2	Roof Joists	5 days	Wed 3/18/26	Tue 3/24/26
275	5.2	Metal Deck	5 days	Wed 3/25/26	Tue 3/31/26
276	5.2	Roofing	5 days	Wed 4/1/26	Wed 4/8/26
277	5.3	Area A - Meeting Rooms/E Sports/Mechanical	92 days	Wed 10/8/25	Mon 3/2/26
278	5.3	Foundations	8 days	Wed 10/8/25	Fri 10/17/25
279	5.3	Structural Steel Level 02	7 days	Mon 10/20/25	Tue 10/28/25
280	5.3	Structural Steel Level 02 Roof	5 days	Wed 10/29/25	Tue 11/4/25
281	5.3	Level 01 Roof Joists	5 days	Wed 11/5/25	Tue 11/11/25
282	5.3	Metal Deck	5 days	Wed 11/12/25	Tue 11/18/25
284	5.3	Nelson Studs	3 days	Wed 11/19/25	Fri 11/21/25
285	5.3	CMU to Grade	7 days	Wed 11/19/25	Tue 12/2/25
286	5.3	Slab on Deck	5 days	Mon 11/24/25	Wed 12/3/25
287	5.3	Underground Plumbing	10 days	Thu 12/4/25	Wed 12/17/25
288	5.3	Underground Electric	10 days	Thu 12/18/25	Fri 1/9/26
289	5.3	Underground Inspections	2 days	Mon 1/12/26	Tue 1/13/26
290	5.3	Regrade for SOG	3 days	Wed 1/14/26	Fri 1/16/26
291	5.3	SOG Stone	5 days	Tue 1/20/26	Mon 1/26/26
292	5.3	SOG Pour	4 days	Tue 1/27/26	Fri 1/30/26
293	5.3	Metal Framing	12 days	Mon 2/2/26	Wed 2/18/26
294	5.3	Parapet Sheathing	3 days	Thu 2/19/26	Mon 2/23/26
283	5.3	Roofing	5 days	Tue 2/24/26	Mon 3/2/26
295	5.4	Area B - Lobby/Main Entry/Ramp/Walkway	69 days	Thu 12/11/25	Mon 3/30/26
296	5.4	Foundations	5 days	Thu 12/11/25	Wed 12/17/25
297	5.4	Elevator Pit	5 days	Thu 12/11/25	Wed 12/17/25
298	5.4	Waterproof Elevator Pit	3 days	Thu 12/18/25	Mon 12/22/25
299	5.4	Backfill Elevator Pit	1 day	Mon 12/29/25	Mon 12/29/25
301	5.4	Structural Steel Roof Level	8 days	Tue 12/30/25	Tue 1/13/26
302	5.4	Structural Steel Level 02	10 days	Wed 1/14/26	Wed 1/28/26
303	5.4	Structural Steel - Ramp/Walkway	5 days	Thu 1/29/26	Wed 2/4/26
304	5.4	Metal Deck	5 days	Thu 2/5/26	Wed 2/11/26
305	5.4	Underground Plumbing	10 days	Thu 2/12/26	Thu 2/26/26
309	5.4	Roof Blocking	6 days	Thu 2/12/26	Fri 2/20/26
313	5.4	Nelson Studs	5 days	Thu 2/12/26	Thu 2/19/26
314	5.4	CMU to Grade	7 days	Thu 2/12/26	Mon 2/23/26
315	5.4	Slab on Deck	8 days	Fri 2/20/26	Tue 3/3/26
310	5.4	Roofing	5 days	Mon 2/23/26	Fri 2/27/26
306	5.4	Underground Electric	10 days	Fri 2/27/26	Thu 3/12/26
300	5.4	Metal Framing Shaft Wall	15 days	Wed 3/4/26	Tue 3/24/26
307	5.4	Underground Inspections	2 days	Fri 3/13/26	Mon 3/16/26
308	5.4	Regrade for SOG	4 days	Tue 3/17/26	Fri 3/20/26
311	5.4	SOG Stone	3 days	Mon 3/23/26	Wed 3/25/26
312	5.4	SOG Pour	3 days	Thu 3/26/26	Mon 3/30/26
247	5.5	Area E Exercise	100 days	Tue 1/20/26	Fri 6/12/26
248	5.5	Foundations	15 days	Tue 1/20/26	Mon 2/9/26
249	5.5	Structural Steel	15 days	Tue 2/10/26	Tue 3/3/26
250	5.5	Roof Joists	15 days	Wed 3/4/26	Tue 3/24/26
251	5.5	Metal Deck	7 days	Wed 3/25/26	Thu 4/2/26
252	5.5	Nesion Studs	3 days	Mon 4/6/26	Wed 4/8/26
254	5.5	CMU to Grade	5 days	Mon 4/6/26	Fri 4/10/26



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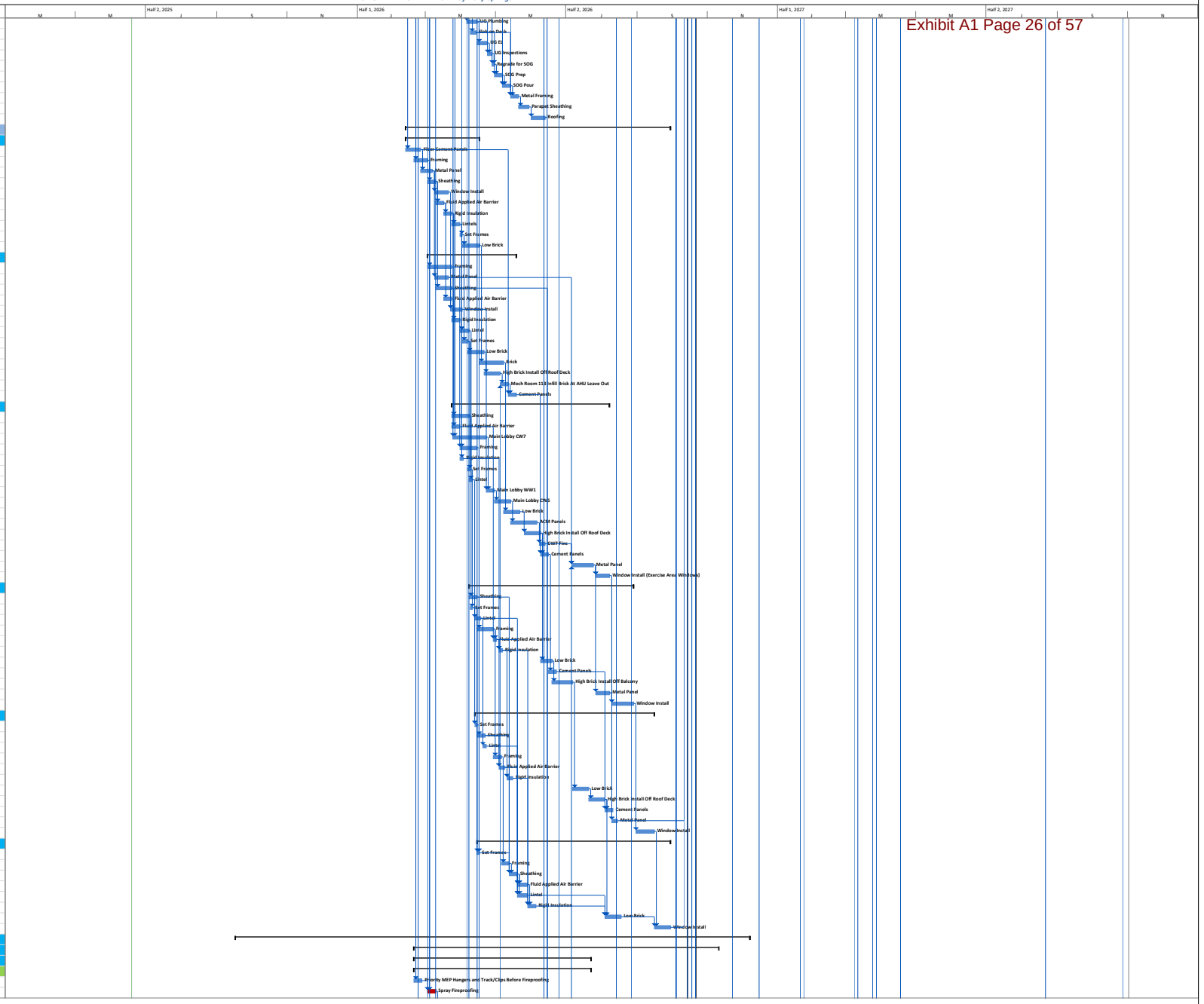
ID	WBS	Task Name	Duration	Start	Finish
255	5.5	UG Plumbing	7 days	Mon 4/6/26	Tue 4/14/26
253	5.5	Slab on Deck	3 days	Thu 4/9/26	Mon 4/13/26
256	5.5	UG EL	7 days	Wed 4/15/26	Thu 4/23/26
257	5.5	UG Inspections	2 days	Fri 4/24/26	Mon 4/27/26
258	5.5	Regrade for SOG	2 days	Tue 4/28/26	Wed 4/29/26
259	5.5	SOG Prep	5 days	Thu 4/30/26	Wed 5/6/26
260	5.5	SOG Pour	5 days	Thu 5/7/26	Wed 5/13/26
261	5.5	Metal Framing	5 days	Thu 5/14/26	Wed 5/20/26
262	5.5	Parapet Sheathing	5 days	Thu 5/21/26	Fri 5/29/26
263	5.5	Roofing	10 days	Mon 6/1/26	Fri 6/12/26
316	6.0	Exterior Veneer - Rec Bldg	156 days	Thu 2/12/26	Tue 9/29/26
317	6.1	Exterior Veneer/Envelope North	44 days	Thu 2/12/26	Thu 4/16/26
325	6.1	Fiber Cement Panels	8 days	Thu 2/12/26	Tue 2/24/26
318	6.1	Framing	8 days	Thu 2/19/26	Mon 3/2/26
326	6.1	Metal Panel	8 days	Wed 2/25/26	Fri 3/6/26
319	6.1	Sheathing	5 days	Tue 3/3/26	Mon 3/9/26
327	6.1	Window Install	10 days	Mon 3/9/26	Fri 3/20/26
320	6.1	Fluid Applied Air Barrier	5 days	Tue 3/10/26	Mon 3/16/26
321	6.1	Rigid Insulation	5 days	Tue 3/17/26	Mon 3/23/26
322	6.1	Lintels	5 days	Tue 3/24/26	Mon 3/30/26
323	6.1	Set Frames	2 days	Tue 3/31/26	Wed 4/1/26
324	6.1	Low Brick	10 days	Thu 4/2/26	Thu 4/16/26
328	6.2	Exterior Veneer/Envelope North East	54 days	Tue 3/3/26	Mon 5/18/26
329	6.2	Framing	15 days	Tue 3/3/26	Mon 3/23/26
340	6.2	Metal Panel	10 days	Mon 3/9/26	Fri 3/20/26
330	6.2	Sheathing	10 days	Tue 3/10/26	Mon 3/23/26
331	6.2	Fluid Applied Air Barrier	5 days	Tue 3/17/26	Mon 3/23/26
341	6.2	Window Install	8 days	Mon 3/23/26	Wed 4/1/26
332	6.2	Rigid Insulation	5 days	Tue 3/24/26	Mon 3/30/26
333	6.2	Lintel	5 days	Tue 3/31/26	Tue 4/7/26
334	6.2	Set Frames	2 days	Thu 4/2/26	Mon 4/6/26
336	6.2	Low Brick	10 days	Tue 4/7/26	Mon 4/20/26
335	6.2	Brick	15 days	Fri 4/17/26	Thu 5/7/26
337	6.2	High Brick Install Off Roof Deck	10 days	Tue 4/21/26	Mon 5/4/26
338	6.2	Mech Room 113 Infill Brick At AHU Leave Out	5 days	Tue 5/5/26	Mon 5/11/26
339	6.2	Cement Panels	5 days	Tue 5/12/26	Mon 5/18/26
342	6.3	Exterior Veneer/Envelope East	94 days	Tue 3/24/26	Fri 8/7/26
344	6.3	Sheathing	10 days	Tue 3/24/26	Tue 4/7/26
345	6.3	Fluid Applied Air Barrier	5 days	Tue 3/24/26	Mon 3/30/26
348	6.3	Main Lobby CW7	20 days	Wed 3/25/26	Wed 4/22/26
343	6.3	Framing	10 days	Tue 3/31/26	Tue 4/14/26
346	6.3	Rigid Insulation	3 days	Tue 3/31/26	Thu 4/2/26
353	6.3	Set Frames	2 days	Tue 4/7/26	Wed 4/8/26
347	6.3	Lintel	3 days	Wed 4/8/26	Fri 4/10/26
349	6.3	Main Lobby WW1	5 days	Thu 4/23/26	Wed 4/29/26
350	6.3	Main Lobby CW5	10 days	Thu 4/30/26	Wed 5/13/26
354	6.3	Low Brick	10 days	Fri 5/8/26	Thu 5/21/26
351	6.3	ACM Panels	15 days	Thu 5/14/26	Fri 6/5/26
355	6.3	High Brick Install Off Roof Deck	10 days	Tue 5/26/26	Mon 6/8/26
352	6.3	CW7 Fins	5 days	Mon 6/8/26	Fri 6/12/26
356	6.3	Cement Panels	5 days	Tue 6/9/26	Mon 6/15/26
357	6.3	Metal Panel	15 days	Mon 7/6/26	Fri 7/24/26
358	6.3	Window Install (Exercise Area Windows)	10 days	Mon 7/27/26	Fri 8/7/26
359	6.4	Exterior Veneer/Envelope South	99 days	Wed 4/8/26	Fri 8/28/26
361	6.4	Sheathing	5 days	Wed 4/8/26	Tue 4/14/26
365	6.4	Set Frames	2 days	Thu 4/9/26	Fri 4/10/26
364	6.4	Lintel	5 days	Mon 4/13/26	Fri 4/17/26
360	6.4	Framing	10 days	Wed 4/15/26	Tue 4/28/26
362	6.4	Fluid Applied Air Barrier	3 days	Wed 4/29/26	Fri 5/1/26
363	6.4	Rigid Insulation	3 days	Mon 5/4/26	Wed 5/6/26
366	6.4	Low Brick	8 days	Tue 6/9/26	Thu 6/18/26
368	6.4	Cement Panels	5 days	Tue 6/16/26	Mon 6/22/26
367	6.4	High Brick install Off Balcony	10 days	Fri 6/19/26	Mon 7/6/26
369	6.4	Metal Panel	10 days	Mon 7/27/26	Fri 8/7/26
370	6.4	Window Install	15 days	Mon 8/10/26	Fri 8/28/26
371	6.5	Exterior Veneer/Envelope West	106 days	Mon 4/13/26	Tue 9/15/26
377	6.5	Set Frames	2 days	Mon 4/13/26	Tue 4/14/26
373	6.5	Sheathing	5 days	Wed 4/15/26	Tue 4/21/26
376	6.5	Lintel	3 days	Mon 4/20/26	Wed 4/22/26
372	6.5	Framing	5 days	Wed 4/29/26	Tue 5/5/26
374	6.5	Fluid Applied Air Barrier	5 days	Mon 5/4/26	Fri 5/8/26
375	6.5	Rigid Insulation	5 days	Mon 5/11/26	Fri 5/15/26
378	6.5	Low Brick	10 days	Tue 7/7/26	Mon 7/20/26
379	6.5	High Brick Install Off Roof Deck	10 days	Tue 7/21/26	Mon 8/3/26
380	6.5	Cement Panels	5 days	Tue 8/4/26	Mon 8/10/26
381	6.5	Metal Panel	5 days	Mon 8/10/26	Fri 8/14/26
382	6.5	Window Install	10 days	Mon 8/31/26	Tue 9/15/26
383	6.6	Exterior Veneer/Envelope North West	114 days	Wed 4/15/26	Tue 9/29/26
389	6.6	Set Frames	2 days	Wed 4/15/26	Thu 4/16/26
384	6.6	Framing	5 days	Wed 5/6/26	Tue 5/12/26
385	6.6	Sheathing	5 days	Wed 5/13/26	Tue 5/19/26
386	6.6	Fluid Applied Air Barrier	5 days	Wed 5/20/26	Thu 5/28/26
388	6.6	Lintel	5 days	Wed 5/20/26	Thu 5/28/26
387	6.6	Rigid Insulation	5 days	Fri 5/29/26	Thu 6/4/26
390	6.6	Low Brick	10 days	Tue 8/4/26	Mon 8/17/26
391	6.6	Window Install	10 days	Wed 9/16/26	Tue 9/29/26
392	6.6	Site Electrical & Telecom Underground Raceways	296 days	Wed 9/17/25	Mon 12/7/26
404	6.7	Interior Rough - In - Rec Bldg	182 days	Thu 2/19/26	Tue 11/10/26
405	6.7.1	Interior Rough in Area A	105 days	Thu 2/19/26	Wed 7/22/26
406	6.7.1.1	First Floor	105 days	Thu 2/19/26	Wed 7/22/26
408	6.7.1.1	Priority MEP Hangers and Track/Clips Before Firep	5 days	Thu 2/19/26	Wed 2/25/26
409	6.7.1.1	Spray Fireproofing	5 days	Tue 3/3/26	Mon 3/9/26



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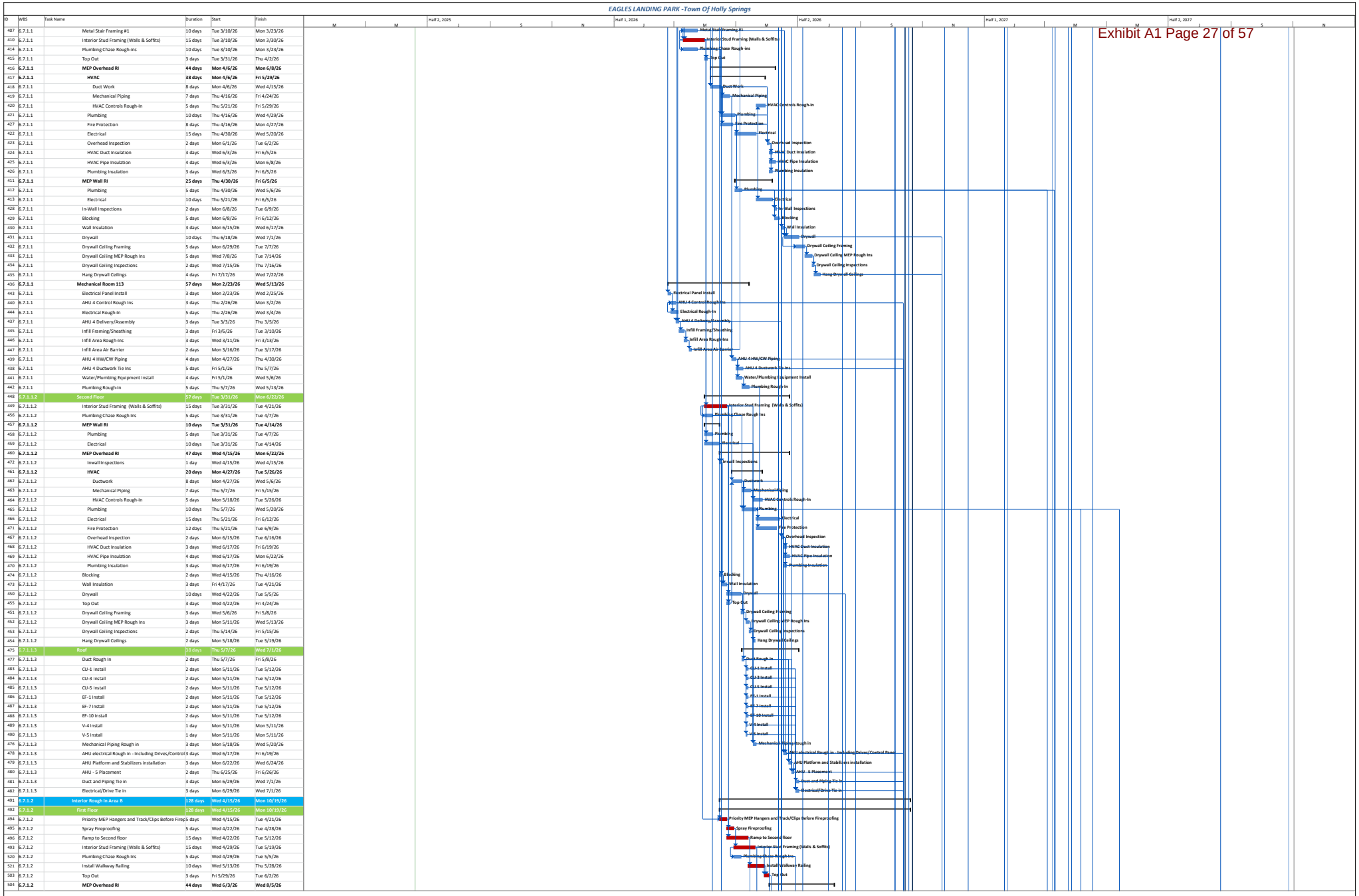

ID	WBS	Task Name	Duration	Start	Finish
407	6.7.1.1	Metal Stair Framing #1	10 days	Tue 3/10/26	Mon 3/23/26
410	6.7.1.1	Interior Stud Framing (Walls & Soffits)	15 days	Tue 3/10/26	Mon 3/30/26
414	6.7.1.1	Plumbing Chase Rough-ins	10 days	Tue 3/10/26	Mon 3/23/26
415	6.7.1.1	Top Out	3 days	Tue 3/31/26	Thu 4/2/26
416	**6.7.1.1**	**MEP Overhead RI**	**44 days**	**Mon 4/6/26**	**Mon 6/8/26**
417	**6.7.1.1**	**HVAC**	**38 days**	**Mon 4/6/26**	**Fri 5/29/26**
418	6.7.1.1	Duct Work	8 days	Mon 4/6/26	Wed 4/15/26
419	6.7.1.1	Mechanical Piping	7 days	Thu 4/16/26	Fri 4/24/26
420	6.7.1.1	HVAC Controls Rough-In	5 days	Thu 5/21/26	Fri 5/29/26
421	6.7.1.1	Plumbing	10 days	Thu 4/16/26	Wed 4/29/26
427	6.7.1.1	Fire Protection	8 days	Thu 4/16/26	Mon 4/27/26
422	6.7.1.1	Electrical	15 days	Thu 4/30/26	Wed 5/20/26
423	6.7.1.1	Overhead Inspection	2 days	Mon 6/1/26	Tue 6/2/26
424	6.7.1.1	HVAC Duct Insulation	3 days	Wed 6/3/26	Fri 6/5/26
425	6.7.1.1	HVAC Pipe Insulation	4 days	Wed 6/3/26	Mon 6/8/26
426	6.7.1.1	Plumbing Insulation	3 days	Wed 6/3/26	Fri 6/5/26
411	**6.7.1.1**	**MEP Wall RI**	**25 days**	**Thu 4/30/26**	**Fri 6/5/26**
412	6.7.1.1	Plumbing	5 days	Thu 4/30/26	Wed 5/6/26
413	6.7.1.1	Electrical	10 days	Thu 5/21/26	Fri 6/5/26
428	6.7.1.1	In-Wall Inspections	2 days	Mon 6/8/26	Tue 6/9/26
429	6.7.1.1	Blocking	5 days	Mon 6/8/26	Fri 6/12/26
430	6.7.1.1	Wall Insulation	3 days	Mon 6/15/26	Wed 6/17/26
431	6.7.1.1	Drywall	10 days	Thu 6/18/26	Wed 7/1/26
432	6.7.1.1	Drywall Ceiling Framing	5 days	Mon 6/29/26	Tue 7/7/26
433	6.7.1.1	Drywall Ceiling MEP Rough Ins	5 days	Wed 7/8/26	Tue 7/14/26
434	6.7.1.1	Drywall Ceiling Inspections	2 days	Wed 7/15/26	Thu 7/16/26
435	6.7.1.1	Hang Drywall Ceilings	4 days	Fri 7/17/26	Wed 7/22/26
436	**6.7.1.1**	**Mechanical Room 113**	**57 days**	**Mon 2/23/26**	**Wed 5/13/26**
443	6.7.1.1	Electrical Panel Install	3 days	Mon 2/23/26	Wed 2/25/26
440	6.7.1.1	AHU 4 Control Rough Ins	3 days	Thu 2/26/26	Mon 3/2/26
444	6.7.1.1	Electrical Rough-In	5 days	Thu 2/26/26	Wed 3/4/26
437	6.7.1.1	AHU 4 Delivery/Assembly	3 days	Tue 3/3/26	Thu 3/5/26
445	6.7.1.1	Infill Framing/Sheathing	3 days	Fri 3/6/26	Tue 3/10/26
446	6.7.1.1	Infill Area Rough-ins	3 days	Wed 3/11/26	Fri 3/13/26
447	6.7.1.1	Infill Area Air Barrier	2 days	Mon 3/16/26	Tue 3/17/26
439	6.7.1.1	AHU 4 HW/CW Piping	4 days	Mon 4/27/26	Thu 4/30/26
438	6.7.1.1	AHU 4 Ductwork Tie Ins	5 days	Fri 5/1/26	Thu 5/7/26
441	6.7.1.1	Water/Plumbing Equipment Install	4 days	Fri 5/1/26	Wed 5/6/26
442	6.7.1.1	Plumbing Rough-In	5 days	Thu 5/7/26	Wed 5/13/26
448	6.7.1.1.2	Second Floor	57 days	Tue 3/31/26	Mon 6/22/26
449	6.7.1.1.2	Interior Stud Framing (Walls & Soffits)	15 days	Tue 3/31/26	Tue 4/21/26
456	6.7.1.1.2	Plumbing Chase Rough Ins	5 days	Tue 3/31/26	Tue 4/7/26
457	**6.7.1.1.2**	**MEP Wall RI**	**10 days**	**Tue 3/31/26**	**Tue 4/14/26**
458	6.7.1.1.2	Plumbing	5 days	Tue 3/31/26	Tue 4/7/26
459	6.7.1.1.2	Electrical	10 days	Tue 3/31/26	Tue 4/14/26
460	**6.7.1.1.2**	**MEP Overhead RI**	**47 days**	**Wed 4/15/26**	**Mon 6/22/26**
472	6.7.1.1.2	Inwall Inspections	1 day	Wed 4/15/26	Wed 4/15/26
461	**6.7.1.1.2**	**HVAC**	**20 days**	**Mon 4/27/26**	**Tue 5/26/26**
462	6.7.1.1.2	Ductwork	8 days	Mon 4/27/26	Wed 5/6/26
463	6.7.1.1.2	Mechanical Piping	7 days	Thu 5/7/26	Fri 5/15/26
464	6.7.1.1.2	HVAC Controls Rough-In	5 days	Mon 5/18/26	Tue 5/26/26
465	6.7.1.1.2	Plumbing	10 days	Thu 5/7/26	Wed 5/20/26
466	6.7.1.1.2	Electrical	15 days	Thu 5/21/26	Fri 6/12/26
471	6.7.1.1.2	Fire Protection	12 days	Thu 5/21/26	Tue 6/9/26
467	6.7.1.1.2	Overhead Inspection	2 days	Mon 6/15/26	Tue 6/16/26
468	6.7.1.1.2	HVAC Duct Insulation	3 days	Wed 6/17/26	Fri 6/19/26
469	6.7.1.1.2	HVAC Pipe Insulation	4 days	Wed 6/17/26	Mon 6/22/26
470	6.7.1.1.2	Plumbing Insulation	3 days	Wed 6/17/26	Fri 6/19/26
474	6.7.1.1.2	Blocking	2 days	Wed 4/15/26	Thu 4/16/26
473	6.7.1.1.2	Wall Insulation	3 days	Fri 4/17/26	Tue 4/21/26
450	6.7.1.1.2	Drywall	10 days	Wed 4/22/26	Tue 5/5/26
455	6.7.1.1.2	Top Out	3 days	Wed 4/22/26	Fri 4/24/26
451	6.7.1.1.2	Drywall Ceiling Framing	3 days	Wed 5/6/26	Fri 5/8/26
452	6.7.1.1.2	Drywall Ceiling MEP Rough Ins	3 days	Mon 5/11/26	Wed 5/13/26
453	6.7.1.1.2	Drywall Ceiling Inspections	2 days	Thu 5/14/26	Fri 5/15/26
454	6.7.1.1.2	Hang Drywall Ceilings	2 days	Mon 5/18/26	Tue 5/19/26
475	6.7.1.1.3	Roof	38 days	Thu 5/7/26	Wed 7/1/26
477	6.7.1.1.3	Duct Rough In	2 days	Thu 5/7/26	Fri 5/8/26
483	6.7.1.1.3	CU-1 Install	2 days	Mon 5/11/26	Tue 5/12/26
484	6.7.1.1.3	CU-3 Install	2 days	Mon 5/11/26	Tue 5/12/26
485	6.7.1.1.3	CU-5 Install	2 days	Mon 5/11/26	Tue 5/12/26
486	6.7.1.1.3	EF-1 Install	2 days	Mon 5/11/26	Tue 5/12/26
487	6.7.1.1.3	EF-7 Install	2 days	Mon 5/11/26	Tue 5/12/26
488	6.7.1.1.3	EF-10 Install	2 days	Mon 5/11/26	Tue 5/12/26
489	6.7.1.1.3	V-4 Install	1 day	Mon 5/11/26	Mon 5/11/26
490	6.7.1.1.3	V-5 Install	1 day	Mon 5/11/26	Mon 5/11/26
476	6.7.1.1.3	Mechanical Piping Rough in	3 days	Mon 5/18/26	Wed 5/20/26
478	6.7.1.1.3	AHU electrical Rough in - Including Drives/Control	3 days	Wed 6/17/26	Fri 6/19/26
479	6.7.1.1.3	AHU Platform and Stabilizers installation	3 days	Mon 6/22/26	Wed 6/24/26
480	6.7.1.1.3	AHU - 5 Placement	2 days	Thu 6/25/26	Fri 6/26/26
481	6.7.1.1.3	Duct and Piping Tie in	3 days	Mon 6/29/26	Wed 7/1/26
482	6.7.1.1.3	Electrical/Drive Tie in	3 days	Mon 6/29/26	Wed 7/1/26
491	6.7.1.2	Interior Rough in Area B	128 days	Wed 4/15/26	Mon 10/19/26
492	6.7.1.2	First Floor	128 days	Wed 4/15/26	Mon 10/19/26
494	6.7.1.2	Priority MEP Hangers and Track/Clips Before Firep	5 days	Wed 4/15/26	Tue 4/21/26
495	6.7.1.2	Spray Fireproofing	5 days	Wed 4/22/26	Tue 4/28/26
496	6.7.1.2	Ramp to Second floor	15 days	Wed 4/22/26	Tue 5/12/26
493	6.7.1.2	Interior Stud Framing (Walls & Soffits)	15 days	Wed 4/29/26	Tue 5/19/26
520	6.7.1.2	Plumbing Chase Rough Ins	5 days	Wed 4/29/26	Tue 5/5/26
521	6.7.1.2	Install Walkway Railing	10 days	Wed 5/13/26	Thu 5/28/26
503	6.7.1.2	Top Out	3 days	Fri 5/29/26	Tue 6/2/26
504	**6.7.1.2**	**MEP Overhead RI**	**44 days**	**Wed 6/3/26**	**Wed 8/5/26**

Project: EAGLES LANDING PARK - Town of Holly Springs
Schedule Print Date: Thu 6/19/25
Project Completion Date: Mon 11/1/27

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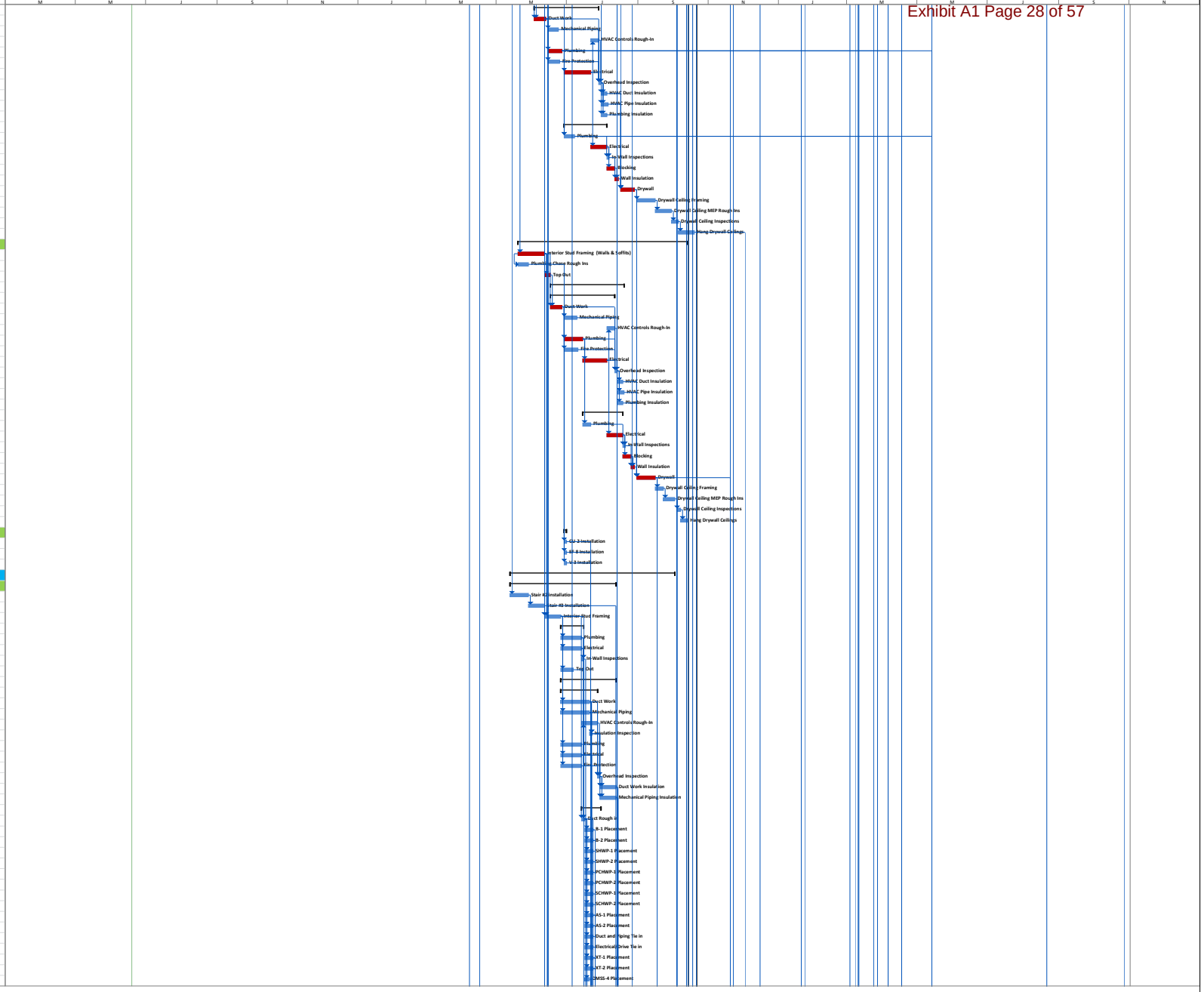
ID	WBS	Task Name	Duration	Start	Finish
505	6.7.1.2	**HVAC**	**38 days**	**Wed 6/3/26**	**Tue 7/28/26**
506	6.7.1.2	Duct Work	8 days	Wed 6/3/26	Fri 6/12/26
507	6.7.1.2	Mechanical Piping	7 days	Mon 6/15/26	Tue 6/23/26
508	6.7.1.2	HVAC Controls Rough-In	5 days	Wed 7/22/26	Tue 7/28/26
509	6.7.1.2	Plumbing	10 days	Mon 6/15/26	Fri 6/26/26
515	6.7.1.2	Fire Protection	8 days	Mon 6/15/26	Wed 6/24/26
510	6.7.1.2	Electrical	15 days	Mon 6/29/26	Tue 7/21/26
511	6.7.1.2	Overhead Inspection	2 days	Wed 7/29/26	Thu 7/30/26
512	6.7.1.2	HVAC Duct Insulation	3 days	Fri 7/31/26	Tue 8/4/26
513	6.7.1.2	HVAC Pipe Insulation	4 days	Fri 7/31/26	Wed 8/5/26
514	6.7.1.2	Plumbing Insulation	3 days	Fri 7/31/26	Tue 8/4/26
497	6.7.1.2	**MEP Wall RI**	**25 days**	**Mon 6/29/26**	**Tue 8/4/26**
498	6.7.1.2	Plumbing	5 days	Mon 6/29/26	Tue 7/7/26
499	6.7.1.2	Electrical	10 days	Wed 7/22/26	Tue 8/4/26
516	6.7.1.2	In-Wall Inspections	2 days	Wed 8/5/26	Thu 8/6/26
517	6.7.1.2	Blocking	5 days	Wed 8/5/26	Tue 8/11/26
518	6.7.1.2	Wall Insulation	3 days	Wed 8/12/26	Fri 8/14/26
519	6.7.1.2	Drywall	10 days	Mon 8/17/26	Fri 8/28/26
522	6.7.1.2	Drywall Ceiling Framing	10 days	Mon 8/31/26	Tue 9/15/26
500	6.7.1.2	Drywall Ceiling MEP Rough Ins	10 days	Wed 9/16/26	Tue 9/29/26
501	6.7.1.2	Drywall Ceiling Inspections	4 days	Wed 9/30/26	Mon 10/5/26
502	6.7.1.2	Hang Drywall Ceilings	10 days	Tue 10/6/26	Mon 10/19/26
523	6.7.1.2.2	Second Floor	99 days	Wed 5/20/26	Tue 10/13/26
524	6.7.1.2.2	Interior Stud Framing (Walls & Soffits)	15 days	Wed 5/20/26	Thu 6/11/26
528	6.7.1.2.2	Plumbing Chase Rough Ins	5 days	Wed 5/20/26	Thu 5/28/26
529	6.7.1.2.2	Top Out	3 days	Fri 6/12/26	Tue 6/16/26
530	6.7.1.2.2	**MEP Overhead RI**	**44 days**	**Wed 6/17/26**	**Wed 8/19/26**
531	6.7.1.2.2	**HVAC**	**38 days**	**Wed 6/17/26**	**Tue 8/11/26**
532	6.7.1.2.2	Duct Work	8 days	Wed 6/17/26	Fri 6/26/26
533	6.7.1.2.2	Mechanical Piping	7 days	Mon 6/29/26	Thu 7/9/26
534	6.7.1.2.2	HVAC Controls Rough-In	5 days	Wed 8/5/26	Tue 8/11/26
535	6.7.1.2.2	Plumbing	10 days	Mon 6/29/26	Tue 7/14/26
541	6.7.1.2.2	Fire Protection	8 days	Mon 6/29/26	Fri 7/10/26
536	6.7.1.2.2	Electrical	15 days	Wed 7/15/26	Tue 8/4/26
537	6.7.1.2.2	Overhead Inspection	2 days	Wed 8/12/26	Thu 8/13/26
538	6.7.1.2.2	HVAC Duct Insulation	3 days	Fri 8/14/26	Tue 8/18/26
539	6.7.1.2.2	HVAC Pipe Insulation	4 days	Fri 8/14/26	Wed 8/19/26
540	6.7.1.2.2	Plumbing Insulation	3 days	Fri 8/14/26	Tue 8/18/26
525	6.7.1.2.2	**MEP Wall RI**	**25 days**	**Wed 7/15/26**	**Tue 8/18/26**
526	6.7.1.2.2	Plumbing	5 days	Wed 7/15/26	Tue 7/21/26
527	6.7.1.2.2	Electrical	10 days	Wed 8/5/26	Tue 8/18/26
542	6.7.1.2.2	In-Wall Inspections	2 days	Wed 8/19/26	Thu 8/20/26
543	6.7.1.2.2	Blocking	5 days	Wed 8/19/26	Tue 8/25/26
544	6.7.1.2.2	Wall Insulation	3 days	Wed 8/26/26	Fri 8/28/26
545	6.7.1.2.2	Drywall	10 days	Mon 8/31/26	Tue 9/15/26
546	6.7.1.2.2	Drywall Ceiling Framing	5 days	Wed 9/16/26	Tue 9/22/26
547	6.7.1.2.2	Drywall Ceiling MEP Rough Ins	8 days	Wed 9/23/26	Fri 10/2/26
548	6.7.1.2.2	Drywall Ceiling Inspections	3 days	Mon 10/5/26	Wed 10/7/26
549	6.7.1.2.2	Hang Drywall Ceilings	4 days	Thu 10/8/26	Tue 10/13/26
550	6.7.1.2.3	Roof	2 days	Mon 6/29/26	Tue 6/30/26
551	6.7.1.2.3	CU-2 Installation	2 days	Mon 6/29/26	Tue 6/30/26
552	6.7.1.2.3	EF-8 Installation	2 days	Mon 6/29/26	Tue 6/30/26
553	6.7.1.2.3	V-3 Installation	2 days	Mon 6/29/26	Tue 6/30/26
583	6.7.1.3	Interior Rough in Area C/D/E Low Mechanical Space/97	97 days	Wed 5/13/26	Fri 10/2/26
584	6.7.1.3.1	First Floor	62 days	Wed 5/13/26	Wed 8/12/26
585	6.7.1.3.1	Stair #2 installation	10 days	Wed 5/13/26	Thu 5/28/26
586	6.7.1.3.1	Stair #3 installation	10 days	Fri 5/29/26	Thu 6/11/26
587	6.7.1.3.1	Interior Stud Framing	10 days	Fri 6/12/26	Thu 6/25/26
588	6.7.1.3.1	**MEP Wall RI**	**12 days**	**Fri 6/26/26**	**Wed 7/15/26**
589	6.7.1.3.1	Plumbing	10 days	Fri 6/26/26	Mon 7/13/26
590	6.7.1.3.1	Electrical	10 days	Fri 6/26/26	Mon 7/13/26
591	6.7.1.3.1	In-Wall Inspections	2 days	Tue 7/14/26	Wed 7/15/26
592	6.7.1.3.1	Top Out	5 days	Fri 6/26/26	Mon 7/6/26
593	6.7.1.3.1	**MEP Overhead RI**	**32 days**	**Fri 6/26/26**	**Wed 8/12/26**
594	6.7.1.3.1	**HVAC**	**20 days**	**Fri 6/26/26**	**Mon 7/27/26**
595	6.7.1.3.1	Duct Work	15 days	Fri 6/26/26	Mon 7/20/26
596	6.7.1.3.1	Mechanical Piping	15 days	Fri 6/26/26	Mon 7/20/26
598	6.7.1.3.1	HVAC Controls Rough-In	10 days	Tue 7/14/26	Mon 7/27/26
597	6.7.1.3.1	Insulation Inspection	2 days	Tue 7/21/26	Wed 7/22/26
599	6.7.1.3.1	Plumbing	10 days	Fri 6/26/26	Mon 7/13/26
600	6.7.1.3.1	Electrical	10 days	Fri 6/26/26	Mon 7/13/26
601	6.7.1.3.1	Fire Protection	10 days	Fri 6/26/26	Mon 7/13/26
602	6.7.1.3.1	Overhead Inspection	2 days	Tue 7/28/26	Wed 7/29/26
603	6.7.1.3.1	Duct Work Insulation	10 days	Thu 7/30/26	Wed 8/12/26
604	6.7.1.3.1	Mechanical Piping Insulation	10 days	Thu 7/30/26	Wed 8/12/26
607	6.7.1.3.1	**Mechanical Room**	**13 days**	**Tue 7/14/26**	**Thu 7/30/26**
608	6.7.1.3.1	Duct Rough In	3 days	Tue 7/14/26	Thu 7/16/26
613	6.7.1.3.1	B-1 Placement	5 days	Fri 7/17/26	Thu 7/23/26
614	6.7.1.3.1	B-2 Placement	5 days	Fri 7/17/26	Thu 7/23/26
615	6.7.1.3.1	SHWP-1 Placement	5 days	Fri 7/17/26	Thu 7/23/26
616	6.7.1.3.1	SHWP-2 Placement	5 days	Fri 7/17/26	Thu 7/23/26
617	6.7.1.3.1	PCHWP-1 Placement	5 days	Fri 7/17/26	Thu 7/23/26
618	6.7.1.3.1	PCHWP-2 Placement	5 days	Fri 7/17/26	Thu 7/23/26
619	6.7.1.3.1	SCHWP-1 Placement	5 days	Fri 7/17/26	Thu 7/23/26
620	6.7.1.3.1	SCHWP-2 Placement	5 days	Fri 7/17/26	Thu 7/23/26
621	6.7.1.3.1	AS-1 Placement	5 days	Fri 7/17/26	Thu 7/23/26
622	6.7.1.3.1	AS-2 Placement	5 days	Fri 7/17/26	Thu 7/23/26
623	6.7.1.3.1	Duct and Piping Tie in	5 days	Fri 7/17/26	Thu 7/23/26
624	6.7.1.3.1	Electrical/Drive Tie in	5 days	Fri 7/17/26	Thu 7/23/26
625	6.7.1.3.1	XT-1 Placement	5 days	Fri 7/17/26	Thu 7/23/26
626	6.7.1.3.1	XT-2 Placement	5 days	Fri 7/17/26	Thu 7/23/26
627	6.7.1.3.1	DMSS-4 Placement	2 days	Fri 7/17/26	Mon 7/20/26



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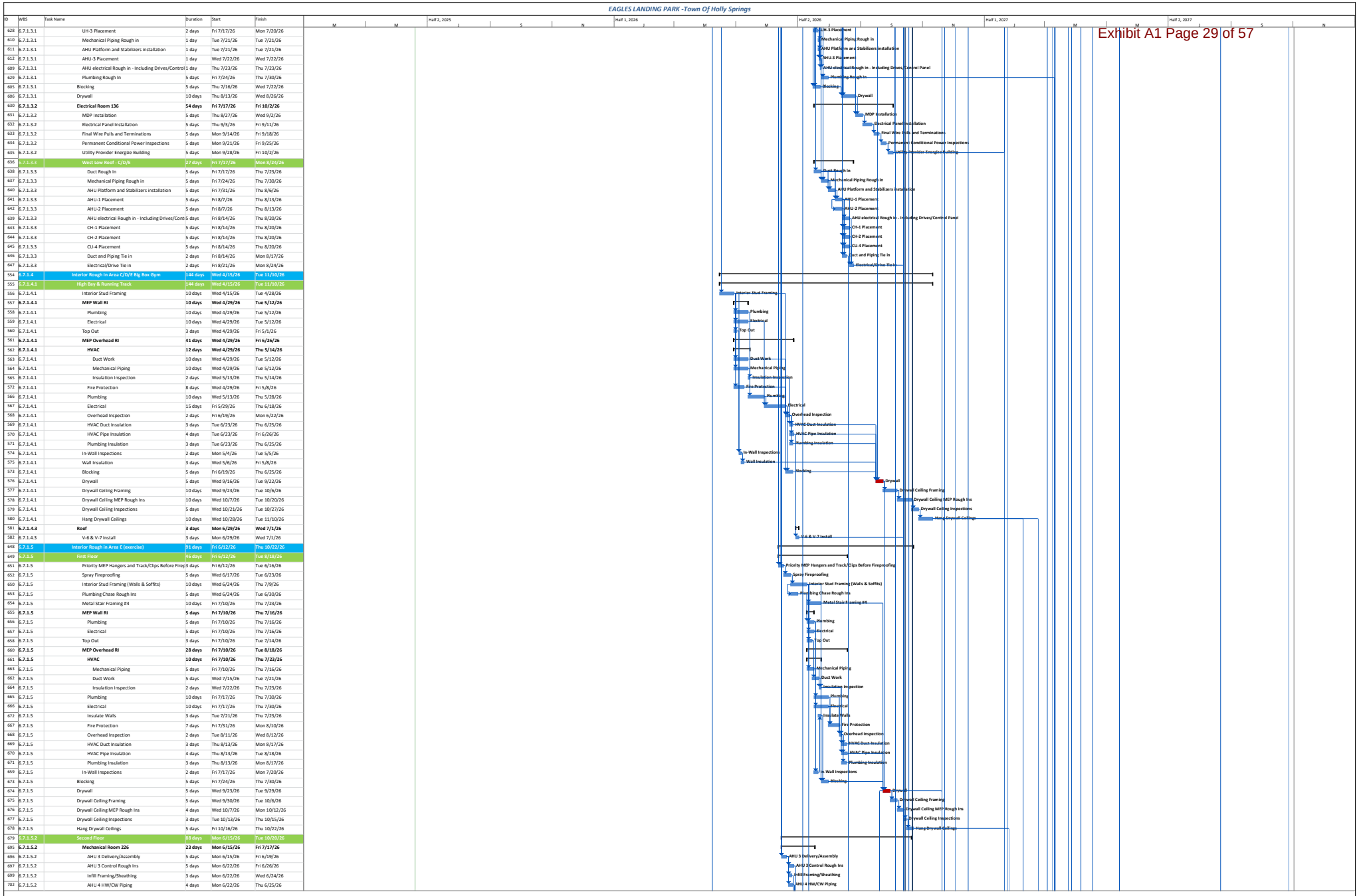

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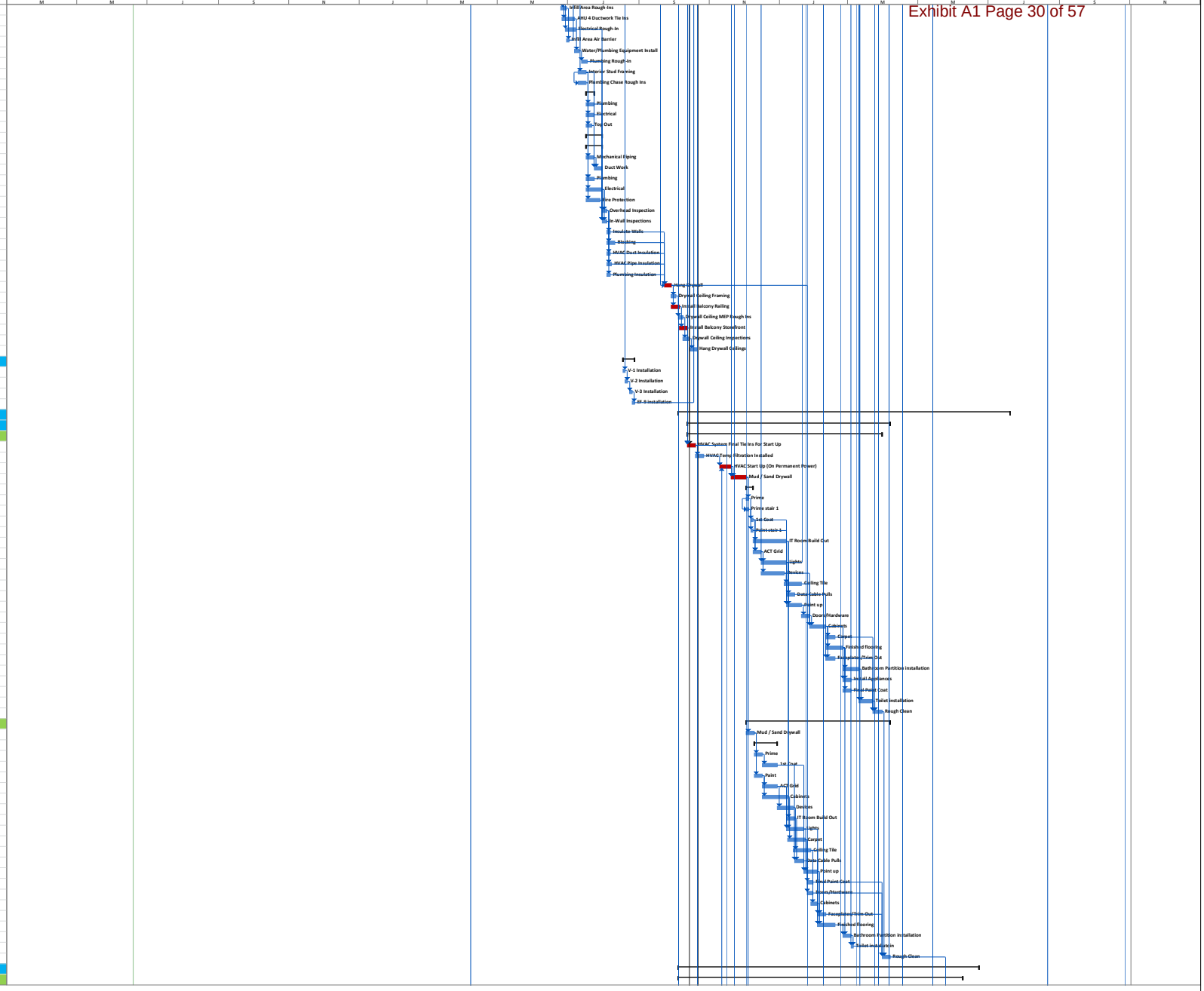
EAGLES LANDING PARK -Town Of Holly Springs

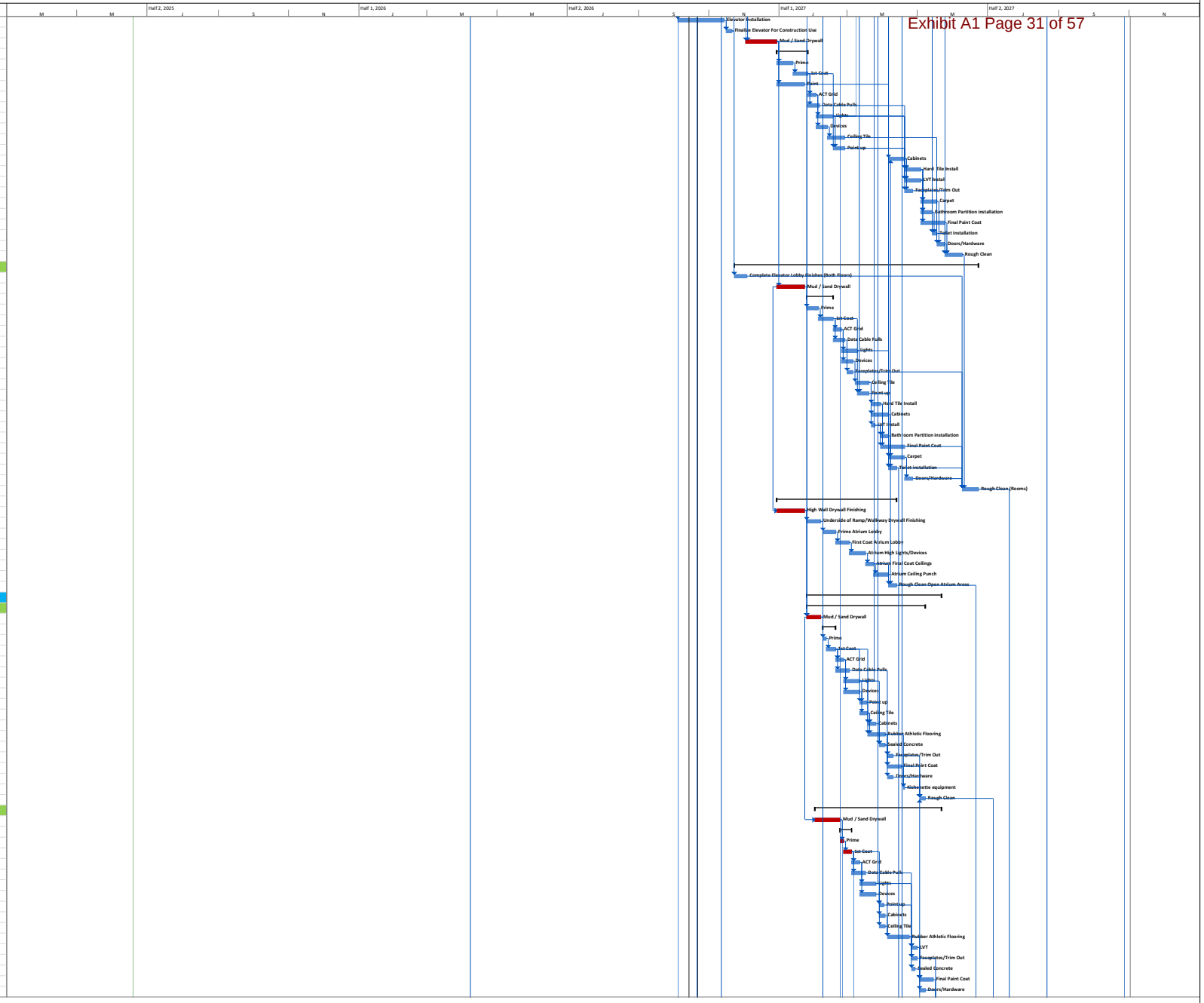
ID	WBS	Task Name	Duration	Start	Finish
700	6.7.1.5.2	Infill Area Rough-Ins	3 days	Thu 6/25/26	Mon 6/29/26
703	6.7.1.5.2	AHU 4 Ductwork Tie Ins	5 days	Fri 6/26/26	Mon 7/6/26
698	6.7.1.5.2	Electrical Rough-In	5 days	Mon 6/29/26	Tue 7/7/26
701	6.7.1.5.2	Infill Area Air Barrier	2 days	Tue 6/30/26	Wed 7/1/26
704	6.7.1.5.2	Water/Plumbing Equipment Install	4 days	Tue 7/7/26	Fri 7/10/26
705	6.7.1.5.2	Plumbing Rough-In	5 days	Mon 7/13/26	Fri 7/17/26
680	6.7.1.5.2	Interior Stud Framing	5 days	Fri 7/10/26	Thu 7/16/26
683	6.7.1.5.2	Plumbing Chase Rough Ins	5 days	Fri 7/10/26	Thu 7/16/26
684	**6.7.1.5.2**	**MEP Wall RI**	**5 days**	**Fri 7/17/26**	**Thu 7/23/26**
685	6.7.1.5.2	Plumbing	5 days	Fri 7/17/26	Thu 7/23/26
686	6.7.1.5.2	Electrical	5 days	Fri 7/17/26	Thu 7/23/26
687	6.7.1.5.2	Top Out	3 days	Fri 7/17/26	Tue 7/21/26
688	**6.7.1.5.2**	**MEP Overhead RI**	**10 days**	**Fri 7/17/26**	**Thu 7/30/26**
689	**6.7.1.5.2**	**HVAC**	**10 days**	**Fri 7/17/26**	**Thu 7/30/26**
691	6.7.1.5.2	Mechanical Piping	5 days	Fri 7/17/26	Thu 7/23/26
690	6.7.1.5.2	Duct Work	5 days	Fri 7/24/26	Thu 7/30/26
692	6.7.1.5.2	Plumbing	5 days	Fri 7/17/26	Thu 7/23/26
693	6.7.1.5.2	Electrical	10 days	Fri 7/17/26	Thu 7/30/26
694	6.7.1.5.2	Fire Protection	8 days	Fri 7/17/26	Tue 7/28/26
710	6.7.1.5.2	Overhead Inspection	2 days	Fri 7/31/26	Mon 8/3/26
711	6.7.1.5.2	In-Wall Inspections	2 days	Fri 7/31/26	Mon 8/3/26
681	6.7.1.5.2	Insulate Walls	3 days	Tue 8/4/26	Thu 8/6/26
706	6.7.1.5.2	Blocking	5 days	Tue 8/4/26	Mon 8/10/26
707	6.7.1.5.2	HVAC Duct Insulation	3 days	Tue 8/4/26	Thu 8/6/26
708	6.7.1.5.2	HVAC Pipe Insulation	4 days	Tue 8/4/26	Fri 8/7/26
709	6.7.1.5.2	Plumbing Insulation	3 days	Tue 8/4/26	Thu 8/6/26
682	6.7.1.5.2	Hang Drywall	4 days	Wed 9/23/26	Mon 9/28/26
712	6.7.1.5.2	Drywall Ceiling Framing	4 days	Tue 9/29/26	Fri 10/2/26
716	6.7.1.5.2	Install Balcony Railing	5 days	Tue 9/29/26	Mon 10/5/26
713	6.7.1.5.2	Drywall Ceiling MEP Rough Ins	4 days	Mon 10/5/26	Thu 10/8/26
717	6.7.1.5.2	Install Balcony Storefront	5 days	Tue 10/6/26	Mon 10/12/26
714	6.7.1.5.2	Drywall Ceiling Inspections	4 days	Fri 10/9/26	Wed 10/14/26
715	6.7.1.5.2	Hang Drywall Ceilings	4 days	Thu 10/15/26	Tue 10/20/26
718	**6.7.1.5.3**	**Roof**	**8 days**	**Tue 8/18/26**	**Thu 8/27/26**
719	6.7.1.5.3	V-1 Installation	2 days	Tue 8/18/26	Wed 8/19/26
720	6.7.1.5.3	V-2 Installation	2 days	Thu 8/20/26	Fri 8/21/26
721	6.7.1.5.3	V-3 Installation	2 days	Mon 8/24/26	Tue 8/25/26
722	6.7.1.5.3	EF-9 Installation	2 days	Wed 8/26/26	Thu 8/27/26
723	**6.8**	**Finishes - Rec Bldg**	**191 days**	**Mon 10/5/26**	**Mon 7/19/27**
724	**6.8.1.1**	**Finishes Area A**	**113 days**	**Tue 10/13/26**	**Tue 4/6/27**
725	6.8.1.1	First Floor	108 days	Tue 10/13/26	Tue 3/30/27
727	6.8.1.1	HVAC System Final Tie Ins For Start Up	5 days	Tue 10/13/26	Mon 10/19/26
726	6.8.1.1	HVAC Temp Filtration Installed	5 days	Tue 10/20/26	Mon 10/26/26
735	6.8.1.1	HVAC Start Up (On Permanent Power)	8 days	Tue 11/10/26	Thu 11/19/26
729	6.8.1.1	Mud / Sand Drywall	5 days	Fri 11/20/26	Wed 12/2/26
730	**6.8.1.1**	**Paint**	**4 days**	**Thu 12/3/26**	**Tue 12/8/26**
731	6.8.1.1	Prime	2 days	Thu 12/3/26	Fri 12/4/26
733	6.8.1.1	Prime stair 1	2 days	Thu 12/3/26	Fri 12/4/26
732	6.8.1.1	1st Coat	2 days	Mon 12/7/26	Tue 12/8/26
734	6.8.1.1	Paint stair 1	2 days	Mon 12/7/26	Tue 12/8/26
728	6.8.1.1	IT Room Build Out	15 days	Wed 12/9/26	Wed 1/6/27
737	6.8.1.1	ACT Grid	5 days	Wed 12/9/26	Tue 12/15/26
738	6.8.1.1	Lights	10 days	Wed 12/16/26	Wed 1/6/27
740	6.8.1.1	Devices	8 days	Wed 12/16/26	Mon 1/4/27
743	6.8.1.1	Ceiling Tile	10 days	Tue 1/5/27	Tue 1/19/27
736	6.8.1.1	Data Cable Pulls	5 days	Thu 1/7/27	Wed 1/13/27
739	6.8.1.1	Point up	8 days	Thu 1/7/27	Tue 1/19/27
750	6.8.1.1	Doors/Hardware	5 days	Wed 1/20/27	Tue 1/26/27
742	6.8.1.1	Cabinets	10 days	Wed 1/27/27	Tue 2/9/27
741	6.8.1.1	Carpet	5 days	Wed 2/10/27	Wed 2/17/27
744	6.8.1.1	Finished flooring	10 days	Wed 2/10/27	Wed 2/24/27
748	6.8.1.1	Faceplates/Trim Out	5 days	Wed 2/10/27	Wed 2/17/27
745	6.8.1.1	Bathroom Partition installation	10 days	Thu 2/25/27	Wed 3/10/27
747	6.8.1.1	Install Appliances	5 days	Thu 2/25/27	Wed 3/3/27
749	6.8.1.1	Final Paint Coat	5 days	Thu 2/25/27	Wed 3/3/27
746	6.8.1.1	Toilet installation	8 days	Thu 3/11/27	Mon 3/22/27
751	6.8.1.1	Rough Clean	5 days	Tue 3/23/27	Tue 3/30/27
752	6.8.1.1.2	Second Floor	80 days	Thu 12/3/26	Tue 4/6/27
753	6.8.1.1.2	Mud / Sand Drywall	5 days	Thu 12/3/26	Wed 12/9/26
754	**6.8.1.1.2**	**Paint**	**10 days**	**Thu 12/10/26**	**Tue 12/29/26**
755	6.8.1.1.2	Prime	5 days	Thu 12/10/26	Wed 12/16/26
756	6.8.1.1.2	1st Coat	5 days	Thu 12/17/26	Tue 12/29/26
764	6.8.1.1.2	Paint	5 days	Thu 12/10/26	Wed 12/16/26
759	6.8.1.1.2	ACT Grid	5 days	Thu 12/17/26	Tue 12/29/26
766	6.8.1.1.2	Cabinets	10 days	Thu 12/17/26	Thu 1/7/27
763	6.8.1.1.2	Devices	8 days	Wed 12/30/26	Tue 1/12/27
757	6.8.1.1.2	IT Room Build Out	5 days	Thu 1/7/27	Wed 1/13/27
760	6.8.1.1.2	Lights	10 days	Thu 1/7/27	Thu 1/21/27
765	6.8.1.1.2	Carpet	10 days	Fri 1/8/27	Fri 1/22/27
767	6.8.1.1.2	Ceiling Tile	10 days	Wed 1/13/27	Wed 1/27/27
758	6.8.1.1.2	Data Cable Pulls	5 days	Thu 1/14/27	Thu 1/21/27
762	6.8.1.1.2	Point up	8 days	Fri 1/22/27	Tue 2/2/27
772	6.8.1.1.2	Final Paint Coat	5 days	Mon 1/25/27	Fri 1/29/27
773	6.8.1.1.2	Doors/Hardware	5 days	Mon 1/25/27	Fri 1/29/27
761	6.8.1.1.2	Cabinets	4 days	Thu 1/28/27	Tue 2/2/27
768	6.8.1.1.2	Faceplates/Trim Out	5 days	Wed 2/3/27	Tue 2/9/27
769	6.8.1.1.2	Finished flooring	10 days	Wed 2/3/27	Wed 2/17/27
770	6.8.1.1.2	Bathroom Partition installation	5 days	Thu 2/25/27	Wed 3/3/27
771	6.8.1.1.2	Toilet installatoin	2 days	Thu 3/4/27	Fri 3/5/27
774	6.8.1.1.2	Rough Clean	5 days	Wed 3/31/27	Tue 4/6/27
775	**6.8.1.2**	**Finished Area B (Atrium Lobby + Restroom/Indoor Pla**	173 days	Mon 10/5/26	Tue 6/22/27
776	6.8.1.2	First Floor	163 days	Mon 10/5/26	Tue 6/8/27



Project: EAGLES LANDING PARK - Town of Holly Springs
Schedule Print Date: Thu 6/19/25
Project Completion Date: Mon 11/1/27

BLUM CONSTRUCTION — EST. 1923 —

ID	WBS	Task Name	Duration	Start	Finish
795	6.8.1.2	Elevator Installation	30 days	Mon 10/5/26	Fri 11/13/26
796	6.8.1.2	Finalize Elevator For Construction Use	5 days	Mon 11/16/26	Fri 11/20/26
777	6.8.1.2	Mud / Sand Drywall	15 days	Thu 12/3/26	Tue 12/29/26
778	**6.8.1.2**	**Paint**	**16 days**	**Wed 12/30/26**	**Mon 1/25/27**
779	6.8.1.2	Prime	8 days	Wed 12/30/26	Tue 1/12/27
780	6.8.1.2	1st Coat	8 days	Wed 1/13/27	Mon 1/25/27
787	6.8.1.2	Paint	15 days	Wed 12/30/26	Fri 1/22/27
781	6.8.1.2	ACT Grid	5 days	Tue 1/26/27	Mon 2/1/27
786	6.8.1.2	Data Cable Pulls	8 days	Tue 1/26/27	Thu 2/4/27
782	6.8.1.2	Lights	10 days	Tue 2/2/27	Tue 2/16/27
785	6.8.1.2	Devices	8 days	Tue 2/2/27	Thu 2/11/27
790	6.8.1.2	Ceiling Tile	10 days	Fri 2/12/27	Fri 2/26/27
784	6.8.1.2	Point up	8 days	Wed 2/17/27	Fri 2/26/27
789	6.8.1.2	Cabinets	10 days	Tue 4/6/27	Mon 4/19/27
783	6.8.1.2	Hard Tile Install	10 days	Tue 4/20/27	Mon 5/3/27
791	6.8.1.2	LVT Install	10 days	Tue 4/20/27	Mon 5/3/27
792	6.8.1.2	Faceplates/Trim Out	5 days	Tue 4/20/27	Mon 4/26/27
788	6.8.1.2	Carpet	10 days	Tue 5/4/27	Mon 5/17/27
793	6.8.1.2	Bathroom Partition installation	8 days	Tue 5/4/27	Thu 5/13/27
797	6.8.1.2	Final Paint Coat	15 days	Tue 5/4/27	Mon 5/24/27
794	6.8.1.2	Toilet installation	2 days	Fri 5/14/27	Mon 5/17/27
798	6.8.1.2	Doors/Hardware	5 days	Tue 5/18/27	Mon 5/24/27
799	6.8.1.2	Rough Clean	10 days	Tue 5/25/27	Tue 6/8/27
800	6.8.1.2.2	Second Floor	138 days	Mon 11/23/26	Tue 6/22/27
819	6.8.1.2.2	Complete Elevator Lobby Finishes (Both Floors)	5 days	Mon 11/23/26	Thu 12/3/26
801	6.8.1.2.2	Mud / Sand Drywall	15 days	Wed 12/30/26	Fri 1/22/27
802	**6.8.1.2.2**	**Paint**	**16 days**	**Mon 1/25/27**	**Tue 2/16/27**
803	6.8.1.2.2	Prime	8 days	Mon 1/25/27	Wed 2/3/27
804	6.8.1.2.2	1st Coat	8 days	Thu 2/4/27	Tue 2/16/27
805	6.8.1.2.2	ACT Grid	5 days	Wed 2/17/27	Tue 2/23/27
807	6.8.1.2.2	Data Cable Pulls	8 days	Wed 2/17/27	Fri 2/26/27
806	6.8.1.2.2	Lights	10 days	Wed 2/24/27	Tue 3/9/27
810	6.8.1.2.2	Devices	8 days	Wed 2/24/27	Fri 3/5/27
817	6.8.1.2.2	Faceplates/Trim Out	5 days	Mon 3/1/27	Fri 3/5/27
813	6.8.1.2.2	Ceiling Tile	10 days	Mon 3/8/27	Fri 3/19/27
809	6.8.1.2.2	Point up	8 days	Wed 3/10/27	Fri 3/19/27
808	6.8.1.2.2	Hard Tile Install	5 days	Mon 3/22/27	Mon 3/29/27
812	6.8.1.2.2	Cabinets	10 days	Mon 3/22/27	Mon 4/5/27
814	6.8.1.2.2	LVT Install	3 days	Mon 3/22/27	Wed 3/24/27
815	6.8.1.2.2	Bathroom Partition installation	5 days	Tue 3/30/27	Mon 4/5/27
818	6.8.1.2.2	Final Paint Coat	15 days	Tue 3/30/27	Mon 4/19/27
811	6.8.1.2.2	Carpet	10 days	Tue 4/6/27	Mon 4/19/27
816	6.8.1.2.2	Toilet installation	5 days	Tue 4/6/27	Mon 4/12/27
820	6.8.1.2.2	Doors/Hardware	5 days	Tue 4/20/27	Mon 4/26/27
821	6.8.1.2.2	Rough Clean (Rooms)	10 days	Wed 6/9/27	Tue 6/22/27
822	**6.8.1.2.3**	**Atrium Lobby High Finishes**	**69 days**	**Wed 12/30/26**	**Mon 4/12/27**
823	6.8.1.2.3	High Wall Drywall Finishing	15 days	Wed 12/30/26	Fri 1/22/27
824	6.8.1.2.3	Underside of Ramp/Walkway Drywall Finishing	10 days	Mon 1/25/27	Fri 2/5/27
825	6.8.1.2.3	Prime Atrium Lobby	8 days	Mon 2/8/27	Thu 2/18/27
826	6.8.1.2.3	First Coat Atrium Lobby	8 days	Fri 2/19/27	Tue 3/2/27
829	6.8.1.2.3	Atrium High Lights/Devices	10 days	Wed 3/3/27	Tue 3/16/27
828	6.8.1.2.3	Atrium Final Coat Ceilings	5 days	Wed 3/17/27	Tue 3/23/27
827	6.8.1.2.3	Atrium Ceiling Punch	8 days	Wed 3/24/27	Mon 4/5/27
830	6.8.1.2.3	Rough Clean Open Atrium Areas	5 days	Tue 4/6/27	Mon 4/12/27
854	6.8.1.3	Finished Area E (Exercise)	83 days	Mon 1/25/27	Fri 5/21/27
855	6.8.1.3	First Floor	73 days	Mon 1/25/27	Fri 5/7/27
856	6.8.1.3	Mud / Sand Drywall	10 days	Mon 1/25/27	Fri 2/5/27
857	**6.8.1.3**	**Paint**	**8 days**	**Mon 2/8/27**	**Thu 2/18/27**
858	6.8.1.3	Prime	3 days	Mon 2/8/27	Wed 2/10/27
859	6.8.1.3	1st Coat	5 days	Thu 2/11/27	Thu 2/18/27
860	6.8.1.3	ACT Grid	5 days	Fri 2/19/27	Thu 2/25/27
862	6.8.1.3	Data Cable Pulls	8 days	Fri 2/19/27	Tue 3/2/27
861	6.8.1.3	Lights	10 days	Fri 2/26/27	Thu 3/11/27
864	6.8.1.3	Devices	10 days	Fri 2/26/27	Thu 3/11/27
863	6.8.1.3	Point up	4 days	Fri 3/12/27	Wed 3/17/27
867	6.8.1.3	Ceiling Tile	5 days	Fri 3/12/27	Thu 3/18/27
866	6.8.1.3	Cabinets	5 days	Fri 3/19/27	Thu 3/25/27
868	6.8.1.3	Rubber Athletic Flooring	10 days	Fri 3/19/27	Fri 4/2/27
865	6.8.1.3	Sealed Concrete	5 days	Mon 3/29/27	Fri 4/2/27
869	6.8.1.3	Faceplates/Trim Out	5 days	Mon 4/5/27	Fri 4/9/27
870	6.8.1.3	Final Paint Coat	10 days	Mon 4/5/27	Fri 4/16/27
872	6.8.1.3	Doors/Hardware	5 days	Mon 4/5/27	Fri 4/9/27
871	6.8.1.3	Kichenette equipment	1 day	Mon 4/19/27	Mon 4/19/27
873	6.8.1.3	Rough Clean	5 days	Mon 5/3/27	Fri 5/7/27
874	6.8.1.3.2	Second Floor	78 days	Mon 2/1/27	Fri 5/21/27
875	6.8.1.3.2	Mud / Sand Drywall	15 days	Mon 2/1/27	Mon 2/22/27
876	**6.8.1.3.2**	**Paint**	**8 days**	**Tue 2/23/27**	**Thu 3/4/27**
877	6.8.1.3.2	Prime	3 days	Tue 2/23/27	Thu 2/25/27
878	6.8.1.3.2	1st Coat	5 days	Fri 2/26/27	Thu 3/4/27
879	6.8.1.3.2	ACT Grid	5 days	Fri 3/5/27	Thu 3/11/27
885	6.8.1.3.2	Data Cable Pulls	8 days	Fri 3/5/27	Tue 3/16/27
880	6.8.1.3.2	Lights	10 days	Fri 3/12/27	Thu 3/25/27
882	6.8.1.3.2	Devices	10 days	Fri 3/12/27	Thu 3/25/27
881	6.8.1.3.2	Point up	4 days	Mon 3/29/27	Thu 4/1/27
884	6.8.1.3.2	Cabinets	5 days	Mon 3/29/27	Fri 4/2/27
887	6.8.1.3.2	Ceiling Tile	5 days	Mon 3/29/27	Fri 4/2/27
888	6.8.1.3.2	Rubber Athletic Flooring	15 days	Mon 4/5/27	Fri 4/23/27
883	6.8.1.3.2	LVT	5 days	Mon 4/26/27	Fri 4/30/27
886	6.8.1.3.2	Faceplates/Trim Out	5 days	Mon 4/26/27	Fri 4/30/27
890	6.8.1.3.2	Sealed Concrete	3 days	Mon 4/26/27	Wed 4/28/27
889	6.8.1.3.2	Final Paint Coat	10 days	Mon 5/3/27	Fri 5/14/27
891	6.8.1.3.2	Doors/Hardware	5 days	Mon 5/3/27	Fri 5/7/27



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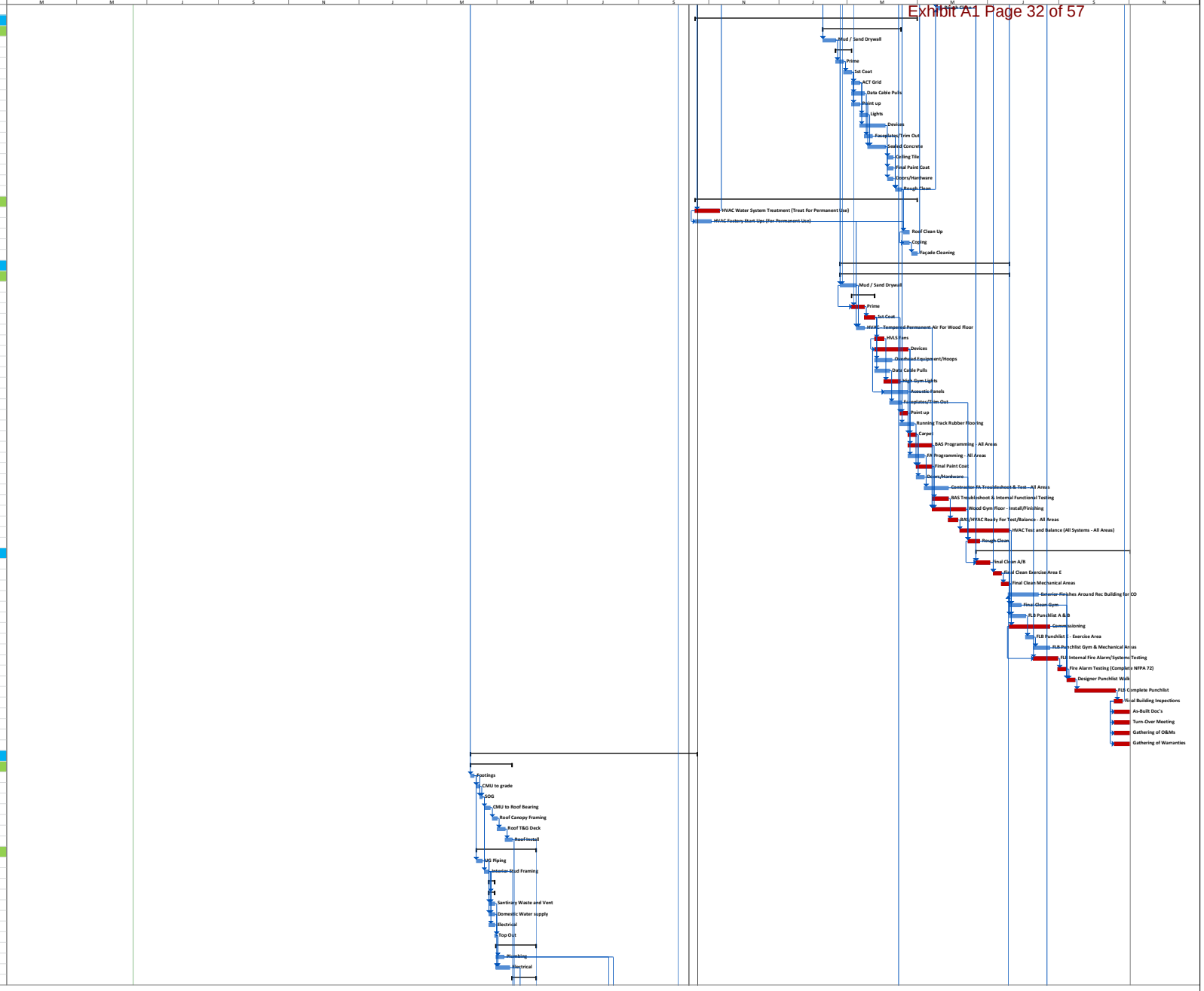
ID	WBS	Task Name	Duration	Start	Finish
892	6.8.1.3.2	Rough Clean	5 days	Mon 5/17/27	Fri 5/21/27
831	6.8.1.4	Finished Area C/D/E Mechanical Room, Storage, Main	126 days	Tue 10/20/26	Fri 4/30/27
832	6.8.1.4	First Floor	48 days	Mon 2/8/27	Fri 4/16/27
833	6.8.1.4	Mud / Sand Drywall	8 days	Mon 2/8/27	Thu 2/18/27
834	**6.8.1.4**	**Paint**	**10 days**	**Fri 2/19/27**	**Thu 3/4/27**
835	6.8.1.4	Prime	5 days	Fri 2/19/27	Thu 2/25/27
836	6.8.1.4	1st Coat	5 days	Fri 2/26/27	Thu 3/4/27
837	6.8.1.4	ACT Grid	5 days	Fri 3/5/27	Thu 3/11/27
839	6.8.1.4	Data Cable Pulls	7 days	Fri 3/5/27	Mon 3/15/27
840	6.8.1.4	Point up	5 days	Fri 3/5/27	Thu 3/11/27
838	6.8.1.4	Lights	5 days	Fri 3/12/27	Thu 3/18/27
841	6.8.1.4	Devices	15 days	Fri 3/12/27	Fri 4/2/27
844	6.8.1.4	Faceplates/Trim Out	5 days	Tue 3/16/27	Mon 3/22/27
843	6.8.1.4	Sealed Concrete	10 days	Fri 3/19/27	Fri 4/2/27
842	6.8.1.4	Ceiling Tile	5 days	Mon 4/5/27	Fri 4/9/27
845	6.8.1.4	Final Paint Coat	5 days	Mon 4/5/27	Fri 4/9/27
846	6.8.1.4	Doors/Hardware	5 days	Mon 4/5/27	Fri 4/9/27
847	6.8.1.4	Rough Clean	5 days	Mon 4/12/27	Fri 4/16/27
848	6.8.1.4.2	Roof Top	126 days	Tue 10/20/26	Fri 4/30/27
849	6.8.1.4.2	HVAC Water System Treatment (Treat For Permar	15 days	Tue 10/20/26	Mon 11/9/26
850	6.8.1.4.2	HVAC Factory Start Ups (For Permanent Use)	10 days	Tue 10/20/26	Mon 11/2/26
852	6.8.1.4.2	Roof Clean Up	5 days	Mon 4/19/27	Fri 4/23/27
853	6.8.1.4.2	Coping	5 days	Mon 4/19/27	Fri 4/23/27
851	6.8.1.4.2	Façade Cleaning	5 days	Mon 4/26/27	Fri 4/30/27
893	6.8.1.5	Finishes Area C,D,E Big Box Gym	102 days	Tue 2/23/27	Mon 7/19/27
894	6.8.1.5	Open Gym Area	102 days	Tue 2/23/27	Mon 7/19/27
895	6.8.1.5	Mud / Sand Drywall	10 days	Tue 2/23/27	Mon 3/8/27
896	**6.8.1.5**	**Paint**	**14 days**	**Fri 3/5/27**	**Wed 3/24/27**
897	6.8.1.5	Prime	7 days	Fri 3/5/27	Mon 3/15/27
898	6.8.1.5	1st Coat	7 days	Tue 3/16/27	Wed 3/24/27
899	6.8.1.5	HVAC - Tempered Permanent Air For Wood Floor	5 days	Tue 3/9/27	Mon 3/15/27
900	6.8.1.5	HVLS Fans	5 days	Thu 3/25/27	Thu 4/1/27
904	6.8.1.5	Devices	20 days	Thu 3/25/27	Thu 4/22/27
908	6.8.1.5	Overhead Equipment/Hoops	10 days	Thu 3/25/27	Thu 4/8/27
910	6.8.1.5	Data Cable Pulls	8 days	Thu 3/25/27	Tue 4/6/27
901	6.8.1.5	High Gym Lights	10 days	Fri 4/2/27	Thu 4/15/27
909	6.8.1.5	Acoustic Panels	15 days	Fri 4/2/27	Thu 4/22/27
903	6.8.1.5	Faceplates/Trim Out	8 days	Wed 4/7/27	Fri 4/16/27
902	6.8.1.5	Point up	5 days	Fri 4/16/27	Thu 4/22/27
911	6.8.1.5	Running Track Rubber Flooring	8 days	Fri 4/16/27	Tue 4/27/27
907	6.8.1.5	Carpet	5 days	Fri 4/23/27	Thu 4/29/27
912	6.8.1.5	BAS Programming - All Areas	15 days	Fri 4/23/27	Thu 5/13/27
913	6.8.1.5	FA Programming - All Areas	10 days	Fri 4/23/27	Thu 5/6/27
915	6.8.1.5	Final Paint Coat	10 days	Fri 4/30/27	Thu 5/13/27
916	6.8.1.5	Doors/Hardware	5 days	Fri 4/30/27	Thu 5/6/27
905	6.8.1.5	Contractor FA Troubleshoot & Test - All Areas	15 days	Fri 5/7/27	Thu 5/27/27
906	6.8.1.5	BAS Troubleshoot & Internal Functional Testing	10 days	Fri 5/14/27	Thu 5/27/27
918	6.8.1.5	Wood Gym Floor - Install/Finishing	20 days	Fri 5/14/27	Fri 6/11/27
917	6.8.1.5	BAS/HVAC Ready For Test/Balance - All Areas	5 days	Fri 5/28/27	Fri 6/4/27
914	6.8.1.5	HVAC Test and Balance (All Systems - All Areas)	30 days	Mon 6/7/27	Mon 7/19/27
919	6.8.1.5	Rough Clean	8 days	Mon 6/14/27	Wed 6/23/27
978	6.10	Rec Building Punchlist/Inspections/Close-Out	94 days	Mon 6/21/27	Mon 11/1/27
979	6.10	Final Clean A/B	10 days	Mon 6/21/27	Fri 7/2/27
980	6.10	Final Clean Exercise Area E	5 days	Tue 7/6/27	Mon 7/12/27
982	6.10	Final Clean Mechanical Areas	5 days	Tue 7/13/27	Mon 7/19/27
984	6.10	Exterior Finishes Around Rec Building for CO	20 days	Mon 7/19/27	Fri 8/13/27
981	6.10	Final Clean Gym	8 days	Tue 7/20/27	Thu 7/29/27
983	6.10	FLB Punchlist A & B	10 days	Tue 7/20/27	Mon 8/2/27
987	6.10	Commissioning	25 days	Tue 7/20/27	Mon 8/23/27
985	6.10	FLB Punchlist E - Exercise Area	5 days	Tue 8/3/27	Mon 8/9/27
986	6.10	FLB Punchlist Gym & Mechanical Areas	10 days	Tue 8/10/27	Mon 8/23/27
988	6.10	FLB Internal Fire Alarm/Systems Testing	15 days	Tue 8/10/27	Mon 8/30/27
989	6.10	Fire Alarm Testing (Complete NFPA 72)	5 days	Tue 8/31/27	Tue 9/7/27
990	6.10	Designer Punchlist Walk	5 days	Wed 9/8/27	Tue 9/14/27
991	6.10	FLB Complete Punchlist	25 days	Wed 9/15/27	Tue 10/19/27
992	6.10	Final Building Inspections	5 days	Tue 10/19/27	Mon 10/25/27
993	6.10	As-Built Doc's	10 days	Tue 10/19/27	Mon 11/1/27
994	6.10	Turn-Over Meeting	10 days	Tue 10/19/27	Mon 11/1/27
995	6.10	Gathering of O&Ms	10 days	Tue 10/19/27	Mon 11/1/27
996	6.10	Gathering of Warranties	10 days	Tue 10/19/27	Mon 11/1/27
920	7	Restroom Building	135 days	Wed 4/8/26	Wed 10/21/26
921	7	Structure	26 days	Wed 4/8/26	Wed 5/13/26
922	7	Footings	3 days	Wed 4/8/26	Fri 4/10/26
923	7	CMU to grade	3 days	Mon 4/13/26	Wed 4/15/26
924	7	SOG	2 days	Thu 4/16/26	Fri 4/17/26
925	7	CMU to Roof Bearing	5 days	Mon 4/20/26	Fri 4/24/26
926	7	Roof Canopy Framing	4 days	Mon 4/27/26	Thu 4/30/26
927	7	Roof T&G Deck	5 days	Fri 5/1/26	Thu 5/7/26
928	7	Roof Install	4 days	Fri 5/8/26	Wed 5/13/26
937	7.1	Interior RI	36 days	Mon 4/13/26	Wed 6/3/26
939	7.1	UG Piping	5 days	Mon 4/13/26	Fri 4/17/26
938	7.1	Interior Stud Framing	4 days	Mon 4/20/26	Thu 4/23/26
940	**7.1**	**MEP Wall RI**	**3 days**	**Fri 4/24/26**	**Tue 4/28/26**
941	**7.1**	**Plumbing**	**3 days**	**Fri 4/24/26**	**Tue 4/28/26**
942	7.1	Santirary Waste and Vent	3 days	Fri 4/24/26	Tue 4/28/26
943	7.1	Domestic Water supply	3 days	Fri 4/24/26	Tue 4/28/26
944	7.1	Electrical	3 days	Fri 4/24/26	Tue 4/28/26
945	7.1	Top Out	1 day	Wed 4/29/26	Wed 4/29/26
946	**7.1**	**MEP Overhead RI**	**23 days**	**Thu 4/30/26**	**Wed 6/3/26**
953	7.1	Plumbing	5 days	Thu 4/30/26	Wed 5/6/26
954	7.1	Electrical	8 days	Thu 4/30/26	Mon 5/11/26
947	**7.1**	**HVAC**	**13 days**	**Thu 5/14/26**	**Wed 6/3/26**

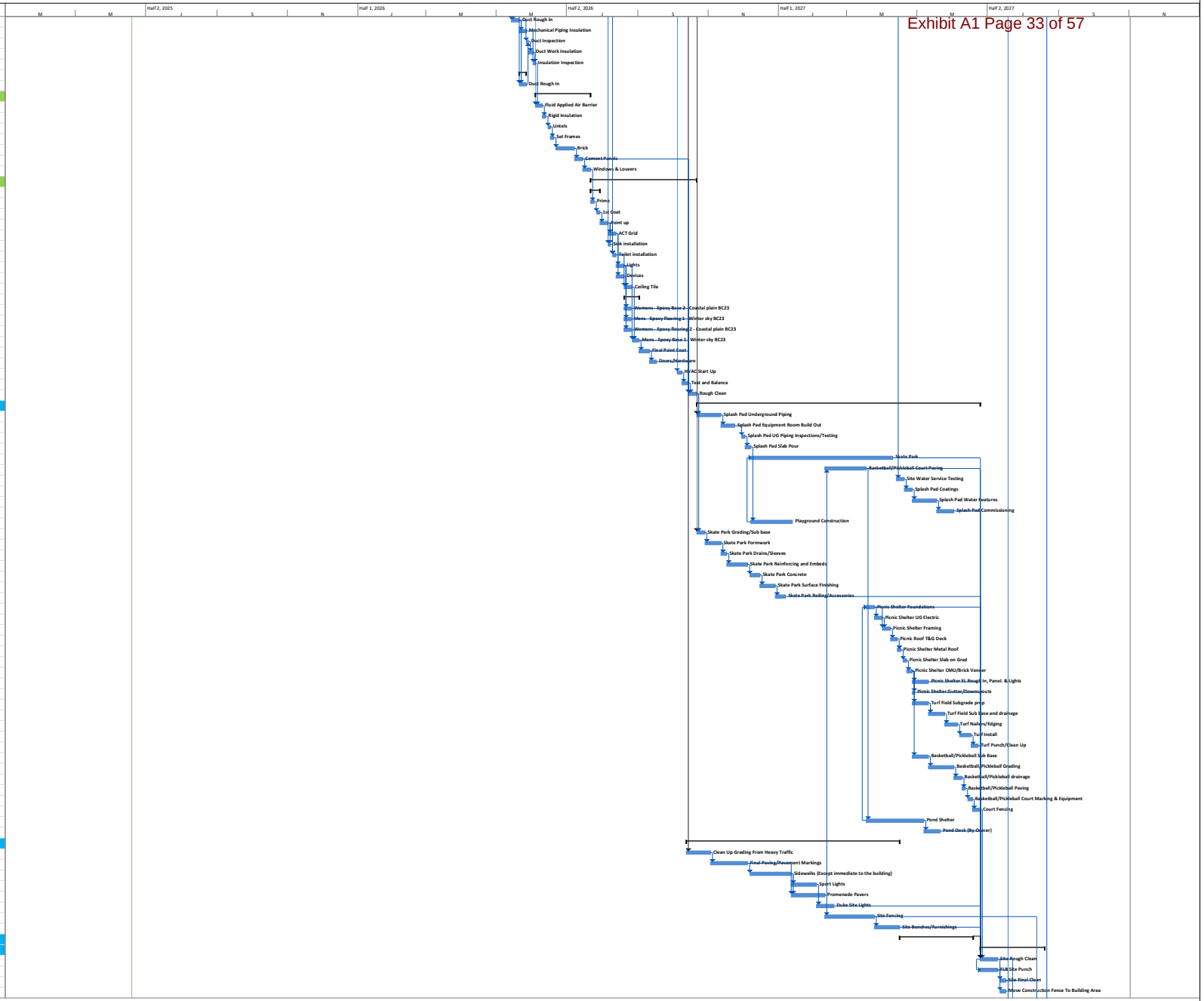


Project: EAGLES LANDING PARK - Town of Holly Springs
Schedule Print Date: Thu 6/19/25
Project Completion Date: Mon 11/1/27

BLUM CONSTRUCTION — EST. 1923 —

EAGLES LANDING PARK -Town Of Holly Springs

ID	WBS	Task Name	Duration	Start	Finish
950	7.1	Duct Rough In	5 days	Thu 5/14/26	Wed 5/20/26
951	7.1	Mechanical Piping Insulation	2 days	Thu 5/21/26	Tue 5/26/26
948	7.1	Duct Inspection	2 days	Wed 5/27/26	Thu 5/28/26
949	7.1	Duct Work Insulation	2 days	Fri 5/29/26	Mon 6/1/26
952	7.1	Insulation Inspection	2 days	Tue 6/2/26	Wed 6/3/26
955	**7.1**	**Pump Room - 101**	**2 days**	**Thu 5/21/26**	**Tue 5/26/26**
956	7.1	Duct Rough In	2 days	Thu 5/21/26	Tue 5/26/26
929	7.1	Exterior	32 days	Thu 6/4/26	Tue 7/21/26
930	7.1	Fluid Applied Air Barrier	4 days	Thu 6/4/26	Tue 6/9/26
932	7.1	Rigid Insulation	3 days	Wed 6/10/26	Fri 6/12/26
933	7.1	Lintels	2 days	Mon 6/15/26	Tue 6/16/26
934	7.1	Set Frames	3 days	Wed 6/17/26	Fri 6/19/26
935	7.1	Brick	10 days	Mon 6/22/26	Tue 7/7/26
936	7.1	Cement Panels	5 days	Wed 7/8/26	Tue 7/14/26
931	7.1	Windows & Louvers	5 days	Wed 7/15/26	Tue 7/21/26
957	7.2	Finishes	64 days	Wed 7/22/26	Wed 10/21/26
958	**7.2**	**Paint**	**6 days**	**Wed 7/22/26**	**Wed 7/29/26**
959	7.2	Prime	3 days	Wed 7/22/26	Fri 7/24/26
960	7.2	1st Coat	3 days	Mon 7/27/26	Wed 7/29/26
971	7.2	Point up	5 days	Thu 7/30/26	Wed 8/5/26
962	7.2	ACT Grid	5 days	Thu 8/6/26	Wed 8/12/26
972	7.2	Sink installation	2 days	Thu 8/6/26	Fri 8/7/26
973	7.2	Toilet installation	3 days	Mon 8/10/26	Wed 8/12/26
963	7.2	Lights	5 days	Thu 8/13/26	Wed 8/19/26
964	7.2	Devices	5 days	Thu 8/13/26	Wed 8/19/26
965	7.2	Ceiling Tile	5 days	Thu 8/20/26	Wed 8/26/26
966	**7.2**	**Finished flooring**	**9 days**	**Thu 8/20/26**	**Tue 9/1/26**
968	7.2	Womens - Epoxy Base 2 - Coastal plain BC23	4 days	Thu 8/20/26	Tue 8/25/26
969	7.2	Mens - Epoxy flooring 1 - Winter sky BC23	4 days	Thu 8/20/26	Tue 8/25/26
970	7.2	Womens - Epoxy flooring 2 - Coastal plain BC23	4 days	Thu 8/20/26	Tue 8/25/26
967	7.2	Mens - Epoxy Base 1 - Winter sky BC23	4 days	Thu 8/27/26	Tue 9/1/26
975	7.2	Final Paint Coat	5 days	Wed 9/2/26	Thu 9/10/26
976	7.2	Doors/Hardware	4 days	Fri 9/11/26	Wed 9/16/26
961	7.2	HVAC Start Up	4 days	Mon 10/5/26	Thu 10/8/26
974	7.2	Test and Balance	4 days	Fri 10/9/26	Wed 10/14/26
977	7.2	Rough Clean	5 days	Thu 10/15/26	Wed 10/21/26
177	12	Site Amenities/Features	162 days	Thu 10/22/26	Thu 6/24/27
178	12.1	Splash Pad Underground Piping	15 days	Thu 10/22/26	Wed 11/11/26
201	12.1	Splash Pad Equipment Room Build Out	8 days	Thu 11/12/26	Mon 11/23/26
202	12.1	Splash Pad UG Piping Inspections/Testing	3 days	Mon 11/30/26	Wed 12/2/26
203	12.1	Splash Pad Slab Pour	3 days	Thu 12/3/26	Mon 12/7/26
216	12.1	Skate Park	80 days	Tue 12/8/26	Fri 4/9/27
200	12.1	Basketball/Pickleball Court Paving	25 days	Wed 2/10/27	Wed 3/17/27
204	12.1	Site Water Service Testing	5 days	Tue 4/13/27	Mon 4/19/27
205	12.1	Splash Pad Coatings	5 days	Tue 4/20/27	Mon 4/26/27
206	12.1	Splash Pad Water Features	15 days	Tue 4/27/27	Mon 5/17/27
207	12.1	Splash Pad Commissioning	10 days	Tue 5/18/27	Tue 6/1/27
215	12.2	Playground Construction	20 days	Tue 12/8/26	Tue 1/12/27
208	12.3	Skate Park Grading/Sub base	5 days	Thu 10/22/26	Wed 10/28/26
209	12.3	Skate Park Formwork	10 days	Thu 10/29/26	Wed 11/11/26
210	12.3	Skate Park Drains/Sleeves	3 days	Thu 11/12/26	Mon 11/16/26
211	12.3	Skate Park Reinforcing and Embeds	10 days	Tue 11/17/26	Fri 12/4/26
212	12.3	Skate Park Concrete	7 days	Mon 12/7/26	Tue 12/15/26
213	12.3	Skate Park Surface Finishing	5 days	Wed 12/16/26	Mon 12/28/26
214	12.3	Skate Park Railing/Accessories	5 days	Tue 12/29/26	Wed 1/6/27
179	12.5	Picnic Shelter Foundations	5 days	Thu 3/18/27	Wed 3/24/27
180	12.5	Picnic Shelter UG Electric	4 days	Thu 3/25/27	Wed 3/31/27
181	12.5	Picnic Shelter Framing	5 days	Thu 4/1/27	Wed 4/7/27
182	12.5	Picnic Roof T&G Deck	4 days	Thu 4/8/27	Tue 4/13/27
183	12.5	Picnic Shelter Metal Roof	3 days	Wed 4/14/27	Fri 4/16/27
185	12.5	Picnic Shelter Slab on Grad	3 days	Mon 4/19/27	Wed 4/21/27
186	12.5	Picnic Shelter CMU/Brick Veneer	3 days	Thu 4/22/27	Mon 4/26/27
184	12.5	Picnic Shelter EL Rough In, Panel. & Lights	10 days	Tue 4/27/27	Mon 5/10/27
187	12.5	Picnic Shelter Gutter/Downspouts	2 days	Tue 4/27/27	Wed 4/28/27
189	12.6	Turf Field Subgrade prep	10 days	Tue 4/27/27	Mon 5/10/27
190	12.6	Turf Field Sub base and drainage	10 days	Tue 5/11/27	Mon 5/24/27
191	12.6	Turf Nailers/Edging	8 days	Tue 5/25/27	Fri 6/4/27
192	12.6	Turf Install	8 days	Mon 6/7/27	Wed 6/16/27
193	12.6	Turf Punch/Clean Up	4 days	Thu 6/17/27	Tue 6/22/27
194	12.7	Basketball/Pickleball Sub Base	10 days	Tue 4/27/27	Mon 5/10/27
195	12.7	Basketball/Pickleball Grading	15 days	Tue 5/11/27	Tue 6/1/27
196	12.7	Basketball/Pickleball drainage	5 days	Wed 6/2/27	Tue 6/8/27
197	12.7	Basketball/Pickleball Paving	3 days	Wed 6/9/27	Fri 6/11/27
198	12.7	Basketball/Pickleball Court Marking & Equipment	4 days	Mon 6/14/27	Thu 6/17/27
199	12.7	Court Fencing	5 days	Fri 6/18/27	Thu 6/24/27
217	12.9	Pond Shelter	35 days	Thu 3/18/27	Thu 5/6/27
188	12.9	Pond Dock (By Owner)	10 days	Fri 5/7/27	Thu 5/20/27
218	13	Site Finishes (For Park TCO)	120 days	Tue 10/13/26	Thu 4/15/27
219	13	Clean Up Grading From Heavy Traffic	15 days	Tue 10/13/26	Mon 11/2/26
220	13	Final Paving/Pavement Markings	20 days	Tue 11/3/26	Fri 12/4/26
221	13	Sidewalks (Except immediate to the building)	20 days	Mon 12/7/26	Mon 1/11/27
222	13	Sport Lights	15 days	Tue 1/12/27	Tue 2/2/27
224	13	Promenade Pavers	20 days	Tue 1/12/27	Tue 2/9/27
223	13	Duke Site Lights	10 days	Wed 2/3/27	Wed 2/17/27
225	13	Site Fencing	30 days	Wed 2/10/27	Wed 3/24/27
226	13	Site Benches/Furnishings	15 days	Thu 3/25/27	Thu 4/15/27
174	14	Landscaping	45 days	Thu 4/15/27	Fri 6/18/27
997	15	Site TCO	39 days	Fri 6/25/27	Thu 8/19/27
998	15	Site Rough Clean	10 days	Fri 6/25/27	Fri 7/9/27
1001	15	FLB Site Punch	10 days	Fri 6/25/27	Fri 7/9/27
999	15	Site Final Clean	5 days	Mon 7/12/27	Fri 7/16/27
1000	15	Move Construction Fence To Building Area	5 days	Mon 7/12/27	Fri 7/16/27



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BLUM CONSTRUCTION — EST. 1923 —

EAGLES LANDING PARK -Town Of Holly Springs

ID	WBS	Task Name	Duration	Start	Finish
1002	1S	Designer Site Punch Walk	4 days	Mon 7/19/27	Thu 7/22/27
1003	1S	FLB Complete Site Punch For Amenities	15 days	Fri 7/23/27	Thu 8/12/27
1004	1S	Site Inspectons for TCO	5 days	Fri 8/13/27	Thu 8/19/27



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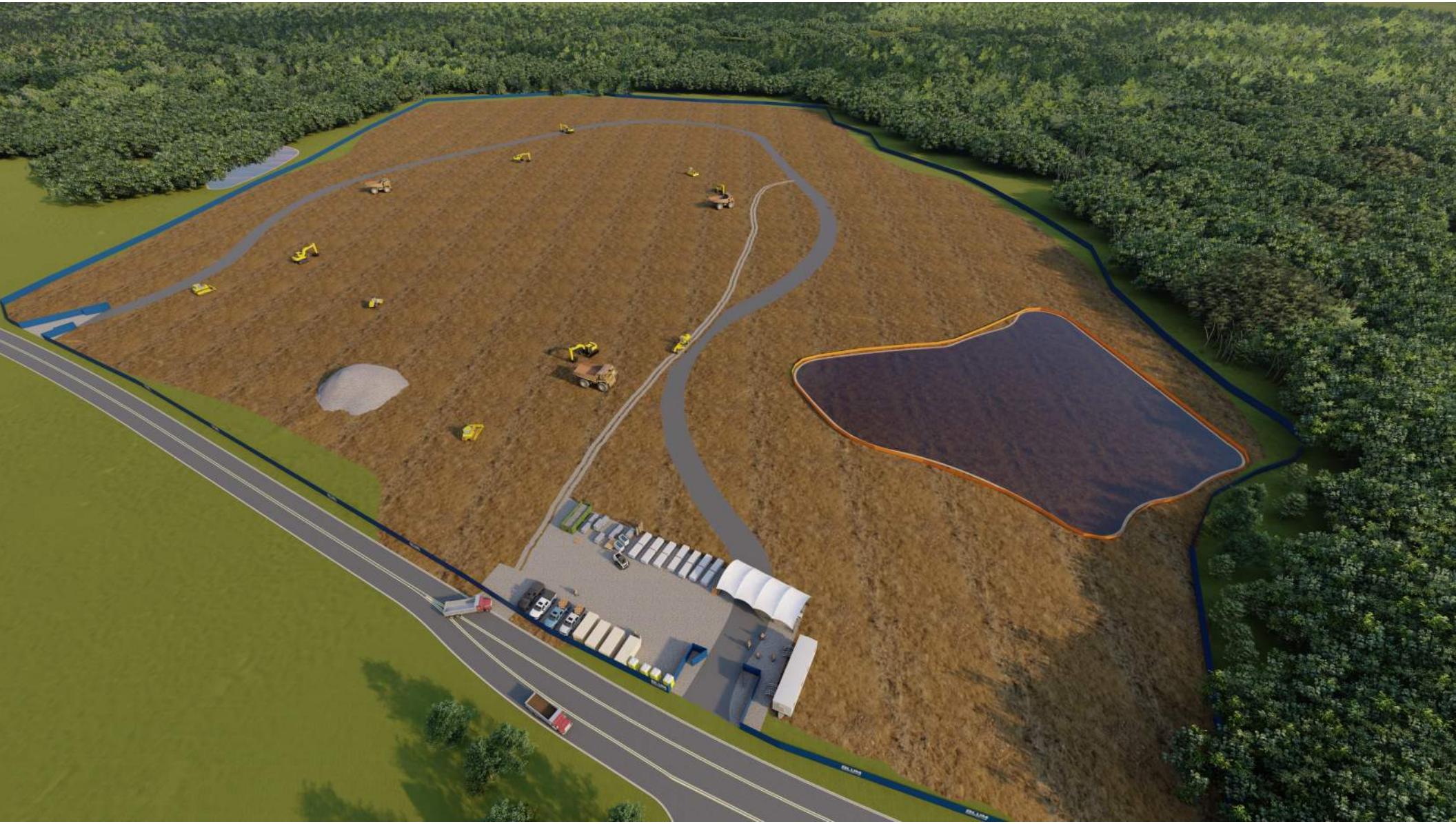
Section 5
Site Logistics



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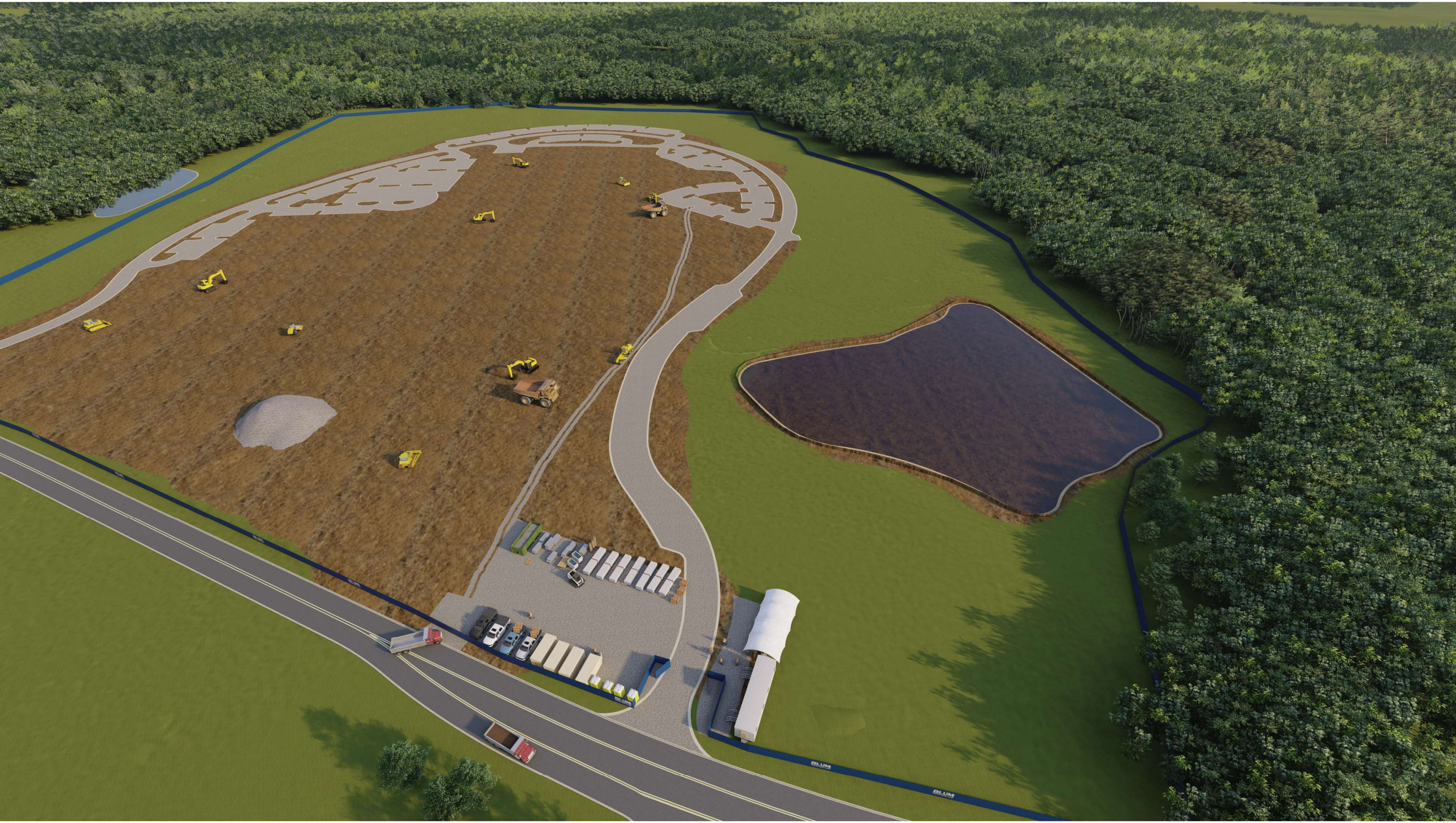
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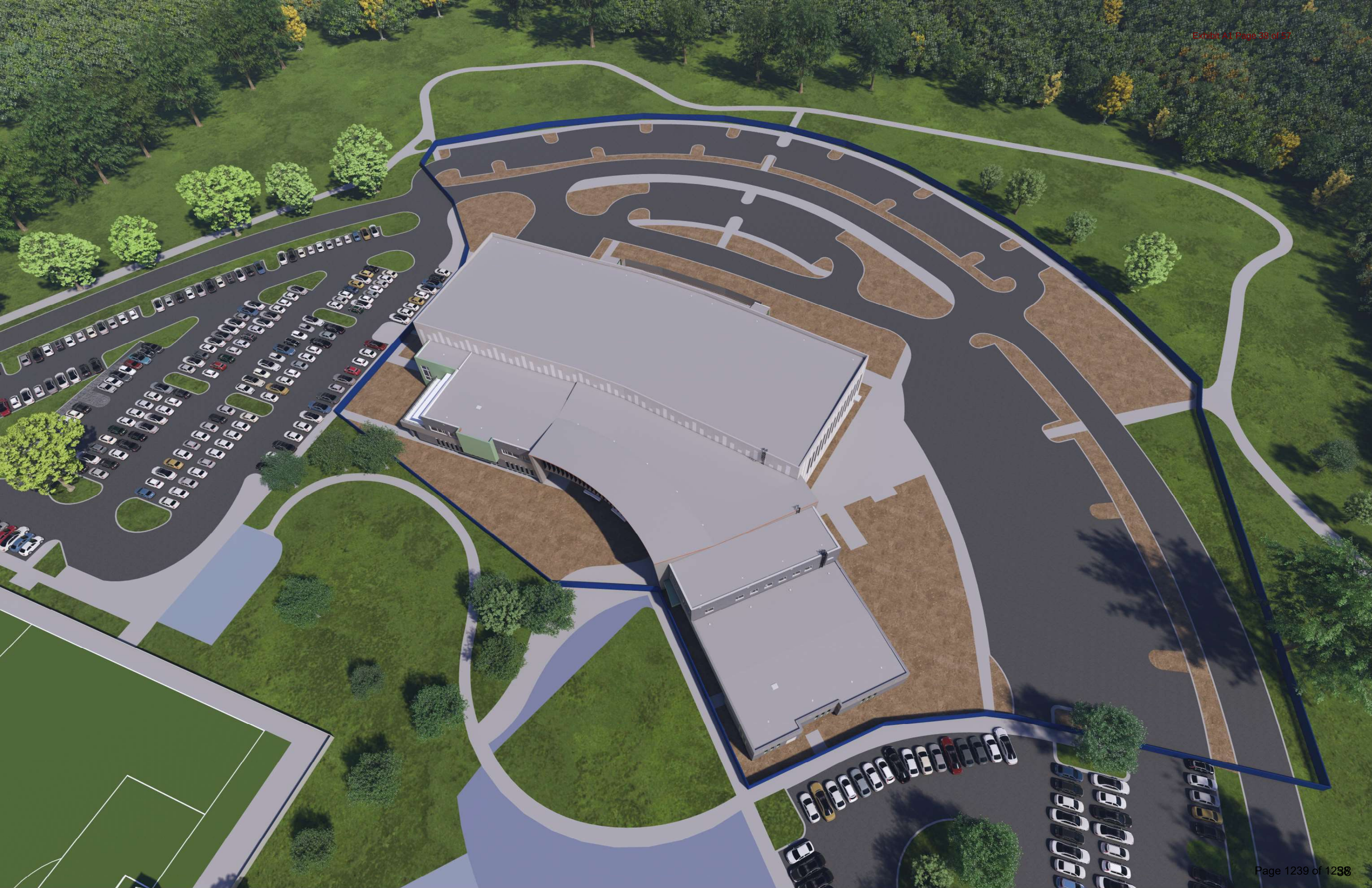

Section 6

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G000B	COVER SHEET - VOLUME 2	03/28/25	-	05/19/25	-
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G002	CODE SUMMARY	03/28/25	-	05/19/25	-
G003	LIFE SAFETY PLAN - FIRST FLOOR	03/28/25	-	05/19/25	-
G004	LIFE SAFETY PLAN - SECOND FLOOR	03/28/25	-	05/19/25	-
G005	RATED ASSEMBLY PLAN - FIRST FLOOR	03/28/25	-	05/19/25	-
G006	RATED ASSEMBLY PLAN - SECOND FLOOR	03/28/25	-	05/19/25	-
G007	UL DETAILS	03/28/25	-	05/19/25	-
G008	UL DETAILS	03/28/25	-	05/19/25	-
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G013	UL DETAILS	03/28/25	-	05/19/25	-
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A004	OVERALL FLOOR PLAN - FIRST FLOOR	03/28/25	-	05/19/25	-
A005	OVERALL FLOOR PLAN - SECOND FLOOR	03/28/25	-	05/19/25	-
A006	OVERALL ROOF PLAN	03/28/25	-	05/19/25	-
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A101	FLOOR PLAN - FIRST FLOOR AREA B	03/28/25	-	05/19/25	-
A102	FLOOR PLAN - FIRST FLOOR AREA C	03/28/25	-	05/19/25	-
A103	FLOOR PLAN - FIRST FLOOR AREA D	03/28/25	-	05/19/25	-
A104	FLOOR PLAN - FIRST FLOOR AREA E	03/28/25	-	05/19/25	-
A105	FLOOR PLAN - SECOND FLOOR AREA A	03/28/25	-	05/19/25	-
A106	FLOOR PLAN - SECOND FLOOR AREA B	03/28/25	-	05/19/25	-
A107	FLOOR PLAN - SECOND FLOOR AREA C	03/28/25	-	05/19/25	-
A108	FLOOR PLAN - SECOND FLOOR AREA D	03/28/25	-	05/19/25	-
A109	FLOOR PLAN - SECOND FLOOR AREA E	03/28/25	-	05/19/25	-
A110	RCP - FIRST FLOOR AREA A	03/28/25	-	05/19/25	-
A111	RCP - FIRST FLOOR AREA B	03/28/25	-	05/19/25	-
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A113	RCP - FIRST FLOOR AREA D	03/28/25	-	05/19/25	-
A114	RCP - FIRST FLOOR AREA E	03/28/25	-	05/19/25	-
A115	RCP - SECOND FLOOR AREA A	03/28/25	-	05/19/25	-
A116	RCP - SECOND FLOOR AREA B	03/28/25	-	05/19/25	-
A117	RCP - SECOND FLOOR AREA C	03/28/25	-	05/19/25	-
A118	RCP - SECOND FLOOR AREA D	03/28/25	-	05/19/25	-
A119	RCP - SECOND FLOOR AREA E	03/28/25	-	05/19/25	-
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A201	BUILDING ELEVATIONS	03/28/25	-	05/19/25	-
A202	BUILDING ELEVATIONS	03/28/25	-	05/19/25	-
A300	BUILDING SECTIONS	03/28/25	-	05/19/25	-
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A311	PRECAST PANELS ELEVATIONS	03/28/25	-	05/19/25	-
A312	PRECAST PANELS ELEVATIONS	03/28/25	-	05/19/25	-
A313	PRECAST PANELS ELEVATIONS	03/28/25	-	05/19/25	-
A314	PRECAST PANELS ELEVATIONS, DETAILS & SCHEDULE	03/28/25	-	05/19/25	-
A320	WALL SECTIONS	03/28/25	-	05/19/25	-
A321	WALL SECTIONS	03/28/25	-	05/19/25	-
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A327	WALL SECTIONS	03/28/25	-	05/19/25	-
A328	WALL SECTIONS	03/28/25	-	05/19/25	-
A329	SECTION DETAILS	03/28/25	-	05/19/25	-
A330	SECTION DETAILS	03/28/25	-	05/19/25	-
A340	MOCKUP WALL DETAILS	03/28/25	-	05/19/25	-
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A362	ROOF DETAILS	03/28/25	-	05/19/25	-
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A402	ENLARGED PLANS - TOILETS	03/28/25	-	05/19/25	-
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A411	ENLARGED PLANS - COURT LAYOUT - AREA D	03/28/25	-	05/19/25	-
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A421	ENLARGED PLANS - STAIRS	03/28/25	-	05/19/25	-
A422	ENLARGED PLANS - STAIRS	03/28/25	-	05/19/25	-
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A431	STAIR SECTIONS	03/28/25	-	05/19/25	-
A432	STAIR SECTIONS & DETAILS	03/28/25	-	05/19/25	-
A433	STAIR SECTIONS & DETAILS	03/28/25	-	05/19/25	-
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A501	PLANS, ELEVATIONS & DETAILS - MAIN RECEPTION CANOPY	03/28/25	-	05/19/25	-
A502	PLANS, ELEVATIONS & DETAILS - FITNESS RECEPTION DESK	03/28/25	-	05/19/25	-
A503	ENLARGED PLANS, ELEVATIONS & DETAILS - CAFÉ	03/28/25	-	05/19/25	-
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A507	INTERIOR ELEVATIONS - GYMNASIUM	03/28/25	-	05/19/25	-
A508	INTERIOR ELEVATIONS - GYMNASIUM	03/28/25	-	05/19/25	-
A509	INTERIOR ELEVATIONS - GYMNASIUM	03/28/25	-	05/19/25	-
A510	INTERIOR ELEVATIONS - LOBBY	03/28/25	-	05/19/25	-

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A513	INTERIOR ELEVATIONS - LOBBY	03/28/25	-	05/19/25	-
A514	INTERIOR ELEVATIONS	03/28/25	-	05/19/25	-
A515	INTERIOR ELEVATIONS	03/28/25	-	05/19/25	-
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A703	STOREFRONT SCHEDULE	03/28/25	-	05/19/25	-
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A707	WINDOW WALL SCHEDULE	03/28/25	-	05/19/25	-
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A712	STOREFRONT DETAILS	03/28/25	-	05/19/25	-
A713	CURTAIN WALL DETAILS	03/28/25	-	05/19/25	-
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PROJECT MANAUAL					
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	Eagles Landing Park Project Manual - Volume 2 [744 pages] - DKA	03/28/25	-	05/19/25	-