



Agenda

1. Call to Order
2. Pledge of Allegiance
3. Invocation
4. Adjustment and approval of November 19, 2024 meeting agenda

RECOGNITIONS

5. NC Chapter of the American Planning Association Marvin Collins Award

REQUESTS AND COMMUNICATIONS

6. CSL Seqirus Update
7. South Wake Landfill Update
8. CAMPO - Blueprint for Safety Update
9. Downtown Alive Update

CONSENT AGENDA

10. October 8, 2024 workshop meeting, October 15, 2024 Business meeting, and October 29, 2024 joint meeting with Planning Board minutes
11. Monthly Budget Amendments and Grants
12. Stormwater Grant Application Resolution
13. Engineering Design & Construction Standards Supplement #11
14. FY25 Vehicle and Equipment Installment Finance Agreement

PUBLIC HEARINGS

15. Multi-jurisdictional Hazard Mitigation Plan

NEW BUSINESS

16. Theater Platform and Seat Replacement Contract - 2023 Parks Bond Project
17. Comprehensive Plan Update for Sections 4, 5, & 6

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: NC Chapter of the American Planning Association Marvin Collins Award

Strategic Priority Area: Growth Management & Economic Vitality
Vibrant Community

Staff Resource: Elizabeth Goodson, Development Services, Matt Beard, Parks & Recreation

Action(s):

No action required.

Explanation:

- Development Services and Parks & Recreation have been recognized with two awards from the North Carolina Chapter of the American Planning Association.
- The recently adopted Holly Springs Downtown Area Plan has been selected as the 2024 Marvin Collins Award recipient in the "Small Area Plan" category. This category recognizes projects that show high quality, originality, and innovation and that advance the science and art of planning.
- Eagles Landing Park has been selected as the 2024 Great Place – Great Healthy Place. This category celebrates community amenities that encourage activity and exploration such as a bicycle or greenway network, concerted efforts for social interaction and/or aging in place, access to locally-sourced foods, a commitment to sustainable ecosystems and the environment, or the active involvement of children in the community.
- The awards were presented at the 2024 APA-NC Conference in Greenville, NC on October 16.

Background:

- The Town has been recognized by the American Planning Association - NC over the last several years.
 - 2018 - Great Places Award, Great Street in the Making – Main Street
 - 2020 - Marvin Collins Award (Honorable Mention) – Land Use & Character Plan
 - 2023 - Marvin Collins Award – Comprehensive Transportation Plan
 - 2023 - Marvin Collins Award (Honorable Mention) – Northeast Gateway Master Plan
 - 2024 - Marvin Collins Award – Downtown Area Plan
 - 2024 - Great Places Award, Great Healthy Place – Eagles Landing Park

Funding Source(s):

N/A

Attachment(s):

None



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 6.

Requests & Communications

Title: CSL Seqirus Update

Strategic Priority Area: Growth Management & Economic Vitality

Staff Resource: Anna Murphy, Economic Development

Action(s):

No actions requested

Explanation:

- CSL Seqirus' Vice President of Manufacturing & Site Head, Jon Kegerise, will present an update about the company, provide an overview of the site operations, growth, pandemic preparedness and highlight their role in the community.

Background:

- CSL Seqirus, formerly Seqirus and Novartis, announced Holly Springs as its chosen location for its next pharmaceutical manufacturing facility in 2006 and opened its doors in 2009.
- Novartis was the first major life science company to locate in Holly Springs.
- CSL Seqirus is the largest cell-based influenza vaccine producer in the world and the first in the U.S.
- Located in the Holly Springs Business Park, CSL Seqirus employs approximately 1,100 workers.
- CSL Seqirus is a global leader in pandemic preparedness. They have a public private partnership with the Biomedical Advanced Research and Development Authority (BARDA) with the U.S. Government to assist with pandemic preparedness efforts. They announced their fifth BARDA Award in September in response to the Avian Influenza outbreak.
- In June 2022, the Town Council and staff participated in a ribbon cutting to celebrate the completion of a new \$156M manufacturing facility expansion that increased its capacity to supply the U.S. market with influenza vaccines.

Funding Source(s):

N/A

Attachment(s):

None



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 7.

Requests & Communications

Title: South Wake Landfill Update

Strategic Priority Area: Vibrant Community

Staff Resource: Paige Scott, Director, Public Works

Action(s):

Receive update.

Explanation:

- John Roberson with Wake County will provide an annual update on the South Wake Landfill (landfill), efforts to reduce the frequency and intensity of malodors associated with the landfill, and metrics on odor mitigation results.
- The regional landfill is owned by Wake County and operated by GFL Environmental.
- The landfill takes in garbage collected from Wake County's businesses and 1.1 million residents. Waste is only accepted from licensed haulers and nothing comes from outside Wake County. For residents, the landfill features a convenience center, a household hazardous waste facility and a multi-material recycling facility.
- The Town and County will continue collaborative efforts to advance odor mitigation and communication from the landfill.

Background:

- In 2018, the Council and Town staff began hearing increasing levels of community concern about landfill malodors.
- In response, at the February 2020 Mayor & Council Retreat, Council established a landfill odor mitigation committee co-led by two Council members.
- The purpose of the committee was to review County efforts to mitigate odor at the South Wake County Landfill and identify engagement opportunities with residents and County officials to advance odor mitigation efforts and elevate communication associated with the landfill.
- Following the Mayor & Council's 2020 annual retreat, the Council adopted Resolution 20-04 outlining Town Council's malodor concerns and requested a number of actions by Wake County and GFL Environmental to engage the Holly Springs community and use all innovative methods and investments to significantly reduce the frequency and intensity of malodors emanating from the landfill.
- As a result, the South Wake Landfill team has undertaken operational changes at the landfill, installed odor detection sensors to track and verify malodors, established a Wake County and Town working group, and increased communication efforts, including weekly reporting of potential malodor concerns in an effort to accurately report and mitigate odor. These efforts have led to a reduction in overall reported malodor complaints from

residents since 2018.

Funding Source(s):

N/A

Attachment(s):

None



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 8.

Requests & Communications

Title: CAMPO - Blueprint for Safety Update

Strategic Priority Area: Community Safety

Staff Resource: Chris Garcia, Development Services

Action(s):

Receive information.

Explanation:

- The Capital Area Metropolitan Planning Organization (CAMPO) along with NCDOT and VHB Engineering are working on the creation of a regional multi-modal safety action plan (known as the Blueprint for Safety). The plan will better inform the safety-related performance metrics for the region, and will better evaluate available safety data to determine priority areas for safety-improvement projects across multiple modes of travel in the region.
- Kenneth Withrow from the project team for the regional multi-modal safety action plan (Blueprint for Safety) will present progress made on the plan as the project is roughly halfway through completion and has gone through one phase of public engagement. The team will also share its plans for completing its analysis for the High Injury and Risk Networks.
- Town staff has been included in efforts for this plan including membership on a Core Technical Team (CTT) for the Western Wake area of the region and reviews of engagement and recommendation progress.

Background:

- The Blueprint for Safety will also meet the criteria for the Infrastructure Investment and Jobs Act (IIJA's) Safe Streets for All program and Increasing Safe and Accessible Transportation Options planning criteria, thus allowing member agencies to apply for additional implementation funding through that program.
- Results from this plan should be able to be incorporated into Town policies and plans to ensure that the town's transportation network becomes safer for all users of the network.

Funding Source(s):

- There are no Town funds involved in this project.

Attachment(s):

None



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 9.

Requests & Communications

Title: Downtown Alive Update

Strategic Priority Area: Vibrant Community
Growth Management & Economic Vitality

Staff Resource: Tyler Garner, Economic Development

Action(s):

No action requested.

Explanation:

- Downtown Alive is a newly established non-profit organization committed to nurturing a vibrant community hub where thriving businesses and residents connect to share in the spirit of the heart of Holly Springs.
- Downtown Alive Board Member, Chris Harol, will share an update and information about the organization, including the organization's mission, goals, and events.

Background:

- Founded in the summer of 2024, Downtown Alive is a newly established non-profit organization based in Downtown Holly Springs and led by downtown business and community leaders.
- Downtown Alive is currently hosting small-scale events in the Downtown area aimed at enhancing the awareness and identity of Downtown Holly Springs as a destination, while driving engagement, increasing activity and foot traffic, and improving the support for local businesses.
- A privately operated downtown business alliance has been envisioned by Town Council in its Strategic Plan as a way to continue strengthening the vitality and energy in the downtown area and provide an opportunity for greater liaising between the Town and the downtown business community. The Downtown Alive organization is proud to serve in a downtown business alliance capacity as a collective voice focused on Holly Springs' local downtown businesses.

Funding Source(s):

N/A

Attachment(s):

None



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 10.

Consent Agenda

Title: October 8, 2024 workshop meeting, October 15, 2024 Business meeting, and October 29, 2024 joint meeting with Planning Board minutes

Strategic Priority Area: Organizational Excellence

Staff Resource: Linda McKinney, Town Clerk

Action(s):

Approve the minutes of the October 8, 2024 workshop meeting, the October 15, 2024 business meeting, and the October 29, 2024 joint meeting with Planning Board.

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. 10.8.24 workshop minutes - DRAFT
2. 10.15.24 minutes - DRAFT
3. 10.29.24 Joint Mayor and Council and Planning Board Workshop minutes - DRAFT



MINUTES

The Holly Springs Town Council met in a workshop session on Tuesday, October 8, 2024, 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 five Councilmembers were present in the room as the meeting opened.

Council Members Present in the room: Mayor Sean Mayefskie, Mayor Pro Tem Dan Berry, Council members Tim Forrest, Danielle Hewetson, Annie Drees, and Chris Deshazor.

Council Members Absent: none.

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; John Schifano, Town Attorney; Kameron Womak, IT; Jesse Dixon, IT; Corey Petersohn, Director, Budget and Strategic Planning; Tina Stroupe, Director, Finance; Matt Beard, Parks and Recreation; Cassie Hack, Director, Communications and Marketing; Irena Krstanovic, Director of Economic Development; Greg Sponseller, Sustainability Coordinator; Kendra Parrish, Executive Director, Utilities & Infrastructure; Kimberly Keys, Utilities & Infrastructure; Carrie Kennedy, Utilities & Infrastructure; Bhavi Joshi, Utilities & Infrastructure; Elizabeth Goodson, Development Services; 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.

2. Eagles Landing Park Design Check-In

Carrie Kennedy, Utilities & Infrastructure, said that the purpose of this item was to provide updates on Eagles Landing Park project and solicit feedback on Council's recommended exterior elevation. She outlined the timeline of what had happened to date, where the project is now, and what items were to come. She said the project is on schedule at this time.

Matt Beard, Parks and Recreation showed the updated site plan, summarizing the amenities that would be included and those that would be bid alternates. He said the public art was something that had received a substantial amount of public engagement and was not a bid alternate. He showed where the three water drop statues would be, and some updates on their wording. He outlined the inspiration given to the architects for the design of the rec center: bald eagle, creeks & springs, wind blowing through trees. He then showed two options for the elevation of the recreation center and walked through how each reflected these sources of inspiration.

Ms. Kennedy gave an overview of the floor plan for the rec center. She said the farmhouse on the property was sold in an open bidding process and will be removed by a professional house moving firm later this month to a place outside of Holly Springs town limits, where it will serve as the primary residence of the purchaser. She asked for Council's preference between the two front elevation/entryway designs.

Council discussed the placement of the town logo, and how a door at the rear would mirror the main entrance. They asked for information on the functionality of the fins and were

told that they are fixed, but the way the building is angled they would block the sun and assist in cooling the lobby. They discussed that staff was pursuing naming rights so the building could eventually be named “The so-and-so Recreation Center at Eagles Landing Park.” Council asked about pricing and staff said that materials had not been chosen yet so they did not have any numbers, but the two options would likely cost about the same.

Council’s consensus was to go with Option A.

Ms. Kennedy said next steps would be bringing a Guaranteed Maximum Price (GMP) for site grading, utilities, and roadwork to Council at their November meeting, and taking the request for the first half of the Bond to the Local Government Commission in January of 2025.

3. Composting Overview

Greg Sponseller, Sustainability Coordinator, said this item was to respond to Council’s request for information about composting and organics collection options. He defined composting and said benefits to the Town include diverting waste from the landfill, reducing municipal solid waste hauling costs, reducing strain on sewer, pump systems and the wastewater treatment plant, and creating organic fertilizer that can be used locally.

Mr. Sponseller explained what options exist in Holly Springs now and what neighboring municipalities offer. He said we could leverage existing resources without requiring excessive staff time or funding by: updating the website to include educational resources and information about existing collection sites and programs; promoting the County convenience center’s drop-off option; formalizing the Farmers Market drop-off program; promoting the annual County compost bin sale; and exploring partnerships with community experts for resident workshops. He said that future options which would require more resources could include a town-owned drop-off site serviced by a private hauler. This could be at the yard waste convenience center, the Ops Campus or at a park. There could be a curbside residential collection program, serviced either by a private hauler or the Town; or the transfer site could be upfitted to receive and process organic material. Mr. Sponseller asked for Council’s feedback on short- and long-term options.

Council discussed the short-term options, and consensus was to provide education on the website and information about existing resources. They asked staff to continue to explore what would be necessary to do any of the long-term options. Council member Drees added that there will be composting at Sugg Farm as part of the community garden, so that should be integrated into the educational piece.

4. Avent Ferry Road Phase II Update

Kendra Parrish, Utilities and Infrastructure, said this item was to share an update on the state’s Avent Ferry Rd. Phase II widening project and components of an existing municipal agreement between the Town and NCDOT to administer design and construction for the project. She reminded Council that this concerned the area between Ralph Stephens Rd. and the Cass Holt Rd. area, although the Town has explored with NCDOT extending it to Holly Meadow Drive. Ms. Parrish said that this project was included on the 2024-2033 Statewide Transportation Improvement Program (STIP). The proposed cross section for the .69-mile segment between Ralph Stephens Rd. and Cass Holt Rd. includes a 4-lane median divided highway with sidewalk on both sides. The Municipal Agreement between NCDOT and the Town was executed in 2017 and is set to expire in 2025. The current cost estimate provided by NCDOT (100% reimbursement) is \$17.3 million, however staff will be meeting with NCDOT soon for a more inclusive final budget. Staff would like to make sure this gets done and paid for by DOT, which means a new Municipal Agreement.

Ms. Parrish outlined the risks and advantages of moving forward. The municipal agreement is likely less than half of the funds needed to complete the project, however, the allocated funds are enough to advance design and right-of-way (ROW). It will require internal resources to manage and deliver the project, but it accelerates design and ROW acquisition and therefore will provide the town with a shovel-ready project for additional funding consideration, and increase the chance of the project being higher on the STIP. Without extending the Municipal Agreement, the committed funding is in jeopardy and the project may fall off the STIP and would likely be delayed to beyond 2029. Reimbursements will occur for project expenses up to \$7.3 million without requiring project completion. But NCDOT cannot commit to additional funding beyond the municipal agreement.

Ms. Parrish said that staff recommendation is to move forward with the project design and right-of-way based on allocated funding in the existing municipal agreement. This will position the project to gain priority in the upcoming STIP.

Council asked about the timeline. Ms. Parrish said construction would start in 2027 and complete in 2029. There was discussion of what would happen if certain parcels along the area develop, and that this is a necessary road improvement that cannot wait. Consensus was to pursue this and update the municipal agreement.

Randy Harrington, Town Manager reminded them that part of our posture with NCDOT is that we are advancing the design, but we are not going to fund any part of their road. They need to fund it and fund any cost overruns if we are going to administer it.

5. Downtown Investment Grant (DIG) Policy Finalization

Irena Krstanovic, Economic Development, said that this item was coming back to the workshop at Council's request for final feedback and direction. She said that after the last workshop the three things they heard were altering the targeted industries; make it easier for small businesses; and clarify the application process. The targeted industries had been adjusted to remove Entrepreneurship and combine Arts, Entertainment, and Hospitality into one category. She reminded Council that businesses must fulfill at least 3 additional criteria to be considered. She said the proposed policy looked at two categories of investment opportunities: new construction/renovation or a tenant leasing within an existing building, with the dollar amounts being less for the second category. She walked through the step-by-step process for awarding a DIG, and the differences between the process depending on the amount requested and whether it was new construction/renovation, or a tenant. She said that funds would be earmarked at approval, but not paid out until the final acceptance of public infrastructure (in the case of construction/renovation) or after the issuance of the Certificate of Occupancy (in the case of a tenant upfit.)

Council discussed desiring transparency in the applications. They discussed how much was in the PAYGO fund and that awards could be given for partial amounts if the full amount was not available.

Consensus was to move forward.

Ms. Krstanovic said that the policy would be presented to Council at their October 15th meeting for final approval. Once approved, the updated DIG policy and online application would be launched on the Economic Development website.

6. Mayor & Council / Planning Board Joint Meeting Draft Agenda

Elizabeth Goodson, Development Services, said this item was intended to give a brief recap of the recent Planning Board training and to discuss topics for the upcoming Joint Meeting set for October 29th. She said that the Planning Board training centered on three broad areas. First was The Big Picture, which was an overview of the purpose of the Planning Board and its

interactions with staff. The second was the Planning Board's role in decision making, and what factors they should consider when making recommendations to Council. The third area was best practices meeting participation, ethics, and communication.

Ms. Goodson said that in setting up the agenda for the Joint Meeting, staff considered what was asked for by Council and submitted a draft agenda that covered three key themes: Information Sharing & Analysis; Decision Making Alignment; and Council Direction for the Planning Board.

Ms. Goodson said that Information Sharing & Analysis could involve discussing available tools and resources; staff reports and consistency analysis; or discussing changes or differences in information received by Planning Board and Town Council.

Council member Deshazor said he was interested in what should Planning Board Reps be presenting when they come before Council so that there is consistency between Planning Board Reps. Council member Drees said that in the notes Council gets from Planning Board it says "we discussed x" but there is no context, so we don't know where they ended up and whether a conclusion was reached or not. Ms. Goodson said that might be an issue with extraction by staff, but it brings up a good point on how we can convey the resolution of discussions. Council member Forrest said if they are looking for Council's opinion, it needs to be consensus or it gets confusing. MPT Berry said the feedback from the training was great and as we go into the next one, he would like to focus on discussion, so the Planning Board gets clear on our focus.

Ms. Goodson said that Decision Making Alignment could include discussing expectations for Planning Board's evaluation and recommendation; the differences and similarities in the scope of review; or discussing when might recommendation and decisions differ. We could also discuss how often staff recommendation doesn't match Planning Board's and why that happens.

Council discussed that Planning Board's feeling that they don't get the same information as Council is more of a level set, and the change in process may clarify that. Council member Forrest said he wants to make sure that the Planning Board feels free to be vocal on their thoughts and processes. Council member Drees said getting Planning Board's approved minutes prior to the Council meeting is an issue. Ms. Goodson said that staff would look into the logistics of that. Council member Forrest said he would like more detailed minutes from Planning Board.

Ms. Goodson said that Council Direction for Planning Board could involve discussing the role of Planning Board's evaluation of development projects when considering areas such as infrastructure impacts, density and housing choices, community perspective, and/or public input. She offered data regarding how often decisions differ and if that is meeting expectations. Sometimes the difference of opinion is a good thing in that they are viewing from a different lens. Planning Board may have questions for Council around this.

Ms. Goodson asked if there were any other topics of interest to Council. She asked if, given the limited time, what Council's priorities were for to focus the discussion.

Council member Drees asked if all the Planning Board was at the training. Ms. Goodson said that most of them were there. Mayor Mayefskie asked if Planning Board meetings were recorded. Ms. Goodson said they have audio used for production of minutes but have not maintained a recording. Council member Deshazor said we will appoint new Planning Board members in January, so it may be worth a shorter session after the new people are appointed. It creates relationships between Planning Board and Council, and that is what makes us better. Ms. Goodson said they used to invite Council to attend their orientation, prior to COVID and there is a great opportunity to reset that as we bring new members on.

Mayor Mayefskie asked if anyone had something pressing before we go into closed session. Council member Drees asked the Town manager if it would be possible to get an update on Composting in 6 months in a Friday briefing or a workshop. Mr. Harrington said staff could do that.

7. Closed Session: The Council entered into closed session, pursuant to N.C.G.S. 143-318.11(a)(4) to discuss three economic incentive packages, and pursuant to NCGS 143-318.11(a)(3) to discuss whether to opt out of a class action lawsuit.

Motion by: Forrest

Second by: Hewetson

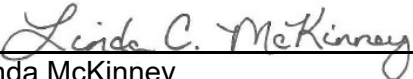
Vote: Unanimous

Motion to leave closed session was made by Council member Forrest seconded by Council member Deshazor and passed with a unanimous vote.

7. Adjournment:

Motion to adjourn was made by Council member Deshazor seconded by Council member Drees and passed with a unanimous vote. The October 8, 2024 workshop meeting of the Holly Springs Town Council was adjourned at 8:41 pm.

Respectfully Submitted on Tuesday, November 19, 2024.



Linda McKinney
Town Clerk



MINUTES

The Holly Springs Town Council met in regular session on Tuesday, October 15, 2024. 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, Mayor Pro Tem Dan Berry, Council members Timothy Forrest, Danielle Hewetson, Chris Deshazor, and Annie Drees.

Council Members absent: none.

Staff Members Present in Chambers: Randy Harrington, *Town Manager*; Scott Chase, *Assistant Town Manager*; Daniel Weeks, *Assistant Town Manager*; John Schifano, *Town Attorney*; Linda McKinney, *Town Clerk* (recording the minutes); Jeff Wilson, *Director, IT*; Kameron Womack, *IT*; Corey Petersohn, *Budget and Sustainability*; Cassie Hack, *Director, Communications and Marketing*; Chris Hills, *Director, Development Services*; Chris Garcia, Brett Gosney, and Catherine Jacobs, *Development Services*; Rachel Ingham, Michael Leonas, Chelsea Davis, and Tim Athy, *Utilities & Infrastructure*; LeeAnn Plumer, *Director, Parks and Recreation*; Matt Beard, *Parks and Recreation*; Irena Krstanovic, *Director, Economic Development*; Tyler Garner, *Economic Development*; Tina Stroupe, *Finance Director*; LeRoy Smith, *Fire Chief*; Kathy White, *Deputy Clerk*.

2. and 3. The Pledge of Allegiance was recited followed by an invocation by Pastor Jonathan Sherrod of Kirk of Holly Springs.

4. Agenda Adjustment: The October 15, 2024, meeting agenda was adopted with changes, if any, as listed: remove item 17 from the agenda.

Motion: Berry

Second: Forrest

Vote: Unanimous

RECOGNITIONS

5. Autism Acceptance Day

Mayor Mayefskie proclaimed November 9, 2024 as Autism Acceptance Day in Holly Springs and presented the proclamation to John and Kim Powell and their son Matthew. He recognized the efforts of the Holly Springs Police Department in sponsoring the Neurodiversity Resource Fair on that day with food trucks, games, superheroes, and a quiet room. Mr. Powell spoke a few words about living with autism.

6. William Ball IV, Powerlifter Champion

Mayor Mayefskie recognized William Ball, IV a Holly Springs High School graduate who represented the United States at the International Powerlifting Federation World Championships in Malta, winning gold and setting a new world record.

William spoke about his experience in Malta and the competition.

7. Recognition of Holly Springs Employees Responding to and Supporting Areas Affected by Hurricane Helene

Mayor Mayefskie recognized town employees who assisted with rescue, recovery, and other emergency support needs in the wake of Hurricane Helene, those who were deployed, and those who provided support here in town by assisting with loading trucks, back-filling shifts of deployed personnel, collecting donations and other activities. Mr. Harrington, Town Manager, spoke about how town employees felt about our colleagues in Western NC, and he recognized some of those who assisted with the effort.

REQUESTS AND COMMUNICATIONS

8. Holly Springs Chamber of Commerce Update

Tonya Palumbo, Executive Director of the Holly Springs Chamber of Commerce, shared highlights of the Town and Chamber partnership including a review of Governmental Support Program events and updates of enhancements to upcoming events. She said the Chamber supported a Downtown Social District.

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 Forrest and a unanimous vote. The following actions were affected:

9. Minutes – Council approved the minutes of the September 10, 2024 workshop and September 17, 2024 business meeting.

10. Monthly Budget Amendments – Council received the Town Manager approved budget amendment and approved budget amendments for Replacement Vehicles and Pump Station Repairs.

Copies of the budget amendments are attached to these minutes.

11. Voluntary Rescinding LAPP Funds for Avent Ferry Rd. Pedestrian Improvement – Council approved the letter to Capital Area Metropolitan Planning Organization returning Locally Administered Projects Program (LAPP) funds for the Avent Ferry Road Pedestrian Improvement Project.

12. Axon Taser Purchase Contract for Police Department – Council approved the Axon Taser sole source purchasing contract for a total of \$447,025 over five years.

13. Fujifilm Diosynth Biotechnologies Reclaimed Water Service Agreement Major User (MUA) – Council approved the Reclaimed Water Service Agreement Major User (MUA) for Fujifilm Diosynth Biotechnologies.

14. Wastewater Chemical Suppliers and Services Sole Sourcing – Council approved Evoqua Water Technologies LLC as sole source for odor and erosion control chemicals and chemical management; approved Evoqua Water Technologies LLC contract and rate schedule for Comprehensive Odor and Erosion Control Program; and approved Zeta Solutions LLC as a sole source for ZetaFloc polymer.

15. Acceptance of Supplemental Nutritional Assistance Program (SNAP) Grant Funding – Council accepted the award and adopted Grants and Special Revenue Fund Ordinance 24-34 to increase the Farmers Market budget to recognize a \$19,500 grant award to support individuals and families who are food insecure.

A copy of Ordinance 24-34 is attached to these minutes.

16. Signal Update Contract Amendments – Various Transportation Projects – Council awarded and authorized the Town Manager to sign and execute the Kimley-Horn design contract amendment #5 in the amount of \$12,000 for the Main St. Right Turn Lane Project; awarded and authorized the Town Manager to sign and execute the Kimley-Horn design contract amendment #1 in the amount of \$30,000 for the Holly Springs Rd. (Central) Project; and awarded and authorized the Town Manager to sign and execute the Summit Design & Engineering Services design contract amendment #6 in the amount of \$7,419 for the NC 55 Right Turn Lane Project.

PUBLIC HEARING

17. Symphonia Rezoning 22-REZ-10 and Development Agreement – withdrawn by the applicant

NEW BUSINESS

(item 18 was heard after item 19)

19. Main St. and NC 55 Right Turn Lane – Construction Contracts

Tim Athy, Utilities and Infrastructure, said this item is for approval of two contracts for the Main St. Right Turn Lane and NC 55 Right Turn Lane projects. He said these are separate contracts that were bid together to save the town money. He said the Main St. Right Turn Lane would add a northbound right-turn lane from Earp St. to Holly Springs Road. Benefits include improved northbound traffic flow and improved pedestrian safety and connectivity. He outlined the scope of the project and said it was one of the 2018 Transportation Bond Projects with \$780,000 in Federal LAPP grants. Construction is anticipated to begin by early 2025, finishing by early 2026.

Mr. Athy said that the NC 55 Right Turn Lane project was also a 2018 Transportation Bond project. It would extend the existing southbound right-turn lane from Main St. to Avent Ferry Road. Benefits would include improving southbound traffic flow and reducing the backup turning onto South Main St. This project includes signal improvements and received \$508,000 in LAPP Grant funding. Construction is anticipated to begin by early 2025 and be complete by early 2026.

Mr. Athy said that several strategies were used to reduce construction costs in addition to bidding the projects together. These include relocating the Duke power lines and light poles prior to construction and removing the diseased oak tree prior to construction. Bidding and constructing them together allowed the projects to come in under budget.

Council member Drees asked what impact was expected on through traffic. Mr. Athy said these projects will make through traffic much smoother because the right turners will not delay through traffic. Council member Drees asked if any lanes would be closed during construction. Mr. Athy said there would be times when a lane would have to be closed but there are two other lanes to use.

Action 1: Motion to award and authorize the Town Manager to sign and execute the construction contracts for the Main St. and NC 55 Right Turn Lane projects.

Motion by: Berry

Second by: Forrest

Vote: unanimous

Action 2: Motion to authorize the Town Manager to negotiate, sign, and execute any other required agreements to include construction engineering & inspections and contract administration, amendments, or change orders necessary to deliver the Main St. and NC 55 Right Turn Lane projects that are consistent with prior Council action, scope, and within the project budget and approved funding sources.

Motion by: Berry

Second by: Forrest
Vote: unanimous

18. Downtown Investment Grant Policy Update

Tyler Garner, Economic Development, said this item is to consider amendments to the Downtown Investment Grant (DIG) policy. He said the goal of the policy is to bring people downtown making the downtown more viable, lively, and active. The enhancements to the policy simplify the process making it open and easy for everyone who is eligible to apply. He explained the purpose of the DIG Policy and the two proposed Town investment opportunities. The first for new construction or renovation of existing buildings, and the second for a tenant within an existing building for upfit costs. He outlined the eligibility requirements concerning location in the downtown area and targeted business types, and said that applicants must fulfill at least three other criteria from a provided list. He reminded the public of the proposed process for the three possible levels of DIG and reiterated that funds are earmarked after approval, but not paid out until acceptance of public infrastructure or, in the case of a tenant, approval of a certificate of occupancy.

Mayor Mayefskie asked about the makeup of the DIG Committee. Mr. Garner said it would be comprised of directors of different departments in Town with a total of 6 members.

Council member Drees asked when the applications would go live. Mr. Garner said they will go live on November 1st.

Action: Motion to approve the Downtown Investment Grant Policy P-033.03 effective November 1, 2024.

Motion by: Deshazor
Second by: Forrest
Vote: unanimous

20. Ting Park to Oak Hall Greenway Professional Services Contract for Design

Matt Beard, Parks and Recreation, said this item is to award the design contract for the Ting Park to Oak Hall Greenway project. He said this is one of the six priority greenway projects identified by Town Council in 2021. The top priorities included Jones Park, which has been completed, this stretch of greenway, and the Camp Branch greenway, which is a potential 2023 Bond Project. This extension would run from Muses Mill Court to the existing greenway, approximately 1,050 feet. Because of the topography of the land, the exact distance may vary. The proposed contract is for Design and Engineering services, with an option to include construction administration / construction engineering and inspection services during construction.

Action 1: Motion to approve and award a contract for Professional Services to Benesch, Inc. in the amount of \$157,751 for the design of the Ting Park to Oak Hall Greenway project.

Motion by: Forrest
Second by: Deshazor
Vote: unanimous

Action 2: Motion to authorize the Town Manager to execute the contract and any necessary change orders for additional professional services as may be required for the project design phase (unforeseen conditions, etc.) not to exceed 14% of the contract amount (\$22,249) for a total value of \$180,000.

Motion by: Forrest
Second by: Hewetson
Vote: unanimous

Public Comment: At this time, an opportunity was provided for members of the audience who had registered to speak to address the Council, and the Clerk was asked for any written comments received prior to the meeting.

The following public comments were received in writing: none.

The following public comments were received in person: none.

OTHER BUSINESS

Council member Deshazor spoke about meeting the director of Western Wake Crisis Ministry (WWCM) at Compassion Day. He said 120 Holly Springs families are going to WWCM each month for food. He said it was very well run and if Council was interested in seeing the tour, he can help set it up. He reminded everyone that October was Breast Cancer Awareness Month.

Mayor Mayefskie said Holly Springs Fire Department has their Breast Cancer Awareness t-shirts for sale and the proceeds go to breast cancer research. They can be purchased at Fire Station 1.

Council member Drees said October is Domestic Violence Awareness Month and informed the public about the Interactive Wall and Candelight Vigil at the Law Enforcement Center. She thanked John Schifano for providing data on the Wake County NDO. She asked if there was consensus to have Wake County come to a workshop to give Council an update. Council member Deshazor said he was interested. No other Council members were interested, so there was not a majority.

Council member Hewetson asked if, based on the DIG discussion and the Chamber recommendation, it was worth bringing a Social District discussion to a workshop. Consensus was to bring it to a future workshop.

MPT Berry reminded the public that we provide grant funding to Western Wake and echoed that they do good work. Secondly, we rightfully thanked the first responders who went out west, but he wanted to give a shout out to 1st responders who were dealing with flooding here in town. He thanked everyone who was here working during that storm event. MPT Berry then said that he had spoken before about the playing field scheduling issues, where fields weren't exited on time and some coaches got aggressive. He said that the policy is if you rent a field, you are supposed to get it at the time reserved. He witnessed some difficulties in teams releasing the field when their time was up. He spoke to the leadership at Wake FC and they were receptive to the issue and acted quickly to provide buffer time and our staff also took action and for the last two weeks things have moved much more smoothly. He said we want to make sure that smaller groups aren't squeezed out by people who have been here longer. As we think about our usage agreements, let's keep that in mind. He thanked staff for addressing the concerns and the folks at Wake FC for being responsive to the issue.

Council member Forrest reiterated the thank you to the first responders who went to western NC. He said that HollyFest, his favorite festival, is coming up on October 26th. He encouraged everyone to be there. Lastly, he said the Farmers Market is year-round and he suggested that people stop by and enjoy the market.

MANAGER'S REPORT

Randy Harrington, Town Manager, said one thing he omitted to mention when we recognized our 1st responders was to recognize the two Chiefs who have both been heavily involved in the efforts to coordinate the assistance. On November 2nd the Battle of the Badges will be at the Farmers Market. Come out and taste the chili! He said that Patty Dressen is retiring after 22 years, and her celebration is on Oct. 30th at Ting Park.

Linda McKinney, Town Clerk, informed Council that there were openings on Tree Advisory Committee and Parks and Recreation Advisory Committee and requested direction on the timing of filling those openings. Council agreed to wait to advertise them until the Planning Board and Board of Adjustment openings were filled.

CLOSED SESSION: The Council entered into closed session, pursuant to N.C.G.S. 143-318.11(a)(9) to discuss cybersecurity and public safety issues, and N.C.G.S. 143-318.11(a)(5) to discuss possible negotiations regarding the acquisition of real property.

Motion by: Berry

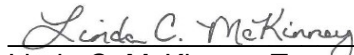
Second by: Forrest

Vote: Unanimous

Motion to leave closed session was made by Council member Forrest seconded by Council member Deshazor and passed with a unanimous vote.

Adjournment: Council member Forrest made a motion to adjourn at 9:10 pm. It was seconded by Council member Deshazor and passed with a unanimous vote.

Respectfully Submitted on Tuesday, November 19, 2024.



Linda C. McKinney, Town Clerk

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



MINUTES

The Holly Springs Town Council and Planning Board met in a joint workshop session on Tuesday, October 29, 2024 at the Law Enforcement Center. Mayor Mayefskie presided, calling the meeting to order at 6:00 p.m. A quorum was established as the Mayor, four Council members, and seven Planning Board Members were present in the room as the meeting opened.

Council Members Present: Mayor Sean Mayefskie, Mayor Pro Tem Dan Berry, Council members, Danielle Hewetson, Annie Drees, and Chris Deshazor.

Council Members Absent: Council member Tim Forrest.

Planning Board Members Present: Ernie Carpico, Van Crandall, Joanna Holder, Rick Madoni, Joseph Cuccurullo, Thomas Urquhart, and Sara Kempin

Planning Board Members Absent: Josh Prizer, Roger Bess

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; John Schifano, Town Attorney; Elizabeth Goodson, Sean Ryan, James Smith, Chris Taylor, Connor Ryan, Christopher Garcia, Brett Gosney, Daniel Pope, Cheryl Caines, Catherine Jacobs, Elliot Blonshine, Julie Nicewinter, Mackenzie Fretz, and Nikki St. Pierre, Development Services;

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

1. Welcome and Introductions: Mayor Mayefskie welcomed everyone and started the introductions.

2. Guided Discussion

Sean Ryan, Development Services, said that tonight was a forum for Council and Planning Board to discuss decision making, information sharing, and strategic direction. He outlined the differing responsibilities of the governing body versus an advisory board like the Planning Board and outlined the three areas of discussion on tonight's agenda.

a. Decision Making Alignment

Mr. Ryan said that in legislative cases NCGS 160D states that the Planning Board shall make a written recommendation to the governing board, but that the governing board is not bound by said recommendations. In quasi-judicial decisions, the statute states that while the Planning Board may provide a preliminary forum for review, "no part of the forum or recommendation may be used as a basis for the deciding board." He said that statistically, for cases between January 1, 2022 and September 1, 2024, Planning Board and Council have been aligned 94% of the time. He asked if this met expectations.

Council member Deshazor said he finds the discussions of Planning Board to be very helpful. Mr. Carpico said that 94% is a pretty high number. He asked what the differences were when the boards are not in agreement. Mr. Ryan said we would touch on that in a later section

of the discussion, but it is related to scope, and the different scope of Planning Board decisions versus Council decisions.

Ms. Holder said a high alignment was a good thing. Planning Board is there to provide guidance and if the percentage were lower Planning Board would not be doing their job. Mr. Madoni said that he thinks Council gets more information than Planning Board. Some of the things we complain about, the applicant then adjusts before bringing their project to Council, so he was surprised alignment was that high. Council member Hewetson said if it was much higher she would worry that Council wasn't doing their job. Having some discrepancy means we're looking at things deeply. Mr. Crandall said that if we are all following general statutes, then it should be a high percentage of alignment. John Schifano, Town Attorney, said that with legislative decisions there is no statutory requirement. You are passing a law. So there's no statute directing you. You have discretionary action so the 6% difference is discretion. Elizabeth Goodson, Development Services, said we might talk later about when you might want alignment to be different and when the same.

b. Information Sharing and Analysis

Ms. Goodson said that this section would be to outline how information and analyses is shared with both groups. She said that in general both groups get the same information. If there is additional information to Council it is generally in reaction to what was said at Planning Board.

Ms. Goodson said that using numbers from 2023 there were 97 general inquiries in the course of that year. These lead to 27 sets of "sketch plans" or "pre-submittals" where an applicant has decided a project is viable enough to proceed to the next step. From those, 23 proceeded to the stage where plans are submitted, and of those 23, 17 projects were approved. She said that most of the changes in staff reports between Planning Board and Town Council is due to reactions the applicant heard at Planning Board and adjusted before going to Council.

Ms. Goodson outlined the timeline of public input, from neighborhood meeting to staff review, to public hearing, to Planning Board meeting, to Council meeting. She said the move of the public hearing to before Planning Board may make for fewer changes between Planning Board and Town Council because the applicant would have received feedback sooner. She outlined the new Planning Board Action Report which is being provided to Council, focusing specifically on the issues and concerns discussed and the Plan Consistency Statement with summary of vote.

Ms. Goodson said that Planning Board does not get public comment as frequently as Council does. She said this might be a good time to discuss what Council does with public comments and how Planning Board can use that information.

Mr. Carpico said historically Planning Board gets very little public input and it would be helpful to us to receive that feedback. This will help the Planning Board make better decisions. Ms. Holder asked if notices go out when there is an adjacent neighborhood affected. Ms. Goodson said notice is tied to the public hearing, so moving the hearing will get those notices out earlier.

Mayor Mayefskie said some of the information may not be readily available and the applicant may change what's there. He asked how we get that information out to the public. Ms. Goodson said with the hearing before the Planning Board action the public will have the agenda packet and all the information in it. There won't be much time between the public hearing and the Planning Board meeting. Mr. Ryan said it depends on how substantial the change is. If it is substantial it will go on the development web page. A large change could also slow the process, making it go to a later set of meetings. And if they spoke at the public hearing the Town Clerk will have their contact information. Mr. Schifano said there can be another neighborhood meeting required if the change is substantial. Council member Drees said public input does not directly change her evaluation, but it gives her details to dig into to see how they affect the project. Council member Hewetson said public input should be used, but there are certain patterns that she notices, and they can affect her decision less, depending on the type of

development and where it is located. It should be used, but you have to use discretion on how to use it. Mr. Carpico said we will always get the “not in my backyard” comments; they won’t necessarily sway our decision. Ms. Kempin said that she has seen developers use the process and the input from neighbors to help them design what they bring before Planning Board and Town Council. Ms. Goodson said part of the reason for the multiple steps is so an applicant can address the concerns they hear from the public.

Council member Deshazor said he has learned in the last few months that residents will email a blanket email to all the elected officials, and we all respond in a different way. If you talk to the residents, you’re going to get different perspectives. We have to hear the residents, but they come to Council more than they do to Planning Board, and they may come to some of us but not all of us. That is still information.

Randy Harrington, Town Manager, said one of the challenges Council faces is weighing the private interest versus the public impact. Also, residents do not always have an awareness of what long-term plans are. That’s another piece Council has to weigh. Planning Board doesn’t have this tool, but Council can defer action. It’s a tool they have to negotiate, or to convey a message that there is potential, but the project is not there yet. It can be an effective tool.

Ms. Goodson outlined the Communication Protocol Policy of 2005 and its order of communication from Board member to Board Chair to Department Director to Town Manager to Town Council, and asked if this policy still met expectations. Mayor Mayefskie said he was aware of it working in the opposite direction. Mr. Schifano said we are a public body – everything we do is public and nothing is secret, but we have to run efficiently, so this policy was developed to make things move smoothly. It keeps things from being discussed among two individuals rather than between the two groups as a whole. It is a way of thinking about how we can communicate effectively. If something is important to the whole group, we want to make sure that there aren’t factions forming and that communications flows through the chairs. He said if it needed to be tweaked, it was Council’s policy, but it has served us well to this point. Ms. Holder said it was a great protocol and was contingent on trust. She trusts the Board Chair to communicate anything she shares. Council member Drees said she was glad we were sharing this.

Council member Deshazor brought up how the Planning Board representative shares information at Council meetings. Ms. Goodson asked him to share what would be most helpful. Council member Deshazor said he wants to hear what the discussion was about; was everyone for it; if not, how many dissented? That is good for Council to see. Council member Drees said that it is helpful if an issue is talked about, like tree preservation, that the conclusion be included, if there was one. Mayor Mayefskie asked if Planning Board meetings were videotaped. Mackenzie Fretz, Development Services, said they are videoed and saved until the minutes are approved and then the recording is deleted. Mayor Mayefskie asked if there was a way for Council to view the video. Mr. Harrington said it was doable. Council member Deshazor said that was not what he was asking for. He was looking at what a Planning Board representative reports at the Council meetings. Mr. Carpico asked if Council member Deshazor wasn’t getting the information he needed and was asking for a more consistent presentation. Council member Deshazor said he doesn’t need them to be consistent; he likes the different flavors. But he wanted to know if everyone is getting what they need. Ms. Goodson said the outcome of the Planning Board is the result of the vote, so that is what is reported in the staff report. Mr. Crandall discussed his process when he is the representative at a Town Council meeting. MPT Berry said he is getting what he needs from the report and the presenter. He is most interested in the dissent and the “why” of the dissent. He wants to be sure those voices are being heard, so please call out, if it is not unanimous, why the dissenting votes were cast.

c. Council Direction for Planning Board

Mr. Ryan, said this last section was to explore how the Planning Board can strengthen their advisory role for Town Council decision making. He discussed the streamlined staff reports

that provide a simplified and predictable format with maps and charts for easier reading. In addition, staff provides analysis of policy, plans, and adequacy of public infrastructure and services. He said staff has implemented recommendations based on the ordinance and policy compliance and best practices.

Mr. Ryan said that, using the same cases between January 1, 2022 and September 1, 2024, 69% of the time Planning Board's recommendation was unanimous, 17% of the time there was one dissent, and 15% of the time there were multiple dissents. He asked Council what story they thought it told if the vote was unanimous versus if there were dissents. Council member Hewetson said a unanimous vote feels easier, that there is less to read into the report. A unanimous Planning Board vote that matches the recommendation by staff gives her less of a feeling that she's missing something. If there is dissent she wants to know why the dissent and what they are thinking. MPT Berry said there are nine members on Planning Board and there should be different opinions. There are nine for a reason: you know different people; you live in different areas. Dissent is an important part of the process and he wants to see that. Council member Deshazor said that if Planning Board's recommendation is unanimous and he disagrees, then he really wonders. He said don't be afraid to dissent. It is helpful to the process.

Mr. Ryan said the Planning Board's scope of decision making was limited to whether a project was consistent with the Comprehensive Plan, whereas Council's scope included also whether a project is reasonable and in the public interest, and whether it meets broader town goals and strategies.

Mr. Crandall said sometimes when presentations come to Planning Board they are in a raw form. The slides are lacking some information or granularity, and the Planning Board will address those things, and when it comes before Council, the presentation can look really different. Mr. Ryan said you are observing our process at work. The applicant is getting feedback and concerns from you, and making sure that their plan addresses those concerns, or if the plan already does, that they highlight it better in their next presentation. With the public hearing moved before the Planning Board meeting, we may see those types of changes between the public hearing presentation and the Planning Board presentation.

Mr. Cuccurullo asked for greater clarity in Planning Board's role of using the Comprehensive Plan in decision making and how it intersects with the UDO. Mr. Ryan said the Comprehensive Plan is the big picture. It is where we are trying to go as a community. It is visionary and aspirational and does not bear the weight of law. The UDO is how we get there, and it is an ordinance. We often have that discussion around conditional zoning districts. Is the request of the applicant reasonable when compared with the Comprehensive Plan, does what they are asking for meet that vision? When you align those two things you can strengthen your advisory role.

Council member Drees asked if members felt more pressured not to dissent when there is a meeting with only five Planning Board members present. Mr. Carpico said it is unfortunate when we don't have all nine present. Five is a quorum but we don't have the vigorous discussions. Ms. Holder said she was comfortable dissenting even if there were just three members present. Mr. Crandall said we haven't had many meetings with just five. Ms. Kempin said all of our members feel free expressing themselves no matter how many are present. Mr. Crandall said there is generally a lot of dialogue. Mr. Carpico said more is better.

Mr. Madoni asked when the new process, with the hearing prior to the Planning Board meeting, would start. Mr. Ryan said probably around February or March as developers are allowed to choose the old way if they applied prior to the change. Staff is trying to steer them in that direction.

3. Open Discussion

Mr. Cuccurullo asked Council about their vision for the Town over the next 20 years. From the point of view of looking at upcoming projects, it would be good to have personal insight into where Council, the manager, and staff are on the main areas of focus for the next 20 years or so. Ms. Goodson said this is a big topic but there may be some who could try to address this. She said the Comprehensive Plan is a very large document, so think about how to use that tool. Council member Hewetson said that density is one of the big things in the Comprehensive Plan with areas of higher and lower density in different areas of town. MPT Berry said it's a balance and you will get different answers from everyone. He said the UDO was redone recently and we adopted it to agree with the new Comprehensive Plan. It is very much based on the character of the proposals. This was meant for us to be able to work with developers and get more public benefit out of development. That is what he is looking for in a Conditional District Zoning project. We can try to move them in one direction or another. We have base districts which are "by right" but we get more bang for buck out of Conditional Districts when we can get things done. We have so many "islands" that are not connected to each other. We can get things from a developer that help pay for infrastructure and provides a public benefit down the road. He said he voted against the Comprehensive Plan in 2019 because the southwest part of town was designated mixed-use and he didn't think the infrastructure could support it. He said he will never vote for a rezoning in that area because he doesn't think the infrastructure supports it. But every one of us will have a different view on what we want to get out of development.

Council member Hewetson said for her, what MPT Berry said is a catch-22. If you wait for infrastructure before development, it will never happen. In her mind development brings the infrastructure. She thinks that it comes back to the public interest. Is it going to bring something to the community that is beneficial and helps bring that infrastructure. So her decision would be based on what the applicants are bringing that is for the public good. She said that infrastructure comes with development, not before. The right kind of development can lessen the impact on the taxpayer.

Council member Drees said that ideally she would like Planning Board to make their decision independently of their prediction of Council's decision. Take the Comprehensive Plan into account and make your own decision.

Council member Deshazor said we all have our own ideas, but Planning Board should read their packet and talk to people and see what they are thinking. We all have different views. To him walkability and connectivity are priorities. Density gets a bad name, but it brings affordability. Don't vote on what you think Council would like. Vote your conscience and what you think is consistent with the Comprehensive Plan.

Mr. Cuccurullo said it was not his suggestion that they would temper their votes to Council's preferences, but understanding those preferences helps them. He said they can tailor their questions to applicants based on Council's priorities. These are things that can help them formulate questions, and tailor good reports to Town Council as the Planning Board Representative. It can help us vet projects at a higher level.

Council member Deshazor said his preference changes according to where in town a project is. Every development is different. Density has to be in the right place. Council member Drees said we're going to ask our questions; ask the ones you want. She said she prefers that Planning Board put their own expertise and their own visions into what they want to ask.

Mr. Crandall spoke about the benefits of roundabouts which he feels could provide more safety and traffic flow. Staff said that they consider all types of intersections and reminded him

that DOT roads require DOT approval, that roundabouts require more land, but that they are considered for those locations where it is the best option.

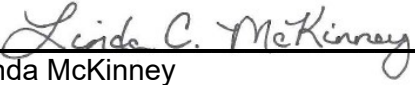
Mr. Madoni said if Council had an issue or wasn't hearing what they wanted to hear, to please bring it to the Planning Board. Ms. Kempin said this meeting was very useful. Council member Drees said if they have questions, to please reach out. We should follow the communication process, but if you have questions about why we voted, reach out.

Mr. Crandall recommended the UDO be amended to include a visual art plan.

4. Adjournment:

Motion to adjourn was made by MPT Berry seconded by Council member Deshazor and passed with a unanimous vote. The October 29, 2024 joint meeting of the Holly Springs Town Council and Planning Board was adjourned at 7:24 pm.

Respectfully Submitted on Tuesday, November 19, 2024.



Linda McKinney
Town Clerk



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 11.

Consent Agenda

Title: Monthly Budget Amendments and Grants

Strategic Priority Area: Organizational Excellence

Staff Resource: Corey Petersohn, Finance

Action(s):

Approve the following amendments and adopt associated project ordinances and resolutions:

- Amendment 1 - Human Resources Contract Services
- Amendment 2 - Human Resources Information System
- Amendment 3 - FY25 Fund Balance
 - PAYGO Capital Project Ordinance (24-35)
 - Utility PAYGO Capital Project Ordinance (24-36)
 - Town Building Fund Capital Project Ordinance (24-37)
 - Fire Station 4 Reimbursement Resolution (24-30)

Explanation:

- Town Council approval is required for any amendments that increase the total appropriation or the transfer of funds greater than \$50,000 between departments:
 - **Amendment 1 - Human Resources Contract Services:** this amendment appropriates \$31,236 for legal services provided to the Human Resources department last fiscal year.
 - Due to a clerical error from the vendor, this bill was not received until after the deadline for payment in fiscal year 2023-2024.
 - The associated appropriation for this bill fell to fund balance with the close-out of the previous fiscal year.
 - This amendment re-appropriates the necessary funds from unassigned fund balance while maintaining fund balance above the Town's fiscal policy and does not materially change the overall fund balance level.
 - **Amendment 2 - Human Resources Information System:** this amendment transfers \$60,000 from the Utility Fund and \$4,000 from the Stormwater Fund to the General Fund for the implementation of a new Human Resources information system.
 - This amendment is a technical correction on advice from the Finance Department and does not increase the total overall operating budget.
 - Initially, the system was to be paid from all three major operating funds, but for future cost allocation purposes, Finance staff advised it would be preferred to pay directly from just the General Fund and have the other operating funds transfer their respective portions.
 - **Amendment 3 - FY25 Fund Balance:** Appropriating General Fund unassigned

Town Council Business Meeting
November 19, 2024

fund balance per the FY25 Manager's Recommendation and Town Council's guidance at the November 12 Workshop to be used for the following PAYGO / Capital Projects:

- Fire Station 4 Land Acquisition - \$500,000
- Comprehensive Plan Updates - \$250,000
- Ting Parking Lot Repairs (initial phase) - \$250,000
- Ting Stadium Safety Net Extension - \$135,000
- Fire Station #2 Kitchen Renovation and Repairs - \$50,000
- The following items from the Manager's Recommendation have been deferred for future consideration:
 - Ting Park Offices / Restrooms Replacement
 - Downtown Area Plan Implementation / Enhancements
 - Town Holiday / Celebration Decorations and Enhancements
 - Gateway Signage
- Amendment 3 includes capital project ordinances for the General Fund PAYGO (pay-as-you-go), Utility PAYGO, and Town Building Fund to appropriate all transfers within their respective capital project funds.
 - The Utility PAYGO Ordinance includes a \$100,000 transfer from the General Fund PAYGO and \$199,909 in additional funds from Utility Reserves for the Comprehensive Plan updates (additional details on the contract for the Comprehensive Plan update are included in the consultant selection agenda item).
- Amendment 3 includes a reimbursement resolution for land acquisition for Fire Station 4. This resolution enables Town Council at a future date to reimburse the use of fund balance with a future bond issuance if it is financially beneficial.
 - The reimbursement resolution includes a not to exceed amount of \$500,000 for land acquisition; this is not a project budget and is only to preserve maximum future flexibility. The scope and amount of the resolution can be amended in the future by Council once a full project budget has been determined.

Background:

- All budget amendments maintain a balanced operating budget.
- Amendment 3 includes items presented by the Town Manager with the Recommended Budget and as presented at the November Council Workshop.
 - At the November 12 Workshop, Town Council directed reducing the recommended fund balance projects to only include:
 - Land Acquisition for Fire Station 4
 - Additional funds for the Comprehensive Plan updates
 - Ting Parking Lot Repairs (initial phase)
 - Ting Stadium Net Extension
 - Fire Station 2 Kitchen Repairs and Renovation
- Capital project ordinances appropriate all funds for all projects contained within the capital fund.
 - A summary of changes to all included capital ordinances is included as an attachment.

Funding Source(s):

- Amendment 1: Operating Budget - General Fund - Appropriation from Fund Balance
- Amendment 2: Operating Budget - General Fund / Utility Fund / Stormwater Fund
- Amendment 3: Operating Budget - General Fund - Appropriation from Fund Balance

Attachment(s):

1. Amendment 1 - HR Contract Services
2. Amendment 2 - HR Information System
3. Amendment 3 - FY25 Fund Balance
4. Summary or Ordinance Changes for Nov 19 2024
5. PAYGO Project Ordinance (24-35)
6. Utility PAYGO Project Ordinance (24-36)
7. Town Building Capital Project Ordinance (24-37)
8. Fire Station 4 Reimbursement Resolution (24-30)

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: Human Resources

Date: 11/19/2024

Reason for Budget Amendment:

This amendment appropriates \$31,236 for legal services provided to the Human Resources department last fiscal year.

Expense			
Account #	Account Description	Increase	Decrease
10-412-12-12.05	General Fund - Human Resources - Contract Serv.	\$ 31,236	
Total Expense:		\$ 31,236	\$ -

Revenue			
Account #	Account Description	Increase	Decrease
10-360.08	General Fund - Approp from Fund Balance	\$ 31,236	
Total Revenue:		\$ 31,236	\$ -

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: Human Resources / Information Technology

Date: 11/6/2024

Reason for Budget Amendment:

Adjustment to cost allocation for NEOGOV human resources information system. This transfers the Utility and Stormwater's portion of the purchase order to the General Fund.

Expense			
Account #	Account Description	Increase	Decrease
31-410-02.12	Stormwater Fund - Central Services		\$ 4,000
31-95	Stormwater Fund - Transfer out	\$ 4,000	
30-414-12.05	Utility Fund - Information Technology		\$ 60,000
30-95	Utility Fund - Transfer out	\$ 60,000	
10-412-12-12.05	General Fund - Human Resources	\$ 64,000	
Total Expense:		\$ 128,000	\$ 64,000

Revenue			
Account #	Account Description	Increase	Decrease
10-355.01	General Fund - Transfer In	\$ 64,000	
Total Revenue:		\$ 64,000	\$ -

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.

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:** 11/12/2024

Reason for Budget Amendment:

Small capital/PAYGO items funded with general fund unassigned fund balance per the Town Manager's FY25 Recommended Budget.

Expense			
Account #	Account Description	Increase	Decrease
10-95.11	Transfer out to PAYGO Fund	\$ 435,000	
10-95.46	Transfer out to Town Building Fund	\$ 500,000	
10-95.75	Transfer out to Utility PAYGO Fund	\$ 250,000	
Total Expense:		\$ 1,185,000	\$ -

Revenue			
Account #	Account Description	Increase	Decrease
10-360.08	General Fund - Approp from Fund Balance	\$ 1,185,000	
Total Revenue:		\$ 1,185,000	\$ -

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 of Capital Project Ordinance changes 11/19/24

Current Approved PAYGO Ordinance	\$9,387,824
Ting Parking Lot	\$250,000
Ting Net Extension	\$135,000
Firestation 2 Kitchen Renovations	\$50,000
PAYGO Capital Project Ordinance (24-35)	\$9,822,824

Current Approved Utility PAYGO Ordinance	\$5,156,700
Comprehensive Plan Updates – Fund Balance	\$250,000
Comprehensive Plan Updates – Transfer from General Fund PAYGO	\$100,000
Comprehensive Plan Updates – Utility Reserves	\$199,909
Utility PAYGO Capital Project Ordinance (24-36)	\$5,706,609

Current Approved Town Buildings Ordinance	\$65,291,561
Fire Station 4 Land Acquisition	\$500,000
Town Buildings Capital Project Ordinance (24-37)	\$65,791,561



Ordinance No. 24-35

Date Submitted: November 19, 2024

Date Adopted: November 19, 2024

**PAYGO Capital Project Ordinance
HOLLY SPRINGS, NORTH CAROLINA**

BE IT ORDAINED by the Town Council of Holly Springs, North Carolina, that, pursuant to Section 13.2 of Chapter 159 of the General Statutes of North Carolina, the following capital project ordinance is hereby adopted:

SECTION I: The project authorized by this ordinance consists of general government “pay-as-you-go” (PAYGO) capital projects related to downtown development, public facilities, Town projects, sidewalk and streets, Americans with Disabilities Act (ADA) improvements, vehicle replacements, park and playground amenities, public works projects, and one-time general government capital projects, infrastructure, and equipment.

SECTION II: The officers of this unit are hereby directed to proceed with the capital project within the terms of the budget contained herein.

SECTION III: PAYGO Fees shall be deposited directly into the fund effective November 19, 2024

PAYGO Fund	
Expenditures:	
General Fund PAYGO Projects	9,822,824
Total	9,822,824

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

PAYGO Fund	
Revenues:	
General Government Revenues	9,470,410
Federal Grants	190,588
Other Financing Sources - Leases	161,826
Total	9,822,824

SECTION V: The Finance Officer hereby directed to maintain within the project funds detailed accounting records.

SECTION VI: The Budget Officer is directed to include a detailed analysis of the past and future costs and revenues on this capital project in every budget submission made to the Town Council.

SECTION VII: The Town Manager or designee is authorized to amend expenditures within the fund for expenditures that are authorized per section I of this ordinance that do not change the total appropriation within the fund.

SECTION VIII: Copies of this capital project 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 IX: 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 November 19, 2024, in accordance with the laws of the State of North Carolina.

Adopted this, the 19th day of November 2024.

Town of Holly Springs by

Sean Mayefskie, Mayor

ATTEST:

Linda McKinney, Town Clerk





Ordinance No. 24-36

Date Submitted: November 19, 2024

Date Adopted: November 19, 2024

**Utility PAYGO Capital Project Ordinance
HOLLY SPRINGS, NORTH CAROLINA**

BE IT ORDAINED by the Town Council of Holly Springs, North Carolina, that, pursuant to Section 13.2 of Chapter 159 of the General Statutes of North Carolina, the following capital project ordinance is hereby adopted:

SECTION I: The project authorized by this ordinance consists of water and sewer enterprise fund “pay-as-you-go” (PAYGO) capital projects related to water and sewer system infrastructure, planning, studies, and capital assets.

SECTION II: The officers of this unit are hereby directed to proceed with the capital project within the terms of the budget contained herein.

SECTION III: The Utility PAYGO Fees shall be deposited directly into this fund effective November 19, 2024:

Utility PAYGO Fund	
Expenditures:	
Water and Sewer Projects	5,706,609
Total	5,706,609

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

Utility PAYGO Fund	
Revenues:	
Transfers In	5,206,609
Economic Development Grants	500,000
Total	5,706,609

SECTION V: The Finance Officer hereby directed to maintain within the project funds detailed accounting records.

SECTION VI: The Budget Officer is directed to include a detailed analysis of the past and future costs and revenues on this capital project in every budget submission made to the Town Council.

SECTION VII: The Town Manager is authorized to amend expenditures within the fund for expenditures that are authorized per section I of this ordinance that do not change the total appropriation within the fund.

SECTION VIII: Copies of this capital project 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 IX: 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 November 19, 2024, in accordance with the laws of the State of North Carolina.

Adopted this, the 19th day of November 2024.

Town of Holly Springs by

ATTEST:

Sean Mayefskie, Mayor

Linda McKinney, Town Clerk





Ordinance No. 24-37

Date Submitted: November 19, 2024

Date Adopted: November 19, 2024

**Town Building Capital Project Ordinance
HOLLY SPRINGS, NORTH CAROLINA**

BE IT ORDAINED by the Town Council of Holly Springs, North Carolina, that, pursuant to Section 13.2 of Chapter 159 of the General Statutes of North Carolina, the following capital project ordinance is hereby adopted:

SECTION I: The project authorized by this ordinance consists of construction of town buildings and general government capitalized assets.

SECTION II: The officers of this unit are hereby directed to proceed with the capital project within the terms of the budget contained herein.

SECTION III: Town Building Project Fees and Revenues shall be deposited in the fund effective November 19, 2024:

Town Building Project Fund	
Expenditures:	
Town Buildings Projects	65,791,561
Total	65,791,561

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

Town Building Project Fund	
Revenues:	
Limited Obligation Bond	57,162,357
State Grants	2,900,000
Transfers In	4,077,148
Other Revenue Sources	1,652,056
Total	65,791,561

SECTION V: The Finance Officer hereby directed to maintain within the project funds detailed accounting records.

SECTION VI: The Budget Officer is directed to include a detailed analysis of the past and future costs and revenues on this capital project in every budget submission made to the Town Council.

SECTION VII: The Town Manager is authorized to amend expenditures within the fund for expenditures that are authorized per section I of this ordinance that do not change the total appropriation within the fund.

SECTION VIII: Copies of this capital project 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 IX: 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 November 19, 2024, in accordance with the laws of the State of North Carolina.

Adopted this, the 19th day of November 2024.

Town of Holly Springs by

Sean Mayefskie, Mayor

ATTEST:

Linda McKinney, Town Clerk





Resolution No. 24-30

Date Adopted: November 19, 2024

Effective Date: November 19, 2024

**REIMBURSEMENT RESOLUTION
FIRE STATION NO 4 PROJECT**

BE IT RESOLVED by the Town Council of the Town of Holly Springs, North Carolina, as follows:

Section 1. The Town intends to undertake a project, advance its own funds to pay project costs, and then reimburse itself from financing proceeds for these early expenditures. The Finance Officer has advised the Council that it is desirable for the Council to adopt this resolution to document the Town's plans, in order to comply with certain federal tax rules relating to this type of reimbursement.

Section 2. The project consists of the land acquisition for a new fire station, known as Fire Station 4, and includes land acquisition, pre-liminary design costs, and any other civil engineering or professional services necessary for the determination and acquisition of an acceptable site, together with the payment of related financing costs and other necessary or incidental costs.

Section 3. The Town intends to finance the project. The expected type of financing (which is subject to change) is limited obligation bonds. The expected maximum amount of bonds or other obligations to be issued or contracted for the project is \$500,000.

Section 4. The Town intends that funds that have been advanced, or may be advanced, from the General Fund, or any other Town fund, for project costs will be reimbursed from the financing proceeds.

Adopted this, the 19th day of November 2024.

ATTEST:

Sean Mayefskie, Mayor

Linda C. McKinney, Town Clerk



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 12.

Consent Agenda

Title: Stormwater Grant Application Resolution

Strategic Priority Area: Growth Management & Economic Vitality

Staff Resource: Daniel Colavito, Utilities and Infrastructure

Action(s):

Adopt Resolution 24-31 authorizing the Town Manager to sign and submit an application for a Water Resources Development Grant for construction of the Womble Park Stormwater Retrofits project which, if awarded, requires a 50% non-federal match of up to \$200,000.

Explanation:

- The Town is requesting adoption of Resolution 24-31 to apply for funding for construction of Womble Park Stormwater Retrofits Project through the North Carolina Department of Environmental Quality (NCDEQ) for a Water Resources Development Grant, also known as a WRD Grant. The WRD grant requires, if awarded, a 50% non-federal match. This match not only includes capital funding, but may be matched by services in-kind, staff time and accessibility to aquatic recreation.
- The Town's WRD grant submission is for an estimated \$400,000 construction phase, which would be \$200,000 grant funded and \$200,000 Town funded.
- If awarded, the Town Manager anticipates recommending use of current Neuse River Basin Fee-In-Lieu funding to fund the Town's 50% match requirement.
- As part of the application process, the Town must submit a letter acknowledging the availability of the 50% match requirement.
- This action would only authorize the Town Manager to apply for the grant per the Town's grant policy. Final appropriation of all funds, including the Town 50% match, would come in a future Council action.

Background:

- As part of the Town's watershed management goals, Womble Park has been identified as an ideal location for stormwater retrofits to reduce pollution from previously untreated impervious surfaces, as well as for public education opportunities.
- A terraced bioretention area will be located on the northeast side of the park, with a regenerative stormwater conveyance replacing the currently eroded channel that runs through a portion of the park to the west.
- Both measures will have adjacent educational signage informing the public of their purpose and general information regarding pollution reduction.
- The Town has partnered with North Carolina State University Department of Biological and Agricultural Engineering for the preliminary design of this project.
- Middle Creek is the only water body in town listed by NCDEQ/EPA for impairment.

Funding Source(s):

Community Investment Plan - Stormwater Fee-in-Lieu

Attachment(s):

1. Resolution 24-31 NC DEQ Water Resources Grant Application



Resolution No. 24-31

Date Adopted: November 19, 2024

Effective Date: November 19, 2024

RESOLUTION FOR NC DEQ WATER RESOURCES GRANT APPLICATION

WHEREAS, the Town of Holly Springs desires to sponsor the Terraced Bioretention Area and Regenerative Stormwater Conveyance in Womble Park, to meet watershed management goals in the Upper Middle Creek Basin. These stormwater retrofits will reduce pollution into a tributary of Upper Middle Creek that is listed as impaired by the EPA/NCDEQ.

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

1. The Council requests the State of North Carolina to provide financial assistance to the Town of Holly Springs for the Terraced Bioretention Area and Regenerative Stormwater Conveyance in Womble Park in the amount of \$200,000 or 50% percent of the nonfederal project costs, whichever is the lesser amount;
2. The Council assumes full obligation for payment of the balance of project costs;
3. The Council will obtain all necessary State and Federal permits;
4. The Council will comply with all applicable laws governing the award of contracts and the expenditure of public funds by local governments.
5. The Council will supervise construction of the project to assure compliance with permit conditions and to assure safe and proper construction according to approved plans and specifications;
6. The Council will obtain suitable spoil disposal areas as needed and all other easements or rights-of-way that may be necessary for the construction and operation of the project without cost or obligation to the State;
7. The Council will assure that the project is open for use by the public on an equal basis with no restrictions;
8. The Council will hold the State harmless from any damages that may result from the construction, operation and maintenance of the project;
9. The Council accepts responsibility for the operation and maintenance of the completed project.

Adopted by the Holly Springs Town Council on this, the 19th day of November, 2024.

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#: 13.

Consent Agenda

Title: Engineering Design & Construction Standards Supplement #11

Strategic Priority Area: Vibrant Community

Community Safety

Organizational Excellence

Growth Management & Economic Vitality

Staff Resource: Sara Emig, Utilities and Infrastructure, Kendra Parrish, Utilities and Infrastructure

Action(s):

Approve Supplement #11 to the Engineering Design and Construction Standards (ED&CS).

Explanation:

- The purpose of the Engineering Design and Construction Standards (EDCS) is to present typical standards for typical conditions encountered in construction of public infrastructure (example: streets and sidewalks, water and wastewater and stormwater). The EDCS is an essential tool for the town to ensure quality, safety, consistency, and efficiency of engineered-designed construction.
- The EDCS updates provide additional clarity about the requirements for design and construction of infrastructure to ensure best, up-to-date materials and practices for efficient operation and maintenance.
- Supplement #11 to the EDCS includes:
 - Updated Section 3.00 Streets, Driveways, and Parking Lots to improve formatting and clarity of language
 - Replace references to Downtown Village District with Downtown Area
 - Added speed limit sign placement requirements in new developments
 - Updated number of dwelling units requiring secondary entrance to match anticipated Fire Code 2024 update
 - Added signpost requirements for consistency with Town Policy and UDO
 - Updated Section 6.00 Water Distribution, Section 7.00 Sanitary Sewer, and 11.00 Reclaimed Water Distribution System to update utility connections performed by licensed Contractor instead of Town of Holly Springs, Utilities & Infrastructure Department
 - Updated Section 10.00 Environmental references to be consistent with updated UDO
 - Various details updated for clarity and alignment with language in EDCS sections and other guidance documents

Background:

- The Engineering Design and Construction Standards (EDCS) are the specifications required by the Town as minimum standards for construction of public infrastructure, including but not limited to utilities, roadways, and greenways.
- Both private development and capital improvements are required to adhere to these standards to ensure a quality product is received upon acceptance into the town-maintained public infrastructure system.
- Establishing and consistently enforcing these requirements results in infrastructure that is more efficient and cost-effective to maintain.
- 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 #11 Summary of Changes
2. 3.00 Supp#11_Nov 2024
3. 6.00 Supp#11_Nov 2024
4. 7.00 Supp#11_Nov 2024
5. 10.00 Supp#11_Nov 2024
6. 11.00 Supp#11_Nov 2024
7. FINALIZED_Updated TOHS Std Details 10.31.24

**Engineering Construction and Design Standards
Supplement # 11 Log - November, 2024**

Section	Sub-Section	Item	Description
3.00	N/A	Table of Contents	Updated Table of Contents to match other section formats
	3.01	General	Changed hyphenations throughout document to be consistent with APA Style.
	3.01	General	Replaced instance of Downtown Village District with Downtown Area
	3.01	General	Revised all instances of "Executive Director of Utilities and Infrastructure Services" sans "Services"
	3.02-A	Design - Street Classifications for Town Specifications	Removed "major" before thoroughfares as there is no distinction between major and minor thoroughfares and no mention of minor thoroughfares.
	3.02-B	Design - Horizontal Street Design	Moved Figure 1 for curvature controls from greenway section to street design as it is more relevant. Renamed to Table 3.1 as it's more of a table than a figure. Revised references.
	3.02-I	Design - Sidewalks and Sidepaths	Added requirements that curb ramps shall be installed on both sides of any street where a sidewalk intersects.
	3.02-K	Design - Pavement Markings and Signage	Added section on speed limit sign placement requirements in new developments.
	3.02-N	Design - Roadway Network	Changed number of dwellings units requiring a secondary entrance from 50 to 100 to match anticipated Fire Code 2024 update
	3.03	Sight Distance	Multiple edits to clarify definition of a sight distance triangle, difference between stopping sight distance and intersection sight distance, revise tables to be more understandable and consistent with AASHTO guidelines.
	3.07	Traffic Control, Traffic Signals, and Street Name Signs & Posts	Added descriptions of signpost requirements including decorative post requirements as stated in town policy P-011.2 and the UDO. Added section on installation and maintenance responsibilities of upgraded signage.
	3.09	Pedestrian Crossing	Revised verbiage on decorative crosswalks in the Downtown Area so that they still are required to be MUTCD compliant.
	3.1	Street Trees	Replaced "Street tree shields" to "street tree root guards" to match UDO definitions.
	3.13	Small Wireless Telecommunications	Removed reference to the specific Section 8.01 H in the UDO as it is no longer in that section. Kept the reference to development standards.
6.00	6.01-B	Water Distribution Pipe- Design	Replaced "Master Water Plan of the Town of Holly Springs" with "Town's Comprehensive Plan"
	6.01 - D	Water Distribution Pipe- Installation	Reworded last paragraph to deter connections to water transmission mains and other mains that are highly sensitive and might compromise the integrity of the Town's service and system
	6.04-B	Water Service Taps - Individual Water Services	Replaced Town of Holly Springs and Utilities & Infrastructure Department with a licensed Contractor for service connections to existing and new water mains.
7.00	7.04 - B	Installation - Service Connections	Replaced Town of Holly Springs and Utilities & Infrastructure Department with a licensed Contractor for service connections to existing and new sewer mains.
10.00	10.06	Riparian Buffers	Replaced "Section 7.06 B., 4., e. Environmental Buffer Areas" with "Section 4.8.4 Riparian Conservation Buffers" for UDO reference update
	10.06 - A	Riparian Buffers - Mitigation	Replaced "Section 7.06D4e" with "Table 4.8.-C" for UDO reference update
11.00	11.03 - A	Reclaimed Water Service Taps - Design	Replaced Town of Holly Springs and Utilities & Infrastructure Department with a licensed Contractor for service connections to existing and new reclaimed water mains.

Revised DETAILS	Name
HS302	Updated detail to provide clarity and consistency with the CTP
HS333	Updated sight distance to match table provided in standards Section 3
HS337	Updated sight distance to match standards Section 3
HS340	Updated the Logo and changed "Engineering Department" to Town of Holly Springs
HS359	Updated detail name to "Standard traffic control and street name sign and posts" (Removed "For local, collector and minor thoroughfares" from end)
HS360	Standardized traffic control signs to match that to HS361
HS361	Updated detail name from "Traffic Control and Street Name Sign and Posts" to "Upgraded Traffic Control and Street Name Sign and Posts for Downtown"
HS369	Updated detail name from "Sign Post Foundation" to "Primary Gateway Sign Foundation"
HS370	Updated detail name from "Village District Pedestrian Light Fixture" to "Downtown District Pedestrian Light Fixture"
HS373	Updated detail name from "Secondary Gateway Sign Post Foundation" to "Secondary Gateway Sign Foundation"
HS374	Updated detail name from "Holly Springs Welcome Sign" to "Secondary Gateway Sign" and added new notes to detail
HS388	Corrected curb ramps to be angled correctly
HS398	New Detail- Primary Gateway Sign
HS501 (2 pages)	Updated detail name to "Tracer Wire-PVC Pressure Pipe (Reclaimed Water Main) and corrected detail to be an accurate depiction of standards section 5
HS502 (2 pages)	Removed Page 1 of 2 detail
HS503	Updated detail to provide clarity and consistency with Standards Section 5
HS504	Relocation of HS720 and updated for Standard Utility Marker Ball locations
HS601	Updated to stay consistent with standard section 6
HS633	Removed detail. It was replaced with Detail HS504
HS715	Updated to add6" of bedding as described in section 7
HS729	Removed detail. It was replaced with Detail HS504
HS1301	Updated detail name from "Pump Station Site Layout and minimum Dimensions" to "Pump Station Access and Buffers"
HS1302 (2 pages)	Updated detail name to "Pump Station Layout <10 HP" and provided additional notes for clarity.

**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

3.01 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 $1\frac{1}{2}$ 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:

$$\begin{aligned} L &= WS \text{ for posted speeds of 45 mph and greater} \\ L &= WS^2 \text{ for posted speeds of 40 mph or less} \\ L &= \text{Length in feet} \\ S &= \text{Speed in miles per hour} \\ W &= \text{Lateral offsets in feet} \end{aligned}$$

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 multi-family 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, $S_o = 0.49$ for flexible pavement and $S_o = 0.39$ 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 $\frac{1}{4}$ "/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 to determine 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 (d_1) 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 d_2 , d_3 , and d_4 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. Curb and Gutter, Driveways, Sidewalks, and Concrete Sidepaths

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 striping 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. Stop lines must be located 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. 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

END OF SECTION 3

**SECTION 6.00
WATER DISTRIBUTION**

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SECTION 6.00

WATER DISTRIBUTION

6.01 WATER DISTRIBUTION PIPE

A. General

Water system expansions shall meet all requirements of these standards. In addition, the *North Carolina Administrative Code Title 15A Chapter 18 Subchapter C – Water Supplies* (15A NCAC 18C) is hereby incorporated into the Town’s standards for water system expansions. This specification section identifies minimum equipment and construction requirements for water system expansions that are to be owned and operated by the Town of Holly Springs. This section does not address every aspect of water system expansion; it is the design engineer’s (Designer’s) responsibility to supplement these requirements as necessary to produce a complete set of plans and specifications.

All utility extension permits must be obtained prior to construction. Refer to the Town Code of Ordinances Section 16 for further requirements.

B. Design

Location: Water lines shall be extended along the entire roadway frontage length of any proposed project. All public water mains shall be located within dedicated right of way or dedicated easements with a minimum width of 20 feet. Landscape plantings, fences, or structures shall not be allowed within water line easements.

Sizing: Water lines shall be sized in accordance with the Town’s “Comprehensive Plan” or as directed by the Executive Director of Utilities and Infrastructure Services. In residential areas, mains shall be 6-inch and 8-inch diameters. Six-inch mains shall be used only when a good grid exists. The total maximum length of 6-inch and 8-inch line, without connection to a larger main, is 1200 feet and 2000 feet, respectively. Four-inch water mains are permitted on residential cul-de-sacs less than 400 feet long, if no hydrant is required. Where a sufficient grid network does not exist, lines shall be upsized additionally to provide adequate fire flow as directed by the Executive Director of Utilities and Infrastructure Services. If there is adjacent developable property, an adequate size line to properly serve future development shall be provided sufficient for any future project to meet Town standards.

C. Material

All water mains shall be ductile iron. The use of Polyvinyl Chloride (PVC) pipe must be approved by the Executive Director of Utilities & Infrastructure Services,

and, if approved, must be blue in color and conform to the specifications of AWWA C900. The Engineering Department will maintain a list of approved manufacturers of other water distribution products. New manufacturers must submit requests for approval to the Engineering Department. Additional information such as catalogs, list of installations in the area, or material samples may be required. A written response will be mailed to the applicant accepting or rejecting the product within 90 days of the receipt of all necessary information.

Ductile Iron Pipe shall be designed and manufactured in accordance with AWWA C150 and C151 for a laying condition Type 2 and a working pressure as follows:

3-12 inches	350 psi
14-20 inches	250 psi
24 inches	200 psi
30-54 inches	150 psi

Pipe Joints shall be of the push-on type as per AWWA C111. Pipe lining shall be cement mortar with a seal coat of bituminous material in accordance with AWWA C104. Galvanized steel pipe will not be allowed as a material for water mains or water services lines.

Steel Encasement for water/sewer pipes are required for the following Street Classifications to avoid traffic disruption in the future:

- Controlled Access Highway

For carrier pipes that employ cathodic protection anticorrosion systems, the carrier and casing pipes shall be effectively insulated from one another. Carrier and casing shall be cathodically protected as a unit.

See Section 5.03 Boring and Jacking for more casing pipe size requirements.

D. Installation

Ductile iron pipe shall be manufactured and installed in accordance with requirements set forth in the most recent revision of AWWA C600/C605 and the Rules Governing Public Water Systems. Materials shall be handled in such a manner to protect them from damage at all times.

All water mains shall be installed with a minimum cover of 4 feet and maximum of 6 feet measured from the top of the pipe to the finished surface grade (or as otherwise directed by Executive Director of Utilities and Infrastructure Services). Where waterlines cross NCDOT roadways or major Town roadways, as determined by the engineer, pipe encasement shall be required. When water lines are installed along a roadway which does not have curb and gutter or which are planned to be widened in the future, the water line shall be installed at 4.5 feet minimum depth below edge of existing pavement. In addition, all waterline installation shall be

placed to prevent conflict with future road improvements or foreseeable vertical alignment changes. Where air release valves are located on water mains the lines should be a minimum of 6 feet below the existing edge of pavement in this area.

The laying conditions for ductile iron pipe shall be certified by a Professional Engineer licensed in the State of North Carolina and installed in accordance with AWWA C600 and the Ductile Iron Pipe Research Association.

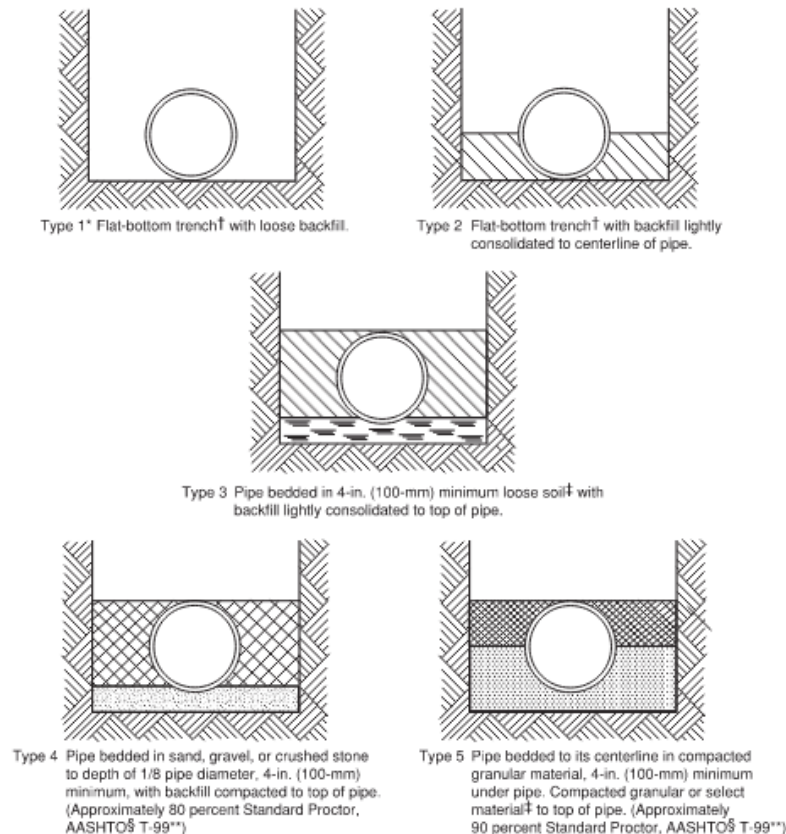


Figure 1: Laying Conditions for Ductile Iron Pipe (AWWA C600)

Locator devices as manufactured by 3M Corporation shall be placed directly on top of distribution water mains along major thoroughfares and cross-country installations (and as otherwise directed by the Executive Director of Utilities and Infrastructure Services) at 100 foot intervals and turns/bends. Locator tape shall also be required to be installed at 2 feet above the pipe.

All construction relating to the utility improvements which will be maintained by the Town must be performed by a contractor licensed in North Carolina. Proof of licensure will be required at the Project Preconstruction Meeting. Operation of existing valves and fire hydrants shall be by Town staff only.

. Town water mains that are 16-inches or greater are considered water transmission mains. Service connections to the Town's water transmission mains are prohibited. A proposed water main connection to the Town's water transmission mains requires an exception granted by the Executive Director of Utilities & Infrastructure. All requests are subject to completing a hydraulic study to confirm adequate pressure can be maintained in the system.

6.02 FIRE HYDRANTS (Public and Private)

A. Location

All fire hydrants shall be installed on a minimum 6-inch waterline with minimum of 20' width easement including 5 feet beyond fire hydrant. Only 1 fire hydrant may be installed on a dead end 6-inch line. There shall be at least 1 fire hydrant at each street intersection located in accordance with the Standard Detail section of these Standards (TOHS Detail HS613). Each fire hydrant shall have a valve on the hydrant service leg, located within 2 feet of tee on the main line.

No building lot shall be more than 350' from fire hydrant.

In residential areas, the maximum distance between fire hydrants, measured along street centerlines, shall be 500 feet. In residential areas, the minimum fire flow shall be 1000 gpm with a minimum system pressure of 25 psi for 1 hour.

In business, office and institutional, and industrial districts, the maximum distance between hydrants, measured along street centerline, shall be 300 feet. When business, office and institutional, and industrial intersections are not more than 450 feet apart, no hydrant is required between intersections. The minimum fire flow in these areas shall be 1500 gpm with a minimum system pressure of 25 psi for 2 hours.

The minimum number of fire hydrants available to a building shall not be less than that listed in Table A1. The number of fire hydrants available to a complex or subdivision shall not be less than that determined by spacing requirements listed in Table A1 when applied to fire apparatus access roads and perimeter public streets from which fire operations could be conducted.

Existing fire hydrants on public streets are allowed to be considered as available. Existing fire hydrants on adjacent properties shall not be considered available unless fire apparatus access roads extend between properties and easements are established to prevent obstruction of such roads.

The average spacing between fire hydrants shall not exceed that listed in Table A1.

Exception: The Office of the Fire Marshal is authorized to accept a deficiency of up to 10 percent where existing fire hydrants provide all or a portion of the required fire hydrant service.

Regardless of the average spacing, fire hydrants shall be located such that all points on streets and access roads adjacent to a building are within the distances listed in Table A1.

Table A1
NUMBER AND DISTRIBUTION OF FIRE HYDRANTS

FIRE-FLOW REQUIREMENTS (gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS (Feet)^{a, b, c}	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT^d
1,750 or less	1	300	250
2,000-2,250	2	300	225
2,500	3	300	225
3,000	3	300	225
3,500-4,000	4	300	210
4,500-5,000	5	300	180
5,500	6	300	180
6,000	6	250	150
6,500-7,000	7	250	150
7,500 or more	8 or more ^e	200	120

^{a.} Reduce by 100 feet for dead-end streets or roads.

^{b.} Where streets are provided with median dividers that cannot be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis.

^{c.} Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed 1,000 feet to provide for transportation hazards.

^{d.} Reduce by 50 feet for dead-end streets or roads.

^{e.} One hydrant for each 1,000 gallons per minute or fraction thereof.

When new buildings are constructed, or existing buildings expanded, all points of exterior walls for buildings shall be within 150' of a fire access lane. When a fire access lane is provided then all portions of exterior walls are required to be within 300' of a hydrant. The maximum length of fire access lanes without an approved turn-a-round is 150'. Hydrants shall be located at least 40 feet from the building or as specified by the Town of Holly Springs Fire Department, Office of the Fire Marshal. See Section 6.07E for fire hydrants required for automatic fire sprinkler systems.

Where sprinkler systems or standpipe systems are used, the fire department connections (FDC) shall be located on the street side of the building and within 100 feet of a fire hydrant and at fall zone line or as specified by the Office of the Fire Marshal, and shall be located so that nothing obstructs direct access. Where a sprinkler system or a riser room are required, outside access in accordance with the N.C. Building Code shall be provided. Backflow prevention for sprinkler systems shall be as specified in Section 6.06 of these Standards. Flow data for system design shall be field-verified by the designer. The Town will provide assistance with opening valves and hydrants for the collection of data for system design. FDC's can be mounted on single story buildings only.

A hydraulic report signed, sealed, and dated within 12 months by an Engineer may be required by the Town to document meeting the minimum fire flow and system pressure requirements. On all thoroughfares and collectors with access points only at street intersections, hydrants shall be located at each street intersection and staggered at 1000 foot intervals along the street. Where these intersections are less than 1200 feet apart, no hydrant is required between the intersections.

B. Specifications

Hydrants shall conform to AWWA C502 with a minimum valve opening of 4½ inches. All fire hydrants shall be furnished with a 5 inch Storz/quick connect coupling on the steamer outlet with a chained cap. The Storz connection shall be by the hydrant manufacturer and only come as part of the hydrant assembly. No adapters for the Storz connection are allowed. Hydrants shall also be furnished with: double 2½-inch hose connections with caps and chains, National Standard Threads, mechanical joint, 1½-inch pentagon operating nut, open left, painted Sherwin Williams pro industrial urethane alkyd enamel safety yellow B54 Y157, bronze to bronze seating, a minimum 3½-foot bury depth with break away ground line flange and break away rod coupling. The hydrant bonnet will be designed with a sealed oil or grease reservoir with O-ring seals and a Teflon thrust bearing, as furnished by Mueller "Centurion" (A-421), Kennedy 'Guardian', American Darling (MK-73), Clow or Waterous. Fire hydrant caps shall be attached to the body of the hydrant with a minimum 2/0 twist link, heavy duty, non-kinking, machine chain. All fire hydrants shall be designed for a working pressure of 250 psi or greater.

All hydrants and Fire Access Lanes shall be installed and operational before any combustible material is brought onto the site.

C. Installation

Hydrants shall be set plumb, properly located with the pumper nozzle facing the closest curb. The back of the hydrant opposite the pipe connection shall be firmly blocked against the vertical face of the trench with 1/3 cubic yard of concrete. Double bridle rods and collars shall not be less than 5/8 inch diameter stock and coated with bituminous paint. All fire hydrants shall be newly painted in accordance with NFPA standards. A minimum of 8 cubic feet of stone shall be placed around the hydrant. The backfill around the hydrants shall be thoroughly compacted. Hydrant installation shall be in accordance with the Standard Details section of these Standards. Fire hydrants shall be installed on a clear level space with a minimum of five (5) feet clearance provided and maintained on all sides of a fire hydrant for immediate access. There must be clearance with a minimum of 18"-24" from center of 5" Storz cap to grade and shall be installed with positive drainage.

D. Relocation

For installations where hydrants will be relocated, all hydrants with greater than 20 years operational service, as indicated by the date of manufacture provided on the hydrant, shall be replaced with a new fire hydrant in accordance with Engineering Design and Construction Standards. The fire hydrant being replaced shall be returned to the Town of Holly Springs Public Works Department.

For installations where the hydrant to be relocated has less than 20-years of operational service, the existing hydrant may be relocated. The existing hydrant shall be disinfected, flushed and pressure tested prior to being placed back into service.

E. Fire Flow Requirements for Buildings

1. One- and two-family dwellings

The minimum fire-flow and flow duration requirements for one-and two-family dwellings having a fire-flow calculation area that does not exceed 3,600 square feet (344.5m²) shall be 1,000 gallons per minute at 25psi for 1 hour.

Fire-flow and flow durations for dwellings having a fire-flow calculation area in excess of 3,601 square feet and greater shall not be less than specified in tables E1 and E2 at 25psi.

2. Buildings other than one- and two-family dwellings.

The minimum fire-flow and flow duration for buildings other than one-and two-family dwellings shall be as specified in tables E1 and E3, but no less than 1,500 gallons per minute at 25psi.

3. Water supply for buildings equipped with an automatic sprinkler system.

For building equipped with an approved automatic sprinkler system, the water supply shall be capable of providing the greater of:

1. The automatic sprinkler system demand, including hose stream allowance.
2. The required fire-flow.

Table E1**MINIMUM REQUIRED FIRE-FLOW AND FLOW DURATION FOR BUILDINGS**

(Appendix B of the 2018 NC Fire Prevention Code)

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute) ¹	FLOW DURATION (hours)
Type 1A and 1B ²	Type IIA and IIIA ^a	Type IV and V-A ^a	Type IIB and IIIB ^a	Type V-B ^a		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater		85,101-Greater	

a. Types of construction are based on the NC Building Code

b. Fire-Flow is measured at 25 psi residual pressure.

TABLE E2

**REQUIRED FIRE-FLOW FOR ONE-AND
TWO-FAMILY DWELLINGS**

FIRE-FLOW CALCULATION AREA (square feet)	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE- FLOW (gallons per minute)	FLOW DURATION (hours)
0-3,600	No automatic sprinkler system	1,000	1
3,601 and greater	No automatic sprinkler system	Value in Table E1	Duration in Table E1 at the required fire-flow rate
0-3,600	Section 903.3.1.3 of the NC Fire Code Section P2904 of the NC Residential Code	1,000	Duration in Table E1 at the required fire-flow rate
3601 and greater	Section 903.3.1.3 of the NC Fire Code Section P2904 of the NC Residential Code	1/2 value in Table E1 but no less than 1,000	1

Table E3

REQUIRED FIRE -FLOW FOR BUILDINGS OTHER THAN ONE-TWO FAMILY DWELLINGS

Automatic Sprinkler System (Design Standard)	MINIMUM FIRE-FLOW (gallons per minute)	FLOW DURATION (hours)
No automatic sprinkler system	Value in Table E1	Duration in Table E1
Section 903.3.1.1 of the NC Fire Code	25% of the value in Table E1 but no less than 1,500	Duration in Table E1 at the reduced flow rate
Section 903.3.1.2 of the NC Fire Code	25% of the value in Table E1 but no less than 1,500	Duration in Table E1 at the reduced flow rate

6.03 VALVES AND APPURTENANCES

A. Location

Valves shall be installed on all branches from feeder mains and hydrants according to the following schedule: 4 valves at crosses; 3 valves at tees; and 1 valve on each hydrant branch. When a loop section of waterline is connected back into the feeder main within a distance of 200 feet or less, only 1 valve will be required in the feeder main.

Where no waterline intersections are existing, a main line valve shall be installed at every 100 feet per 1-inch diameter main up to a distance of 2000 feet between valves.

Blowoff assemblies shall be a minimum of 2 inches and installed at the end of all dead-end waterlines. Where there is not sufficient pressure or fire hydrants located to thoroughly flush the system, a larger blowoff may be required. On large diameter mains or other circumstances, larger blowoffs may be required by the Executive Director of Utilities and Infrastructure Services.

Combination air valves shall be installed at high points of waterlines 12 inches in diameter or larger, as directed by the Executive Director of Utilities and Infrastructure Services. All new air release valves shall be installed in precast manholes. Existing lines in which an air release valve is installed can use a dog house manhole. Water lines shall be installed at a grade which will allow the air to migrate to a high point where the air can be released through an air valve. A minimum pipe slope of 1 foot in 500 feet should be maintained. The size of air valve shall be designed by a Professional Engineer registered in North Carolina. Combination air valves or other types of air release valves may be required at other locations as directed by the Executive Director of Utilities and Infrastructure Services.

All new construction air release manholes shall be a precast manhole. Doghouse manholes can only be installed on existing water lines.

Water lines crossing stream beds will be required to be installed with restrained joint pipe inside a steel encasement pipe.

B. Specifications

Gate Valves greater than 2 inches shall meet all requirements of AWWA C500 for a working pressure of 150 psi. All shall be mechanical joint with iron body, resilient wedge seat type in accordance with AWWA C509 with a non-rising stem and open left with a double O-ring seal. Gate valves shall be installed in a vertical position.

Valve Boxes shall be cast iron of the screw or telescopic type with a 5-inch opening with "water" stamped on the cover. Valve box ring adjustments will not be allowed. Locking valve boxes may be required as determined by the Executive

Director of Utilities and Infrastructure Services. All castings shall be made in the United States.

Butterfly Valves shall be installed in waterlines 24 inches or greater. All shall meet the requirements of AWWA C504 with mechanical joints, 2-inch operating nut and open left.

Blowoff Assemblies shall be constructed as shown in the Standard Details Section of these Standards. The valves shall be an AWWA iron body gate valve with a non-rising stem and a 2-inch operating nut.

Pipe Fittings shall be compact fittings in accordance with AWWA C153. Joints for fittings shall be mechanical joint and lined with cement mortar with a seal coat of bituminous material, all in accordance with AWWA C104.

Reaction Blocking for all fittings or components subject to hydrostatic thrust shall be securely anchored by the use of concrete thrust blocks poured in place. The required reaction areas are shown in the Standard Details Section of these Standards. Concrete shall be installed so that it does not interfere with the removal of fittings. Material for reaction blocking shall be 3000 psi concrete. Alternative restraining methods may be considered only in unusual circumstances and must be designed by a Professional Engineer registered in North Carolina and approved by the Executive Director of Utilities and Infrastructure Services.

Tapping Sleeves shall be stainless steel sleeves with stainless steel flanges meeting the material requirement of AWWA C223 and AWWA C228. The sleeves shall be mechanical joint to the main line and flanged to the tapping valve. Mechanical joint outlet connections shall be compatible with ANSI/AWWA C111/A21.11.

Tapping Saddles shall be used on mains 16 inches and larger. Saddles shall be made of stainless steel providing a factor of safety of 2.5 with a working pressure of 250 psi. Saddles shall be equipped with an AWWA C110 flange connection on the branch. Sealing gaskets shall be O-ring type, high quality molded rubber having an approximate 70 durometer hardness, placed into a groove on the curved surface of the saddles. Straps shall be alloy steel.

The maximum size saddle outlet for each size of pipe to be tapped shall be as follows:

Size pipe to be tapped	Maximum size saddle outlet
16"	8"
18"	8"
20"	10"
24" and larger	12"

Combination Air Valves shall be of the single housing style that combines the operation of both an air/vacuum and air release valve. The valve shall be manufactured for a 150 PSIG working pressure and be sized by the Engineer. The valve must meet the requirements of AWWA C512 and be installed in accordance with the Standard Details Section of these Standards.

C. Installation

Valves shall be properly located, operable and at the correct elevation. All valves and reducers shall be rodded to a nearby tee or cross if possible. As shown in the Standard Details Section of these Standards. If reducers cannot be rodded, concrete blocking or other restraining methods will be required. The valve box shall be centered over the wrench nut and seated on compacted backfill without touching the valve assembly. The maximum depth of the valve nut shall be 5 feet, unless approved by the Executive Director of Utilities & Infrastructure Services. When valve extension kits are used, they must be manufactured by the same company which manufactured the valve.

All valve boxes in roadways shall be encased in a trowel-finished 30" diameter circle by 12" thick circular pad of 3000 psi concrete beneath the asphalt course with the cover flush with the top of the pavement.

Valve boxes outside roadways shall be flush with finished grade with a 2'x2'x6" concrete encasement or precast concrete donut.

Precast concrete valve box encasements may be used for valve box encasement outside of paved areas only.

6.04 WATER SERVICE TAPS

A. Materials

Corporation Stops shall be brass, complete with a flared or compression 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.

The maximum size of direct taps without a fitting, tapping sleeve or saddle for ductile iron water mains shall be as follows:

4" main - 3/4" tap
6" main - 1" tap
8" main - 1 1/4" tap

10" main - 1½" tap
12" main - 2" tap

No burned taps will be allowed and each corporation stop will be wrapped with Teflon tape for ductile iron pipe water mains.

Service Saddles shall be bronze body (85-5-5 waterworks brass) and double strap for taps with silicon bronze nuts conforming to ASTM A98 and factory-installed grade 60 rubber gaskets.

Copper Service Tubing shall be type K soft copper tubing per ASTM B88. The longest available length of service line should be used with no unions. As an example, for a ¾-inch service connection, no union shall be used in the installation of 100 feet or less. Unions shall be made with flare type couplings.

Meter Boxes for ¾-inch Services shall be 18 inch depth cast iron MBX-1 and a complete unit (less meter) for setting a 5/8 by 3/4-inch water meter. Meter box grade adjuster rings are not acceptable.

Meter Boxes for 1-inch Services shall be 18 inch depth cast iron box and cover with a meter yoke and/or copper resetter. Meter box grade adjuster rings are not acceptable.

Meter Boxes for 1½ and 2-inch Services shall be lightweight polymer concrete as indicated in the Standard Details Section of these Standards. Piping for 1½ and 2-inch water meters shall be constructed from brass and copper tubing and shall be equipped with angled check valve outlets and by-pass flanged valve or by-pass flanged ball valve inlets. Meter boxes shall not be allowed in travel lanes or traffic areas. Meter box grade adjuster rings are not acceptable.

Meters for ¾" services shall meet the requirements of AWWA C700 and be supplied and installed by the Town of Holly Springs.

Meters for services 1 inch and greater shall meet the requirements of AWWA C700 and be paid for by the Developer and installed by the Town of Holly Springs Public Works Department after approval by the Executive Director of Utilities and Infrastructure Services. **Meters 2 inches and greater** shall require a 2 inch bypass and shall require a meter test port. A strainer shall be provided upstream of the meter.

Meter Boxes shall not be located in sidewalk or travel lanes, except as noted below.

Meter Vaults within paved areas shall meet HS-20 loading requirements and shall be located outside travel areas. The access door shall be aluminum with a flush drop lift handle, stainless steel hinges and bolts, a stainless steel slam lock, an automatic hold open arm, and compression springs to allow for easy opening.

Positive drainage shall be provided for all meter vaults. Positive drainage shall be construed to mean a “daylight” drain not less than 4” schedule 40 PVC pipe with flap valve on the end. Vault dimensions must be sized to ensure pipe work will fit within the vault. When installing pipe work, ensure it is spaced evenly within the vault.

All vaults over 2” in size shall be in below ground vault unless in riser room.

B. Individual Water Services

Individual water services shall be provided from the main to each water meter for single family residences in accordance with the Standard Details section of these Standards. Multi-family units may be in accordance with the Standard Detail for multi-family units in the Standard Details section of these Standards. All connections shall be made by wet taps.

Service connections shall be made perpendicular from the main line and shall run straight horizontally toward the meter and then vertically to the meter which shall be located at the edge of the right of way or easement of the served property. Refer to the standard detail on water service installations for more information. No water meter box or vault shall be located in streets, sidewalks, or parking areas in residential areas. For non-residential development, individual services are required for each business space. In non-residential areas, meter locations shall be approved on a case-by-case basis. Provisions for backflow prevention shall be as specified in Section 6.06 of these Standards.

All water service connections to existing and new water mains shall be made by a licensed Contractor in the State of North Carolina and in accordance with these Standards.

Water meters shall be sized based on water demand. Water meter size shall be determined from the following table; or as otherwise specified by the Executive Director of Utilities and Infrastructure Services. All non-residential projects shall submit sealed calculations prepared in conformance with the AWWA Manual of Practice for approval of type of meter and meter size by the Town.

WATER METER SIZING

Meter Size (inches)	Flow Range (GPM)	Load Range (number of fixture units)	
		Supply Systems Predominately for Flush Tanks	Supply Systems Predominately for Flush Valves
5/8" PD	0 - 20	1 – 22	1 - 8
1" PD	20 - 50	22 – 140	9 - 50
1½" PD	50 - 100	140 – 450	50 - 275
2" C	100 - 200	450 – 1000	275 - 1000
3" C	200 - 400	1000 – 2500	1000 - 2500
4" C	400 - 600	2500 – 5000	2500 - 5000

PD = Positive Displacement

T = Turbine (may be required on a case-by-case basis)

C = Compound (must be sized on a case-by-case basis)

6.05 CLEARANCE BETWEEN WATER MAINS, AND NON-POTABLE WATER LINES

Water mains shall be laid at least 10 feet laterally (measured edge to edge) from existing or proposed sanitary sewer unless local conditions or barriers prevent a 10-foot lateral separation--in which case:

- (1) 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 sewer; or
- (2) The water main is 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.

Water mains shall be laid at least 10 feet laterally (measured edge to edge) or 18-inches above existing or proposed reclaimed water distribution lines, in accordance with the most recent revision to 15A NCAC 18C .0906 (e).

A water main that crosses a sewer/reclaimed line shall be laid a minimum vertical distance of 18 inches from the outside of the water main and the outside of the sewer/reclaimed, either above or below the sewer/reclaimed, with preference to the water main located above the sewer/reclaimed. One full length of water pipe shall be located so that both joints will be as far from the sewer/reclaimed as possible.

When water mains must cross sewer mains, the water mains shall cross at an approximate 90° angle unless adequate vertical separation is provided.

Where it is infeasible to maintain the required 18 inches of vertical separation between a water main and a sanitary sewer main, a Professional Engineer licensed in the state of North Carolina can submit justification of the deviation according to special conditions listed under the most recent revision of 15A NCAC .0906 (c) and .0906 (f).

To allow for construction and repair, a minimum distance of 12 inches shall be maintained between the outside of the water main and the outside of all other utilities. Where it is infeasible to maintain the required 12 inches of vertical separation between a water main and other utilities, a Professional Engineer licensed in the state of North Carolina must seek to defend a special consideration per 15A NCAC .0904(c).

Water lines that cross and run beneath storm drainage pipes that are greater than or equal to 42" diameter (single pipe) or 36" diameter (multiple pipes) and/or streams or creeks shall be installed as restrained joint pipe and enclosed in casing pipe. A minimum cover of 5 feet shall be provided over the pipe for underwater stream crossings, in accordance with the Recommended Standards for Water Works (Ten State Standards) and the Rules Governing Public Water Systems. Installation may be by bore and jack or excavation at discretion of Executive Director of Utilities and Infrastructure Services.

For required separation and clearance from water main to reclaimed water reference Section 11.00.

6.06 BACKFLOW PREVENTION AND CROSS CONNECTION

A. General

Cross-Connection shall mean any unprotected actual or potential connection or structural arrangement between a public or a consumer's water system and any other source or system through which it is possible to introduce any contamination or pollution, other than the intended potable water with which the system is supplied. All construction shall be required to comply with the Town of Holly Springs Ordinance for the Control of Backflow and Cross-Connection No. 03-09 in its entirety, in addition to the following:

All residential water services for domestic purposes shall be provided with a dual check backflow prevention device on the meter setter within the meter box. Dual check valves must comply with AWWA Standard C-510.

All irrigation services and non-residential services shall be provided with reduced pressure principle backflow prevention installed in accordance with the State of North Carolina and the Foundation for Cross Connection Control and Hydraulic Research at the University of South Carolina (USC) and AWWA Standard C-511.

This includes all service connections to fire sprinkler systems. Reduced pressure zone (RPZ) backflow preventers shall be installed aboveground immediately behind the meter (on the private side). Alternate installations shall comply with Town Ordinance 03-09 as noted above, and require approval of the Executive Director of Utilities and Infrastructure Services. Above-ground installations that service any use other than single family residential users will require an insulated box mounted on a 4" concrete slab, wired for a heater and provided with a heater. A 4" concrete slab shall be provided for underground RPZ's and for insulated boxes.

6.07 AUTOMATIC FIRE SPRINKLER SYSTEMS

A. General

Working drawings and calculations for all fire sprinkler systems and standpipe systems, prepared by a Professional Engineer registered in North Carolina, shall be submitted to the Town of Holly Springs Inspection Department for approval before installation begins.

B. Design

Approved working plans shall be in complete compliance with NFPA No. 13, 13D, 13R, 14, 231, 231C, 231F and Town specifications. A NFPA above ground material and test certificate, and a NFPA underground material and test certificate are required after completion of designated and approved work. Design shall include backflow prevention measures, details on any proposed fire pumps and/or tanks, calculations to ensure that the allowable pressures in the Town system are maintained. Flow data for system design shall be field-verified by the designer. The Town will provide assistance with opening valves and hydrants for the collection of data. Fire lanes are required in front of all FDC, Riser Rooms, Fire Hydrants, PIV, and other entrances and exits as determined by the Town or Office of the Fire Marshal.

C. Post Indicator Valve (PIV)

A post indicator valve (PIV) shall be provided on the Town's side at the right of way or edge of easement. The valve shall be locked in open position monitored by an electronic tamper switch. When backflow prevention devices are contained within a building, an outside access (above the finish floor elevation) shall be provided. The top of the post indicator valve shall be installed at 30-42 inches from the finished grade, minimum of 5' of unobstructed access perimeter shall be maintained around the PIV and must be protected from vehicular obstruction. The Town shall maintain up to, but not including, the post indicator valve. The post indicator valve shall be painted red and must be protected from vehicular obstruction with means of steel bollards when not located behind curb. In urban settings, a wall mounted indicator valve may be used where there is no suitable

location for a post mounted indicator valve. Wall mounted indicator valves shall be centered 30-42 inches above the finished grade. It shall be greater than 10 feet from any door, window or protected opening along the wall.

Post indicator valve is to be located as close as possible to the tap of the water main.

D. Backflow Prevention

When a fire protection system is proposed an RPZ type backflow prevention device as approved by USC (with make and model specified) shall be required. RPZ's shall be located inside a riser room in a location shown on the construction plans. Existing structures shall be exempt from this section until such time any structure is sold, remodeled or improvements to the property exceeding the sum of \$2,500.00 are made, or a new occupancy permit is otherwise required for the property.

E. Fire Department Connection (FDC)

Where automatic fire sprinkler systems or standpipe systems are used, a Fire Department Connection (FDC) with check valve [reference detail section 6, HS625] shall be red in color, provided on the street side of buildings, fully visible and recognizable from the street or nearest point of fire department vehicle access or as otherwise approved by the Office of the Fire Marshal. The Fire Department Connection shall be located 36 inches above proposed grade and within 100 feet of a fire hydrant and at fall zone line or as specified by the Office of the Fire Marshall, and shall be located so that nothing obstructs direct access. A 5 foot clearance shall be provided around the FDC connection and labeled with 6 inch contrasting colored letters. When a sprinkler system serves only part of a large structure, the fire department connection shall be labeled as to which section of the structure that sprinkler riser serves. This labeling shall be a minimum of 2 inch lettering on a permanent sign. FDC shall have a 5" Storz connection with chained cap. FDC's can be mounted on single story buildings only.

F. Dedicated Riser Room

A dedicated sprinkler riser room providing an entry door to the room from the exterior of the building in accordance with NC Building Code shall be provided. All dedicated riser rooms shall be equipped with a floor drain sized appropriately to prevent flooding. The floor drain shall be piped to storm system or main building drain. The floor drain shall be provided with a circular raised ring/hub around the floor drain to prevent debris and/or chemicals from entering the drain during an emergency spill. The hub shall be fabricated of cast iron or other corrosion resistant material and extend at least 3 inches above floor elevation. The exterior riser room door plus all other required or Town designated fire exits shall have a protected clearance of 5 feet from any obstruction by vehicular movement by means of curbing, bollards, or concrete bumpers.

G. Access

Any building, other than a residential building with less than four units, shall have installed a “Knox Box”, a key box entry system per North Carolina Fire Code, to be used by the local fire department in case of emergency. The key box shall contain master keys necessary for access to all portions of the premises. The Office of the Fire Marshal may specify such supplemental information as floor plans, lists of chemicals and hazardous materials located within the building to be required within the Knox Box.

This Knox Box shall be mounted on the exterior entrance to the dedicated riser room or at the normal fire department entrance when there is no dedicated riser room. Mount Knox Box on wall at 5 feet A.F.F. on door handle side of dedicated riser room door or normal fire department entrance door. This Knox Box shall be ordered online at www.knoxbox.com and shall be in place before a Certificate of Occupancy is issued. Keys to access the facility shall be provided to the Town Fire Department by the owner/manager.

Existing structures shall be exempt from this section until such time as any such structure is sold, remodeled or improvements to the property, exceeding the sum of \$2,500.00, are made, or a new occupancy permit is otherwise required for the property.

H. Identification

The exterior door leading to the dedicated sprinkler riser room shall be labeled with minimum 4 inch lettering designating “SPRINKLER RISER ROOM” in a contrasting color. Durable vinyl lettering is suggested.

I. Installation

All gas or electrical panels must be protected with steel bollards from vehicular traffic.

J. Fire Alarm Panel Location

When a building is protected by an automatic sprinkler system and has a fire alarm system, the fire alarm control panel or a remote annunciation of the fire alarm control panel shall be placed in the sprinkler riser room. This control panel shall have the capacity of silencing and resetting. Adjacent to the fire alarm control panel shall be a mounted framed zone map, removable from the wall. Nomenclature shall correspond with the zone map.

When there is no sprinkler system in building, the fire alarm control panel or remote annunciator shall be located at the normal fire department entrance.

6.08 FIRE DEPARTMENT ACCESS

A. Fire Access and Fire Lanes

Fire Access

The following guidelines represent the Town's efforts to maintain consistency concerning Fire Department emergency access. It is the Town's responsibility to ensure adequate access for the Fire Department and other responding agencies. The Town therefore reserves the right to require modifications to established requirements if, in the Town's opinion, the access cannot be provided or may be compromised.

All access roadways shall be built to street standards as described in the Town's Engineering Design and Construction Standards. The roadway design shall be prepared and certified by a Design Professional. All required access roadways shall be properly maintained and kept clear for emergency use at all times. Any alternatives to these specifications shall be reviewed and approved by the Office of the Fire Marshal prior to construction.

FIRE APPARATUS ACCESS ROAD – A road that provides fire apparatus access from a fire station to a facility, building or portion thereof. This is a general term inclusive of all other terms such as fire lane, Public Street, Private Street, parking lot lane, alley ways and access roadway.

FIRE LANE – A road or other passageway developed to allow the passage of fire apparatus. A fire lane is not necessarily intended for vehicular traffic other than fire apparatus.

Approved fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of the NC Fire Code and Town Standards and shall extend to within 150 feet of all portions of the facility or all portions of the exterior wall of the first story of the building as measured by an approved route around the exterior of the building or facility. The fire official is authorized to increase the 150 feet where:

The building is equipped throughout with an approved automatic sprinkler system installed in accordance with the NC Fire Code and applicable NFPA standards.

Fire apparatus access roads cannot be installed due to location on property, topography, waterways, non-negotiable grades or other similar conditions, and an approved alternative means of fire protection is provided.

There are not more than two Group R-3 or Group U occupancies.

Fire department apparatus access to buildings used for high-piled combustible storage shall comply with the applicable provisions of the NC Fire Code.

Fire apparatus access roads shall have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of not less than 13 feet 6 inches.

The Office of the Fire Marshal shall have the authority to require an increase in the minimum access widths where they are inadequate for fire or rescue operations.

Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide all-weather driving capabilities.

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. Proposed turn around area shall not be located within proposed residential lots. See TOHS Detail HS367

Grass pavers are also an acceptable alternative to concrete, asphalt or gravel for the 120' Hammerhead or the acceptable alternative to the 120' Hammerhead. Specification and data sheets on the proposed pavers will need to be submitted to the Fire Department for approval

Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge shall be constructed and maintained in accordance with AASHTO Standard Specification for Highway Bridges. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the code official. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, approved barriers, approved signs or both shall be installed and maintained when required by the code official.

The grade of the fire apparatus access road shall be within the limits established by the Office of the Fire Marshal based on the fire department's apparatus.

B. Gates

Gates securing the fire apparatus access roads shall comply with all of the following criteria:

The minimum unobstructed gate width shall be 20 feet.

The gate shall have a Knox Box mounted to it, with keys or access cards to open the gate in the event of an emergency.

Gates shall be of the swinging or sliding type, unless approved by the Office of the Fire Marshal.

Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.

Electric gates shall be equipped with a means of opening the gate by fire department personnel for emergency access. Emergency opening devices shall be approved by Office of the Fire Marshal.

Manual opening gates shall not be locked with a padlock or chain and padlock unless they are capable of being opened by means of forcible entry tools; locking device specifications shall be submitted for approval by the Office of The Fire Marshal.

The Office of the Fire Marshal is authorized to require the installation and maintenance of gates or other approved barricades across fire apparatus access roads, trails or other access ways, not including public streets, alleys or highways. When required, gates and barricades shall be secured in an approved manner. Roads, trails and other access ways that have been closed or obstructed shall not be trespassed on or used unless authorized by the owner and the Office of the Fire Marshal.

The installation of security gates across a fire apparatus access road shall be approved by the Office of the Fire Marshal. Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.

C. Two Points of Access

The Office of the Fire Marshal may require more than one fire apparatus access road based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

When two points of access are required, they shall be placed a distance apart of at least one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses. The Town shall not allow the second access point to be limited to use by emergency responders only. The second access shall always be available for public use in case the other access is blocked.

Buildings or facilities located in Commercial and Industrial Developments and exceeding 30 feet or 3 stories in height shall have at least 2 means of fire apparatus access. Buildings or facilities having a gross building area of more than 62,000 square feet shall have at least 2 means of fire apparatus access. If the buildings or facilities are provided with an approved automatic fire sprinkler system, the gross building area can be increased to 124,000 square feet with one access road.

Fire apparatus access roadways shall have a minimum unobstructed width of 26 feet in the immediate vicinity of any building or portion of building more than 30 feet in height. At least one of the required access routes meeting this condition shall be located within a minimum of 15 feet and a maximum of 30 feet from the building, and shall be positioned parallel to one entire side of the building.

Maintenance of the required access shall be considered during the planning stages and installation of Fire Department access roadways, fire hydrants, or connections. This includes the potential growth of trees and/or other vegetation over the years.

D. Fire Lanes

A plan shall be submitted for approval to the Office of the Fire Marshal which indicates all fire lanes and proposed fire lane sign placements for the project site.

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 Office of the Fire Marshal. For specifications of the fire lane cross section, refer to Section 3 of these standards.

All fire lanes shall be marked in accordance with one of the following requirements:
Continuously painted yellow striping 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 Office of the Fire Marshal;

Continuously painted yellow curb 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 Office of the Fire Marshal;

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 both sides of the fire lane (or an additional sign beneath the fire lane sign lettered as “both sides”). Signs shall be a type R8-31 or equivalent reflective sign no less than 12 inches x 18 inches in size, white background, with the wording “No Parking - Fire Lane” in red letters.

Signs shall be posted at the following minimum height:

60 inches to the top of the sign when pedestrians do not pass by or under the sign.
This application includes signs mounted on the building face, a column, or other fixed mounting surface;

84 inches to the top of the sign when the pedestrian path does pass by or beneath the sign. This application includes signs mounted on a fixed metal post located in a sidewalk and/or traffic island.

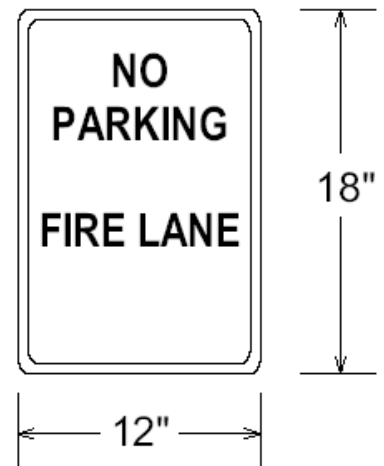
SIGN TYPE "A"



SIGN TYPE "C"



SIGN TYPE "D"



The above fire lane requirements shall also apply to all fire hydrant islands located along the face and sides of a hydrant.

Fire Lanes shall be installed and inspected in accordance with these Standard Specifications as well as the NC Fire Code. The Office of the Fire Marshal shall have the authority to designate fire lanes as deemed necessary for Fire Department access.

Roadways, driveways, and access ways shall not be marked as fire lanes without first obtaining approval from the Office of the Fire Marshal.

E. Fire Safety During Construction

There shall be no open burning within the Town's jurisdiction, unless approved by the Office of the Fire Marshal.

Fire Safety during construction, alteration, or demolition shall be maintained according to the NC Fire Code and other applicable provisions of NFPA 241.

Fire safety during construction and demolition is essential to maintain a safe and efficient project. The use of temporary heating equipment, flammable and combustible liquids storage, use and dispensing, explosives storage, handling and use, and all other general fire safety requirements shall be adhered to according to the NC Fire Code.

Vehicle access for firefighting shall be provided to all construction or demolition sites. Vehicle access shall be provided within 100 feet of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions.

The fire protection water supply system, including fire hydrants, shall be installed and be in at least the functional status prior to placing combustible materials on the project site. If phased construction is planned, coordinated installation of the fire protection water system is permitted.

Any existing fire hydrant removed from service due to construction/demolition activities shall be placed back into service by the Owner/Developer within 14 calendar days from the date it was taken out of service or a timeframe approved by the Office of the Fire Marshal.

The Fire Department shall be notified at least 24 hours before fire hydrant(s) or water line impairment.

6.09 TESTING AND INSPECTION

Under no circumstance shall any waterline system valve be operated without prior approval by the Development Inspector. Damage to Town infrastructure resulting from illegal operation of valves shall be the responsibility of the Contractor. In addition, the Contractor shall be subject to a fine for operating a valve without prior approval.

All materials shall be inspected by the Development Inspector before they shall be allowed to be installed. Materials rejected by the Development Inspector shall be immediately removed from the job site.

The Contractor shall furnish all materials, labor, equipment, and shall pay for the water used to perform all testing and inspections to the satisfaction of the Development Inspector. The Contractor shall obtain a Water Blowoff Permit from the Town Engineering Department for use when blowing off water mains.

Water service taps shall not be made until after all water main testing is completed, and bacteriological testing is satisfactory.

A. Hydrostatic Testing

Hydrostatic testing shall be done in accordance with AWWA C600. No valve in the existing Town of Holly Springs water system shall be operated without authorization from the Construction Inspector via a Water Blowoff Permit. Each section of line which is to be hydrostatically tested shall be slowly filled with water at a rate which will allow complete evacuation of air from the line. Once the line is full, it shall be blown off at a minimum of 2.5 FPS to flush and remove any debris. The line must be pretested at 200 psi provided that 200 psi is no less than 1.25 times the stated working pressure of the pipeline measured at the highest elevation along the test section and no less than 1.5 times the stated working pressure of the pipeline measured at the lowest elevation along the test section for 2 hours prior to contacting inspector for testing. Hand pumps shall not be used for the pressure testing of water mains. Taps used for testing purposes shall be removed after testing in accordance with Section 6.11 of these Standards.

Each water line shall be tested to a pressure of 200 psi as measured at the lowest elevation of the line, provided that 200 psi is no less than 1.25 times the stated working pressure of the pipeline measured at the highest elevation along the test section and no less than 1.5 times the stated working pressure of the pipeline measured at the lowest elevation along the test section for a duration of 2 hours. The test pressure shall not exceed the thrust restraint design pressures or 1.5 times the pressure rating of the pipe or joint, whichever is less (as specified by the manufacturer). The pressure gauge used in the hydrostatic test shall be calibrated in increments of 10 psi or less. At the end of the test period, the leakage shall be measured with an accurate water meter. Note that all visible leaks are to be repaired regardless of the amount of leakage. The Development Inspector may require pressure tests to be performed in smaller segments to determine if there is a problem

with a particular section of waterline. No chlorine dosage will be allowed in line during testing.

Fire line need to be tested all the way up to the slab through the riser room by the Development Inspector.

ALLOWABLE LEAKAGE	
Pipe Size (inches)	Amount of Allowable Leakage (gallons per 1000 feet of pipe)
4	0.85
6	1.28
8	1.70
12	2.56
16	3.40
20	4.24
24	5.10

B. Chlorination

All additions or replacements to the water system shall be chlorinated before being placed in service. Such chlorination must take place under the supervision of the Construction Inspector.

Chlorination of a completed line shall be carried out in the following manner:

- 1) The specific procedure and order of testing shall follow ANSI/AWWA C651 and be approved by the Construction Inspector before beginning the chlorination process.
- 2) Taps shall be made at the control valve at the upstream end of the line and at all extremities of the line including valves.
- 3) Before the main is chlorinated, it shall be filled with potable water to eliminate air pockets and flushed to remove particulates. Flushing velocity in the main shall no be less than 3 feet per second.
- 3) Drinking water treatment chemicals and drinking water system components shall be ANSI/NSF Standard 60 and 61 compliant. In accordance with ANSI/AWWA C651 4.1.3., a solution of water containing calcium hypochlorite (HTH, 65% available chlorine by weight) shall be introduced into the line by regulated pumping at the control-valve tap. Using ANSI/AWWA C651 4.4

Continuous Feed Method of Chlorination, the solution shall be of such a concentration that the line shall have a uniform concentration of 50 ppm total chlorine immediately after chlorination.

- 4) The HTH solution shall be circulated in the main by opening the control valve and systematically manipulating hydrants and taps at the line extremities. The HTH solution must be pumped in at a constant rate for each discharge rate in order that a uniform concentration will be produced in mains. *Note that for projects that are surrounded by populated development areas, the Construction Inspector can require that the circulation of HTH solution be accompanied with mechanical pumping.*
- 5) HTH solution shall remain in lines for no less than 24 hours or as directed by the Executive Director of Utilities and Infrastructure Services.
- 6) Extreme care shall be exercised at all times to prevent the HTH solution from entering existing mains.

C. Bacteriological Sampling

All new water systems shall be valved off from the existing water system until a satisfactory bacteriological sample is obtained and the Construction Inspector has authorized the use of the new water system.

1. Free residual chlorine after 24 hours shall be at least 10 ppm or the Construction Inspector shall require that the lines be rechlorinated.
2. Flushing of lines may proceed after 24 hours, provided the free residual chlorine analysis is satisfactory. Flushing shall be continued until a chlorine test kit shows that the lines contain only the normal chlorine residual.
3. Samples for bacteriological analysis shall be collected by the Construction Inspector a minimum of 16 hours after flushing is completed. The Contractor shall furnish such help as may be required to secure the required samples. Samples shall be collected and delivered to the Utley Creek Water Reclamation Facility Laboratory or other state-approved, certified laboratory by the Construction Inspector.
4. If bacteriological test results are unsatisfactory, the Contractor shall immediately obtain another Water Blowoff Permit, rechlorinate and retest the lines, proceeding with such measures as are necessary to secure properly disinfected lines.

6.10 FIRE PROTECTION DURING CONSTRUCTION

The fire protection water supply system, including fire hydrants, shall be installed and tested prior to placing combustible materials on the project site.

6.11 IRRIGATION SYSTEMS

No mainlines or valves shall be allowed within the utility strip (between the sidewalk and curb). Lateral will be allowed and shall be placed within 1 ft of sidewalk. Pipe material for all lines within the public right of way shall be a minimum of 2 feet deep and Schedule 40 PVC or greater for all lateral irrigation lines.

Irrigation systems shall have a backflow preventer installed in accordance with Section 6.06 of these Standards. All irrigation systems are required to secure a plumbing permit from the Code Enforcement Department prior to installation and shall be inspected after installation. A separate meter is required for irrigation systems.

All irrigation line street crossings shall be contained within a ductile iron or steel encasement pipe. The Town may, in some instances, permit irrigation systems installed in the medians of Town-maintained roadways. These systems must also have french drains installed behind the curb and gutter and piped to a storm drainage collection system. These systems shall be allowed only when some permanent mechanism is established for the private perpetual maintenance of the system(s).

Wells may be kept maintained for irrigation purposes after public utility connection, if they are on the opposite side of the single-family dwelling where the public water and/or sewer service is located.

6.12 REPAIR OF WATER LINES

Joint Leaks of cast iron pipe, ductile iron pipe, and PVC pipe shall use a bell joint leak repair clamp as manufactured by Rockwell, or other approved equal.

Line Breaks or Punctures shall be repaired by a full circle repair clamp as manufactured by Rockwell, Mueller, or other approved equal.

Line Splits or Blow Outs shall be repaired by replacing the damaged section with ductile iron pipe with a cast iron coupling at each end. The following cast pipe couplings shall be used for each pipe material indicated:

A.C. Pipe - Rockwell 441 cast coupling or other approved equal

Ductile Iron Pipe - Rockwell 431 cast coupling or other approved equal

PVC Pipe - Rockwell 411 cast coupling or other approved equal

For A.C. Pipe to PVC or Ductile Iron Pipe connections, use a cast pipe coupling with different end diameters sized specifically for the pipe materials, and pipe outside diameter at each end.

Water Service Line Repairs

- A water service line severed between the water main and the water meter shall be repaired using new type K copper tubing and bronze or brass 3-piece flare unions.
- A corporation stop pulled out of a PVC pipe water main shall have a new service saddle and a new corporation stop installed on the water main.
- A corporation stop pulled out of a ductile iron pipe water main shall have a full circle repair clamp placed over the old tap hole. A new tap shall be made and a new corporation stop installed on the water main.

END OF SECTION 6.00

**SECTION 7.00
SANITARY SEWER**

SUB-INDEX

7.01 GRAVITY SEWER MAINS

- A. General**
- B. Design**
- C. Materials**
- D. Additional Requirements for Flexible and Semi-Rigid Sanitary Sewer Pipe**

7.02 MOVED to NEW Section 13

7.03 MANHOLES

- A. Materials**

7.04 SERVICE CONNECTIONS

- A. Materials**
- B. Installation**
- C. Grease Interceptor**

7.05 TESTING AND INSPECTION

7.06 REPAIR OF SANITARY SEWER LINES

7.07 MOVED to NEW Section 13

SECTION 7.00 SANITARY SEWER

7.01 GRAVITY SEWER MAINS

A. General

Gravity sewer extensions shall meet all requirements of these standards. In addition, the Minimum Design Criteria for the Permitting of Gravity Sewers and Alternative Design Criteria for Minimum Separation for Sewer Systems to Wetlands, prepared by the Division of Water Resources of NC DEQ, and the North Carolina Administrative Code Title 15A Chapter 02 Subchapter T Waste Not Discharged to Surface Waters (15A NCAC 02T) are hereby incorporated into the Town's standards for gravity sewer design. This specification section identifies minimum equipment and construction requirements for gravity sewer extensions that are to be owned and operated by the Town of Holly Springs. This section does not address every aspect of gravity sewer extensions; it is the design engineer's (Designer's) responsibility to supplement these requirements as necessary to produce a complete set of plans and specifications.

All utility extension permits must be obtained prior to construction. Refer to the Town Code of Ordinances Section 16 for further requirements.

B. Design

Location

1. All public sanitary sewer mains shall be installed in dedicated street right of way or in dedicated utility easements. Sanitary sewer mains installed in Town of Holly Springs maintained streets shall be located in the center of travel lanes. Mains located within N.C. Department of Transportation right of way shall be placed outside of pavement limits, in accordance with NCDOT standards. See Section 2.10 for landscape plantings within Utility easements.
2. Minimum widths of public sanitary sewer easements shall be:

<u>Pipe Size (inches)</u>	<u>Pipe Depth (feet)</u>	<u>Easement Width (feet)</u>
< 12	< 20	20
< 12	> 20	30
12 - 24	< 20	30
12 - 24	> 20	40

> 24	All depths	Executive Director of Utilities and Infrastructure Services Specified
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- a) Additional width of easement will be required when easement contains multiple utilities.
 - b) Additional temporary construction easement may be required for any sewer not constructed at the time the easement is recorded.
 - c) Sewer mains shall be centered within their easements.
 - d) All sewer mains that extend as an outfall between residential lots shall have a minimum 30ft easement.
3. Outfalls shall require accessibility with a maximum cross slope of 6:1.
4. Proposed sanitary sewers paralleling a creek shall be designed to a proper depth to allow lateral connections such that all creek crossings will be below stream bed elevation unless otherwise approved by the Executive Director of Utilities and Infrastructure Services. The top of the sewer main shall have a minimum of one foot of cover between steel encasement pipe and the stream bed. In addition, the following is required:
- a) Sewer lines crossing stream beds will be required to be installed with restrained joint pipe inside a steel encasement pipe in accordance with the Standard Details section of these standards (Reference TOHS HS607).
 - b) Sewer lines crossing under storm drainage pipe containing a single pipe greater than 42 inches or multiple pipes greater than 36-inches will be required to be installed with restrained joint pipe inside a steel casing pipe. Installation may be by bore and jack or excavation which will be at the discretion of the Executive Director of Utilities and Infrastructure Services. All encasements to be extended a minimum of 10 feet beyond the stream bank and/or storm drainage pipe.
5. Sanitary sewer mains shall not be installed under any portion of water impoundments unless approved by the Executive Director of Utilities and Infrastructure Services.
6. The following minimum separations must be maintained:
- a) Any private or public water supply source, including WS-1 waters or Class I or Class II impounded reservoirs used as a source of drinking water – 100 feet;

- b) Any waters classified WS-II, WS-III, B, SA, ORW, HQW or SB (from normal high water [or tide elevation] – 50 feet);
- c) Any other stream, lake, or impoundment – 25 feet or as required by State law.

Where the required minimum separations cannot be maintained, ferrous sanitary sewer pipe with joints equivalent to water main standards shall be used. However, in no instance may sanitary sewer lines be installed less than 25 feet from a private well or less than 100 feet from a public water supply source (or as required by State law).

- 7. Sanitary sewer lines shall be extended to adjacent upstream property lines, in order to serve all upstream properties. These lines shall be sized to serve all upstream tributary areas in accordance with the Master Land Use Plan or approved developments (whichever results in the larger flow).
- 8. All non-residential swimming pools shall be discharged into the storm sewer system after dechlorination.

Size

- 1. The minimum size of public gravity sanitary sewer mains shall be 8 inches.
- 2. Major interceptors shall be sized in accordance with the “Master Wastewater Plan of the Town of Holly Springs.” In areas not included in the master plan, new sewer interceptors shall be designed based on the proposed land use (in accordance with the Town’s Master Land Use Plan) of the contributory area. The following flow factors shall be used:

Residential, (Single-Family) flow rates:

Use flow factors as required by the North Carolina Department of Environmental Quality- (at the time of this specification revision, these flow rates are contained in 15A NCAC 02T.0114), or use the Town’s approved flow reduction of 255 gpd/unit, whichever is less.

Residential (Multi-Family) and Non-Residential flow rates:

Use flow factors as required by the North Carolina Department of Environmental Quality- (at the time of this specification revision, these flow rates are contained in 15A NCAC 02T.0114).

- 3. For existing sewer systems, an additional allowance shall be made to the above flow factors where the existing flow exceeds these values and immediate remedial measures are not proposed.

4. The ratio of peak to average daily flow shall be 2.5.
5. Sanitary sewers shall be designed to carry the projected peak flow at no more than $\frac{1}{2}$ full. The recommended minimum velocity for sanitary sewer lines is 2 fps. The minimum slope for the uppermost reach of a sanitary sewer line shall be 1.00%.

The minimum grades for public sanitary sewers shall be as follows:

Main Size (inches)	Minimum Slope (feet/100 feet)
8	0.40
12	0.22
16	0.14
18	0.12
21	0.10
24	0.08
30	0.06

6. The maximum grade for sanitary sewers is 10%. The maximum velocity in sanitary sewers is 15 feet per second. These limits may be exceeded with the approval of the Executive Director of Utilities and Infrastructure Services and with the incorporation of the following provisions:
 - a) All sewers of greater than 10% slope shall be ductile iron pipe;
 - b) High velocity manholes, in accordance with the Standard Details Section of these Standards shall be used on all sewers with a slope greater than 10%;
 - c) Concrete anchors shall be installed on all sewers of greater than 10% slope at the following spacings:
 - i) Not over 36 feet center to center on grades from 10% to 25%;
 - ii) Not over 24 feet center to center on grades from 25% to 40%;
 - iii) Not over 16 feet center to center on grades exceeding 40%.
7. Sewer extensions should be designed for projected flows even when the diameter of the receiving sewer is less than the diameter of the proposed extension.
8. Pipe diameter changes shall occur in a manhole with the invert of the larger pipe lowered sufficiently to maintain the same energy gradient. An approximate method of securing these results is to place the 0.8 depth point of both sewers at the same elevation.
9. All residential subdivision lots shall be served by public gravity sanitary sewer unless otherwise approved by the Executive Director of Utilities and Infrastructure Services. If a pump is approved, it shall be privately maintained, must pump into a gravity service connection placed on the lot, and must have a note on the construction plans and recorded plat indicating a private pump may be required to serve the lot with sanitary sewer service. In instances where private pump stations are approved, the gravity service

that received the force main shall be required to extend into private property so that the required private force main vent is located a minimum of 20 feet from public right of way.

10. Downstream receiving sewer infrastructure shall be evaluated to confirm adequate capacity by the design engineer for each project. In addition, a sewer study may be required to accompany plans submitted to the Town for consideration of impacts to downstream sewer infrastructure. Developer shall be required to upgrade insufficient infrastructure.

Installation

1. Sanitary sewer mains shall be deep enough to serve adjoining and upstream properties and allow for sufficient slope in lateral lines. All sanitary sewer mains shall have the following minimum of 4.5 feet of cover and 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 which may be widened in the future;
 - c) 4.5 feet from top of pipe to finished grade in all other areas.

The above requirements may be waived at the direction of the Executive Director of Utilities and Infrastructure Services, in which case ductile iron pipe shall be installed.

2. The construction of all sanitary sewer lines which will be maintained by the Town must be performed by a contractor licensed in North Carolina.
3. Sewer mains from 14 to 20 feet deep shall require special bedding in accordance with the Standard Details Section of these Standards.
4. Sewers over 20 feet deep shall require ductile iron for the entire run between manholes and shall be 401 protectant lined.
5. Pipe trench excavation and backfilling shall be performed in accordance with Section 5.00 of these Standards.
6. Transitions of pipe material shall occur only at manholes.
7. Sewer mains shall be laid at least 10 feet laterally measured edge to edge from existing or proposed water mains unless it is determined that local conditions or barriers prevent a 10-foot lateral separation in which case:

- a) 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 sewer;
 - b) The water main is 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.
- 8. Where sanitary sewers cross NCDOT roadways or major Town roads, as determined by the engineer, pipe encasement shall be required.
 - 9. Where sanitary sewers cross beneath water mains with a vertical separation of 18 inches or less or where water mains cross under sewer mains, the entire leg of sewer line shall be ductile iron pipe. The water line pipe shall be centered at the point of crossing and shall cross sanitary sewer lines at an approximate 90° angle.
 - 10. Where sanitary and storm sewers cross with a vertical separation of less than 24 inches the entire leg of sanitary sewer shall be of ductile iron pipe. There shall be a minimum 5-foot horizontal separation between sanitary sewer and storm sewer.
 - 11. For sanitary sewer and reclaimed separation, see Section 11.01.
 - 12. There shall be a minimum 5-foot horizontal separation between parallel gravity and/or force mains.
 - 13. Sewer line easements shall be completely cleared of all vegetation, graded smooth with minimum cross slope of 6:1, free from rocks, boulders, roots, stumps, and other debris, free from ponded water, and seeded and mulched upon the completion of construction.
 - 14. The first new downstream manhole(s) of any sanitary sewer line extension under construction shall be plugged on the outlet side with a masonry wall or a wing nut plug (to be determined and inspected by the Development Inspector); secured with a stainless steel cable with identification plate of contractor's name; and secured with stainless steel cable to prevent the passage of groundwater, runoff and sediment into the existing sanitary sewer system. All water upstream of the plug shall be pumped out of the sanitary sewer line and all sediment and solids shall be removed and properly disposed of by the Contractor prior to removal. The plug shall not be removed until the line has been inspected by the Development Inspector to ensure that all possible points of inflow or infiltration have been secured. Failure to meet this requirement will result in a \$1,000 per day fine. If the plug blows out and causes equipment or material damage or spills downstream, the Contractor shall be responsible for resulting fines and costs

of repairs. Authorization to remove the plug shall be required by Development Inspector. If the Contractor fails to obtain necessary approvals and removes the plug before the system is activated, the Contractor shall be responsible for resulting State and Town fines and damages resulting.

Manholes

1. All manhole cone sections shall be the eccentric type.
2. Manholes shall be spaced at a maximum distance of 425 feet apart regardless of size unless documentation is provided showing capability to perform routine maintenance on sewer at distances greater than 425' apart.
3. 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.
4. All manholes that are over 20 feet deep shall be 5 feet in diameter.
5. Manholes shall be installed at each deflection of line and/or grade. The flow channel through manholes should be smooth and shall conform to the shape of the entering/exiting sewer line. A standard 0.20-foot drop shall be provided at each manhole. Inverts “in” and “out” shall be as designated on the approved plans. Sewers shall be designed to minimize free drops in manholes.

Either precast or brick and mortar inverts may be used conforming to these Standards. The invert shall be smooth and uniform in shape along the entire length.

6. 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 Standard Details Section of these Standards. Outside drops shall not be permitted except when necessary to connect to existing manholes.
7. 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.
8. Watertight manhole rings and covers shall only be allowed upon approval by the Executive Director of Utilities and Infrastructure Services. Manholes

with watertight tops shall be vented in accordance with the Standard Details Section of these Standards.

9. Manholes located within flood plain areas, on outfalls, and within any areas of high groundwater shall be waterproofed by wrapping all joints with a minimum 8-inch width band of butyl joint wrap. Waterproofing shall be installed by mopping asphalt over the joint area, then wrapping butyl joint wrap around the joints, and finally mopping the wrap with another coat of asphalt. The total asphalt coat thickness shall be a minimum of 20 mils.
10. Manholes for sewers 12 inches and above shall be coated with an epoxy coating system such as Cor-Cote SC as manufactured by Sherwin-Williams, Raven 405 as manufactured by Raven Lining Systems, Sewer Kote Duramer 1030 or an approved equivalent.
11. Manholes with an exterior height of four feet or greater from finished grade shall have exterior steps.
12. Manholes on outfalls shall have frames and rotating covers as detailed in HS722 with vent holes.
13. All sanitary sewer manholes in areas of special concern shall be required to be vacuum tested in accordance with ASTM C-1244.
14. Where manholes are located in streets inside the Triassic Basin (HS356) it will be required to have suitable off-site structural material or stone to backfill around excavation of manholes up to subgrade. Also see Section 3.02J of these standards.

C. Materials

The Executive Director of Utilities and Infrastructure Services will maintain a list of approved manufacturers for all sanitary sewer collection system products. New manufacturers must submit requests for approval to the Executive Director of Utilities and Infrastructure Services. Additional information such as catalogs, lists of installations in the area or material samples may be required. A written response will be mailed to the applicant accepting or rejecting the product within 90 days of the receipt of all necessary information.

Each length of sanitary sewer pipe installed shall have plainly and permanently marked thereon the following information:

1. Pipe class or strength designation;
2. Manufacturer's name or trademark;

3. Nominal pipe size.

A.B.S. Composite (Truss) Pipe

A.B.S. composite pipe shall meet the requirements of ASTM D 2680. Pipe joints shall be chemically welded or gasket joints in accordance with ASTM D 3212. See Section 7.01-C for additional installation requirements. See the Standard Drawing Details Section of these Standards for bedding requirements.

Ductile Iron Pipe

Ductile iron pipe for gravity sewer use shall be designed and manufactured in accordance with AWWA C150 and C151 for a laying condition Type 2 and a working pressure as follows:

3 – 12 inches	350 psi
14 – 20 inches	250 psi
24 inches	200 psi
30 – 54 inches	150 psi

Pipe joints shall be of the push-on type as per AWWA C1211. Pipe lining shall be cement lined. All ductile sewer lines 12” and above shall be 401 protectant lined

Polyvinyl Chloride (PVC) Pipe

PVC pipe shall be made of PVC plastic having a cell classification of 12454-B, 12454-C or 13364-B (with minimum tensile modulus of 500,000 psi) as defined in Specification D1784. PVC pipe shall have integral wall bell and spigot joints for the conveyance of domestic sewage. Fittings shall be made of PVC plastic having a cell classification of 12454-B, 12454-C or 13343-C as defined in Specification D1784. Fittings must be manufactured by pipe supplier or approved equal, and have bell and/or spigot configurations compatible with that of the pipe. Compounds with superior properties are also acceptable.

All pipe less than 18 inches in diameter shall have a maximum Standard Dimension Ratio (SDR) of 35. Where laying conditions so warrant, and in accordance with manufacturer’s recommendations, lower SDR values (stronger pipe) may be required.

PVC pipe 18 inches in diameter and larger must be SDR-35 as defined in ASTM 679. Pipe strength shall be equal to or exceed that required for pipe less than 18” in size. Pipe shall have special bedding as per Detail HS 703.

Installation shall consist of Class I bedding material (as defined in Section 7.01 C) placed 4 inches below the pipe barrel and continuing to 4 inches above the pipe barrel, as per ASTM D2321. In addition, the installation of PVC pipe shall satisfy

the requirements of Section 7.01-C below. See the Standard Details Section of these Standards for bidding requirements.

PVC Composite (Truss) Pipe

PVC thermoplastic material shall be a rigid PVC plastic conforming to ASTM D-1784 for a minimum cell class of 12454-B. The Portland Cement Perlite concrete or other inert filler material shall be as described in Section 6.3 of ASTM D-2680.

Joints shall be chemical welded or gasketed in accordance with ASTM D3212. Solvent cement for joining PVC to PVC shall comply with ASTM D-2564. Pipe test specimens shall meet all the manufacturing requirements established in ASTM D-2680.

All recommendations of the manufacturer shall be followed in shipping, handling, laying, joining and backfilling of the pipe, and the pipe shall be installed in full and complete compliance with Recommended Practice D2321. In addition, the installation of PVC composite pipe shall satisfy the requirements of Section 7.01-C below. See the Standard Details Section of these Standards for bedding requirements.

Steel Encasement for water/sewer pipes are required for the following Street Classifications to avoid traffic disruption in the future:

- Controlled Access Highway

For carrier pipes that employ cathodic protection anticorrosion systems, the carrier and casing pipes shall be effectively insulated from one another. Carrier and casing shall be cathodically protected as a unit.

See Section 5.03 Boring and Jacking for more casing pipe size requirements.

D. Additional Requirements for Flexible and Semi-Rigid Sanitary Sewer Pipe

Installation of flexible and semi-rigid sanitary sewer pipe shall satisfy the requirements of the manufacturer and/or the following, whichever is more stringent:

1. Installation shall follow the recommendations of ASTM D-2321 “Underground Installation of Flexible Thermoplastic Sewer Pipe.” For flexible and semi-rigid pipes, bedding and embedment material shall be Class I. In any area where the pipe will be installed below existing or future ground water levels or where the trench could be subject to inundation, additional Class I material shall be used for bedding. Refer to the Standard Details Section of these Standards for embedment requirements.

2. The manufacturer's specifications or otherwise approved method shall be used in determining the stiffness class of the pipe to be installed so as to attain the required deflection control. The class of the pipe must be approved by the Executive Director of Utilities and Infrastructure Services prior to installation.
3. The maximum allowable deflection after installation shall be less than 5% for flexible pipe and 3% for semi-rigid pipe. The mandrel (go/no-go) deflection test must be performed on each line prior to acceptance, and no less than 30 days after installation. The Contractor shall supply the mandrel used for this performance test. The mandrel device shall be cylindrical in shape having 9 possible contact points with the pipe. The mandrel's length and diameter (ID of proving ring) shall equal the dimensions in the following table, and shall be subject to the Construction Inspector's approval. A mandrel test on truss pipe shall only be required if the Construction Inspector finds a problem during the visual inspection.

For polyethylene pipe, the following shall apply:

Nominal Diameter (inches)	Mandrel Length (inches)	Mandrel Diameter (inches)
18	12 (minimum)	16.53
21	"	19.30
24	"	22.08
27	"	24.84
30	"	27.62
33	"	30.38
36	"	33.15
42	"	38.68
48	"	44.21
54	"	49.74
60	"	55.27

For other flexible pipes the following shall apply:

Nominal Diameter (inches)	Mandrel Length (inches)	Mandrel Diameter (inches)
6	6	5.65
8	8	7.40
10	10	9.31
12	10	11.22
15	12	14.09

For semi-rigid (truss) pipes the following shall apply:

Nominal Diameter (inches)	Mandrel Length (inches)	Mandrel Diameter (inches)
8	8	7.52
10	10	9.46
12	10	11.40
15	12	14.31

4. For PVC and Polyethylene pipe, the pipe shall be produced with bell and spigot end construction. Joining will be accomplished by rubber gasket in accordance with manufacturer's recommendation, unless otherwise directed or approved by the Executive Director of Utilities and Infrastructure Services. Flexible watertight elastomeric seals in accordance with ASTM D3212-81, may also be used. Each pipe length shall be clearly marked with information including pipe size, profile number, and class number.

5. Minimum trench width shall be one pipe diameter plus 9 inches on each side of the pipe.
6. Special Bedding (6-inch minimum) and embedment materials shall be per ASTM D2321. Embedment materials shall be installed from trench wall to trench wall and from 6" below the invert to a minimum of 6 inches above the crown of the pipe, for all pipe 14-20 feet deep.
7. The bedding and embedment material shall be compacted to a minimum of 90% Standard Proctor density for Class I materials.
8. If hydraulic jack shoring is utilized for trench walls where shoring is used, it shall be kept to the area just above the top of the pipe. This will ensure the embedment materials and pipe will not be disturbed when removal is made.
9. Bedding and embedment material classifications shall be defined as follows:

Class I - Angular, ($\frac{1}{4}$ to $1\frac{1}{2}$ inch) graded stone, including a number of fill materials that have regional significance such as coral, slag, cinders, crushed stone, crushed gravel, and crushed shells.

Class II - Coarse sands and gravels with maximum particle size of $1\frac{1}{2}$ inch, including variously graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. Soil types GW, GP, SW and SP are included in this class.

Class III - Fine sand and clayey gravels, including fine sands, sand-clay mixtures, and gravel-clay mixtures. Soil types GM, GC, SM, and SC are included in this class.

Class IV - Silt, silty clays, and clays, including inorganic clays and silts of medium to high plasticity and liquid limits. Soil types MH, ML, CH and CL are included in this class. These materials are not recommended for embedment.

7.02 **MOVED to NEW Section 13**

7.03 **MANHOLES**

A. **Materials**

Manholes shall be precast concrete. No hoop steel base or riser sections are allowed. All manholes shall have eccentric cone sections.

Precast concrete manholes shall meet ASTM C478 as to design and manufacturer. The standard joint shall be sealed with a plastic cement putty meeting Federal Specification SS-S-00210, such as Ram-Nek or a butyl rubber sealant. All lift holes must be plugged with non-shrinking grout after installation. For precast concrete manholes, see the Standard Details Section of these Standards.

Manhole frames and covers (including rotating covers) shall be cast in ductile iron, conforming to ASTM A-48 Class 30, with “Sanitary Sewer” stamped on the cover and two 1-inch perforated holes in roadways and four 1-inch perforated holes in outfalls unless covers required to be watertight. Castings shall be machined to give even and continuous bearing on the full length of the frame. Castings shall be Grey Iron ASTM 48, CL 35B made in the U.S.A. Manhole frames shall be bolted to the manhole as per the Standard Details Section of these Standards. All manhole rings in roadways shall be encased in a concrete collar, 18 inches by 12 inches, of 3,000 psi concrete beneath the asphalt, with the cover flush with the top of pavement and rated for an AASHTO loading Class HS-20, as shown in the Standard Details Section of these Standards.

Watertight manhole frames and covers shall have neoprene gasket, machine bearing surfaces. Bolts shall be standard hexagonal-head, countersunk such that when fully tightened bolt head is flush with the top of the cover. Castings shall be Gray Iron ASTM 48, CL 35B, made in the U.S.A., free of porosity and blow holes. Watertight manhole frames and covers shall only be permitted in lieu of elevating the manhole tops above the 100 and/or 500-year flood plain with specific approval by the Executive Director of Utilities and Infrastructure Services. Watertight manholes shall require venting per the Standard Details section of these standards.

Manhole steps shall be furnished with the precast sections. Steps shall be of polypropylene material reinforced with a half-inch diameter grade 60 reinforcing steel rod. Manhole steps shall be designed for a vertical load of 400 pounds and a horizontal pull out load of 1,000 pounds. Steps shall be set 16” on center. Holes for the installation of manhole steps shall not project through the manhole wall. There shall be a minimum of 1-inch wall thickness from the deepest penetration of the step installation hole and the outside wall. Steps shall be at least 10” clear width

and shall project at least 4" from the wall into which it is embedded. Steps shall not be located over the influent or effluent pipes and shall be installed along a vertical manhole wall from the shelf to the top of cone.

All manholes shall have 6-inch, 3,000 psi concrete bottoms resting on a minimum of 6 inches of #57 stone. Sewer mains shall enter and exit radially through the manhole. Inverts shall be constructed with a width and height equal to half that of the effluent pipe and shall be so brushed and troweled that a minimum energy loss occurs in the manhole.

At each inlet and outlet of line 8 inches or greater, wastewater lines are to be connected to the manholes by means of compression connectors (flexible sleeves) cast into the manhole section. Flexible connectors are to be manufactured of high-quality rubber or synthetic rubber and all strap clamps or draw bolts are to be manufactured from stainless steel.

7.04 SERVICE CONNECTIONS

A. Materials

Cast iron soil pipe shall be service weight hub and spigot meeting Federal Specifications WW-401. The joints shall be rubber type elastomeric as per ASTM C425.

PVC pipe shall be schedule 40 or greater supplied in 18 foot lengths. The pipe may be joined by elastomeric gaskets.

Ductile iron pipe shall be used for sanitary sewer services with less than 3 feet of cover or in excess of 20 feet of cover.

Services for new lines shall use in-line wyes of like material unless otherwise approved by the Executive Director of Utilities and Infrastructure Services.

Service saddles for existing PVC or ABS lines shall be of the same material as the main, solvent welded and fastened with double stainless steel bands as shown on the Standard Details Section of these Standards.

Service saddles for existing cast iron soil pipe services may be "ROMAC C" sewer saddles consisting of a virgin SBR gasket compounded for sewer service, a ductile iron saddle casting, a 304 stainless steel adjustable strap for fastening the gasket and the saddle casting to the sewer main and a 304 stainless steel adjustable circle clamp for securing the service line into the SBR gasket.

B. Installation

Individually owned structures shall require individual sewer taps to public sewer. All service connections to existing or new sanitary sewer mains shall be made by a licensed Contractor in the State of North Carolina, and in accordance with these Standards.

Service taps into mains shall be made on the top quarter of the main with the wye angled with the direction of flow in the main. All services installed on new lines shall be inline wyes unless otherwise approved by the Executive Director of Utilities and Infrastructure Services.

All service lines shall require Class I bedding from 6 inches below service line to 6 inches above the service line. All service lines shall have a minimum of 8 inches separation from other utilities. Service lines greater than 20 feet or less than 3 feet in depth must be ductile iron.

Service connections to the main lines shall be perpendicular to the main line to the edge of the right of way or easement line. Services shall have a minimum slope of 1.0 feet per 100 feet. Cleanouts shall be required on all sewer services at a maximum spacing of 75 feet on 4-inch services and 100 feet on 6-inch services. A cleanout shall be placed on all service lines at the right of way line or at the edge of the easement. All cleanouts shall extend a minimum of 6 inches above finished grade or meet the optional installation requirements in accordance with the Standard Details Section of these Standards. Sewer cleanouts located in paved areas must have traffic load bearing mini-manhole.

All 6-inch service lines shall tie directly into a manhole.

All service lines which are connected into manholes shall be installed less than 2½ feet above the invert or shall be installed with a standard drop as shown on the Standard Details Section of these Standards. Service lines shall not be installed through manhole cone sections or manhole joints. The use of service saddles will only be permitted for connection to existing sewer lines.

Service connections made using a “ROMAC C” sewer saddle shall be made only when the service line is cast iron soil pipe and only when the sewer main is 8, 10, or 12-inch diameter concrete, ductile iron, or PVC sewer pipe. This service connection shall not be used when the sewer main material is truss sewer pipe.

The opening in the sewer main for the “ROMAC C” sewer saddle shall be cut with a hydraulically driven or a pneumatically driven circular tapping saw of the same nominal diameter as the sewer service line.

C. **Grease Interceptor**

All grease traps/interceptors shall be designed according to minimum standards of the North Carolina Plumbing Code and any requests of the Town. The Town prohibits joint use of a tap or interceptor between establishments. All cooking establishments shall have grease interceptors installed and maintained at the User's expense. Non-cooking establishments or other commercial, institutional and/or industrial establishments may also be required to install a grease-handling device(s) when deemed necessary by the Town.

The discharge from the following fixtures shall be connected to the grease interceptor: all sinks, dishwashers, floor drains in food preparation and storage areas, and any other fixtures through which grease may be discharged. See Detail HS725.

7.05 TESTING AND INSPECTION

All materials used must be inspected by the Construction Inspector before they shall be allowed to be installed. Materials rejected by the Construction Inspector shall be immediately removed from the job site.

The Contractor shall furnish all materials, labor, and equipment, and shall pay for the water used to perform all testing and inspection to the satisfaction of the Construction Inspector. The Contractor shall obtain a meter from the Town of Holly Springs for use.

Sanitary sewer lines shall be free and clean from obstructions and shall be visually inspected from every manhole to ensure all lines exhibit a fully circular pattern. Lines which do not exhibit a true line and grade or have structural defects shall be corrected. Sanitary sewer service connections shall be visually inspected prior to backfilling.

Prior to the placement of any roadway structure, the Contractor shall clean and CCTV all newly installed sewer mains. A 3rd Party CCTV contractor shall televise the sewer main and all lateral connections installed from the upstream to the downstream manhole with no reverse setups or cutaways. This shall be done at the Developers expense. The contractor shall clean the sewer mains ahead of the video inspection with a high velocity water jet. The video inspection shall take place within two hours of the cleaning operation as witnessed by a Town of Holly Springs Development Inspector. All construction debris shall be collected in the down stream manhole and shall not be released into the sewer system. No other work shall be performed on the sewer lines after cleaning and prior to the video inspection. The contractor may not perform CCTV inspections on any utilities that they have installed. The contractor shall provide a DVD or Flash Drive, submitted to the inspector for review.

See Section 7.01 C for additional testing requirements for flexible and semi-rigid pipe.

Low-pressure air testing shall be performed after all laterals or stubs are installed on the line and after the main has been backfilled to finished grade. Plugs shall be installed at each manhole to seal off the section of line to be tested. The line will be pressurized with a single hose and monitored by a separate hose connection from the plug. Air shall be slowly introduced into the sealed line until the internal air pressure reaches 4.0 psig. The air pressure shall then be allowed to stabilize for a minimum of 2 minutes to no less than 3.5 psig (plus groundwater pressure, if any). When the pressure reaches 3.5 psig, the time required for the pressure to drop 1.0 psi shall be observed and recorded. The line shall be termed “acceptable” if the pressure does not drop more than 1.0 psi in the time prescribed for the test in the following table:

STANDARD AIR TEST TABLE Specification time (min:sec) required for pressure drop from 3½ to 2½ psig when testing one pipe diameter only									
Length of Pipe (feet)	Pipe Diameter (inches)								
	4	6	8	10	12	15	18	21	24
25	0:04	0:10	0:18	0:28	0:40	1:02	1:29	2:01	2:38
50	0:09	0:20	0:35	0:55	1:19	2:04	2:58	4:03	5:17
75	0:13	0:30	0:53	1:23	1:59	3:06	4:27	6:04	7:55
100	0:18	0:40	1:10	1:50	2:38	4:08	5:56	8:05	10:34
125	0:22	0:50	1:28	2:18	3:18	5:09	7:26	9:55	11:20
150	0:26	0:59	1:46	2:45	3:58	6:11	8:30		
175	0:31	1:09	2:03	3:13	4:37	7:05			
200	0:35	1:19	2:21	3:40	5:17				12:06
225	0:40	1:29	2:38	4:08	5:40			10:25	13:36
250	0:44	1:39	2:56	4:35			8:31	11:35	15:07
275	0:48	1:49	3:14	4:43			9:21	12:44	16:38
300	0:53	1:59	3:31				10:12	13:53	18:09
350	1:02	2:19	3:47			8:16	11:54	16:12	21:10
400	1:10	2:38			6:03	9:27	13:36	18:31	24:12
450	1:19	2:50			6:48	10:38	15:19	20:50	27:13
500	1:28			5:14	7:34	11:49	17:01	23:09	30:14

If the section of line tested fails to meet these requirements, the source of leakage shall be determined and repaired. The section of line shall then be retested.

The Construction Inspector may require that an infiltration test be performed. Infiltration shall not exceed 100 GPD per inch per mile.

At the discretion of the Executive Director of Utilities and Infrastructure Services, sanitary sewer manholes in areas of special concern may be required to be vacuum tested in accordance with ASTM C-1244 as shown.

C 1244 – 05a ^{e1}																			
Table 1 Minimum Test Times for Various Manhole Diameters (30-120 in.) in Seconds										Table 1 Minimum Test Times for Various Manhole Diameters (30-120 in.) in Seconds (continued)									
Diameter, in.										Diameter, in.									
Depth (ft)										Depth (ft)									
	30	33	36	42	48	54	60	66	72		78	84	90	96	102	108	114	120	
Time, in seconds										Time, in seconds									
<4	6	33	7	9	10	12	13	15	16	<4	18	19	21	23	24	25	27	29	
6	9	10	11	13	15	18	20	22	25	6	26	29	31	34	36	38	41	43	
8	11	12	14	17	20	23	26	29	33	8	35	38	41	45	48	51	54	57	
10	14	15	18	21	25	29	33	36	41	10	44	48	52	56	60	63	67	71	
12	17	18	21	25	30	35	39	43	49	12	53	57	62	67	71	76	81	85	
14	20	21	25	30	35	41	46	51	57	14	62	67	72	78	83	89	94	100	
16	22	24	29	34	40	46	52	58	67	16	70	76	83	89	95	101	108	114	
18	25	27	32	38	45	52	59	65	73	18	79	86	93	100	107	114	121	128	
20	28	30	35	42	50	53	65	72	81	20	88	95	103	111	119	126	135	142	
22	31	33	39	46	55	64	72	79	89	22	97	105	114	122	131	139	148	156	
24	33	36	42	51	59	64	78	87	97	24	106	114	124	133	143	152	161	170	
26	36	39	46	55	64	75	85	94	105	26	114	124	134	144	155	164	175	185	
28	39	42	49	59	69	81	91	101	113	28	123	133	145	155	167	177	188	199	
30	42	45	53	63	74	87	98	108	121	30	132	143	155	166	178	189	202	213	

7.06 REPAIR OF SANITARY SEWER LINES

The repair of damaged sanitary sewer lines shall be as follows:

1. PVC Pipe - Replace damaged section with PVC pipe. Install PVC couplings or ductile sleeves and mechanical bolt at each end (encased in concrete).
2. ABS/PVC Truss Pipe - Replace damaged section with D.I.P. Install PVC couplings or ductile sleeves and mechanical bolt at each end (encased in concrete).

All repairs to damaged sanitary sewer lines shall be backfilled with ABC stone (crusher run) to a density of 95% Standard Proctor.

7.07 MOVED to NEW Section 13

END OF SECTION 7.00

**SECTION 10.00
ENVIRONMENTAL**

SUB-INDEX

10.00 ENVIRONMENTAL

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10.0 ENVIRONMENTAL

10.01 GENERAL

This chapter contains standards, specifications, techniques and devices required to preserve the natural function of the environment, and for the purpose of insuring compliance with the Town's Sedimentation & Erosion Control Ordinance, Flood Damage Prevention Ordinance and other environmental ordinances, policies, and standards. These techniques and devices are the minimal acceptable for use in the Town of Holly Springs. The use of other techniques and devices is acceptable if adequate measures are provided by the alternative and prior approval is given by the Executive Director of Utilities and Infrastructure Services based on a review of specifications and details for the measure. The designer should also refer to Section 4.00 of these specifications for more Sedimentation & Erosion Control Standards.

10.02 TREE PROTECTION PRESERVATION AND HARVESTING

Tree protection and preservation is required whenever preservation or protection of existing vegetation is required per the Town's UDO and other ordinances, policies, etc. Fencing locations shall be shown on preliminary and construction drawings and may be modified in the field with approval of the Inspector.

Trees shall be protected by fencing installed the distance from the trunk of the tree that equals the diameter of the trunk of the tree divided by two and converted into feet or at the drip line of the tree branches; whichever is more stringent. Tree protection fencing shall be installed before any work is done on the site and inspected during the Certificate of Compliance Inspection.

Encroachment into buffer areas must be permitted by the Utilities and Infrastructure Services per Section 7.06, D., 4., e Environmental Buffer Areas of the Town of Holly Springs, Unified Development Ordinance and 2003 N.C. Sess. Law ch. 73, § 5.1.

A separate timbering plan is required for timbering that fits the criteria outlined in Section 9-5023 of the Town's Soil Erosion and Sediment Control, Stream and Wetlands Protection, Land Disturbance Ordinance.

A. Tree Protection Fencing

Standard tree protection fencing shall be used to protect any tree save area including riparian buffers, buffers required by the UDO, thoroughfare buffers, open space or areas designated by the Town's Engineering, Planning, or Parks and Recreation Departments. Fencing shall consist of high-visibility orange, UV-resistant high tensile strength poly barricade

fabric with 5' steel posts located at a maximum 8' spacing, with minimum 10 gauge line wires. Signage shall be required which states "TREE PROTECTION AREA DO NOT ENTER" along the fencing at 50 foot intervals (maximum), and shall be made out of a durable waterproof material with a minimum of 3" lettering spaced clearly legible in accordance with the standard detail and the approved erosion control plan.

B. Boardwalk-type sidewalk

Boardwalks shall be used adjacent or through tree save areas or riparian buffers in lieu of sidewalk or asphalt. These measures shall be in accordance with the standard detail.

C. Construction Operations in (or adjacent to) Tree Save Areas

When construction operations (including but not limited to cut and fill) cannot be avoided in or near either tree save areas or the drip line of the tree, the following criteria shall be met:

1. A tree specialist shall be consulted prior to obtaining an approved timbering, erosion control, or grading plan or beginning operations of a plan is not required. Recommendations from the specialist may be established as conditions of plan approval.
2. No more than 2" of fill may be placed on the roots or around the trunk of a tree.
3. Cut slopes shall be no closer than 3 times the diameter of the tree, and shall not cause removal of more than 25% of the root zone surrounding the tree.
4. No heavy machinery shall be used within the drip line of the tree. Construction equipment shall be limited to small rubber-tired equipment and hand work.
5. Root pruning with instruction by an arborist is required prior to the installation of any permanent structures or excavation that encroaches into the root zone of a tree.
6. All denuded area around the tree must be covered by at least 3" of mulch within 10 days of completion of work around the tree.
7. A 2 (two) year warranty period may be required for all work done in (or adjacent to) a tree save area.

10.03 INDIVIDUAL LOT REQUIREMENTS

A. Erosion and Sedimentation Control

Erosion and Sedimentation Control measures are required on lots that have an active construction in compliance with Section 4.09. Residential lot construction of 20,000 square feet or greater of disturbed area requires an Erosion Control Plan approval and a Environmental Development Permit. The amount of disturbed area for residential lot construction is determined by the lot or lots that are to be constructed in a subdivision or phase of a subdivision. These lots do not have to be contiguous or being disturbed at the same time.

B. Flood Damage Prevention

Individual lots shall be required to comply with the Town of Holly Springs Flood Damage Prevention Ordinance, ordinance number 06-08, Chapter 8, Article III of the Holly Springs NC, Code, and 10.02 of the Town of Holly Springs Development Procedures Manual, Building Permit Procedures.

C. Tree Preservation

Tree preservation must take place on all lots with active construction in compliance with 10.02 of this section.

10.04 DEVELOPMENT IMPACTS IN ENVIRONMENTALLY SENSITIVE AREAS

A. Stream Crossing

In areas where utility line installation is proposed to go through an area determined to be environmentally sensitive (such as stream, wetlands and/or floodplain) the following items shall be incorporated into design and construction in order to minimize adverse impacts to the area. Evaluation to determine if boring and jacking under the environmental feature is possible. Obtaining permits from regulatory agencies with jurisdiction, site specific erosion control devices (diversions, pumping, removal of fill, stabilization, etc.), a detailed construction sequence for the specific utility crossing, special techniques as required, and a special preconstruction meeting prior to starting the work. At the end of each work day, until completion, the site shall have appropriate erosion control measures installed to prevent damage from sedimentation and all channels must be restored to have positive flow. Once work has started, it must be completed in the shortest timeframe possible. Town maintained sanitary

sewer outfalls must be considered as permanent stream and wetland impacts and be provided with access to allow long term operation and maintenance of sanitary sewer outfalls or alternate means of access approved by the Executive Director of Utilities and Infrastructure Services.

10.05 TIGER SALAMANDER PRESERVATION AREA

In 1995, Tiger Salamanders (*Ambystoma tigrinum*) were found upstream of SR 1152 (Holly Springs Road) through environmental surveys associated with a Town project. In an effort to reduce the potential impacts to the tiger salamander population, the Town has compiled the following mitigative strategies which must be followed within the Tiger Salamander Preserve area for ensuring the long-term survival of this salamander population.

A. Future Utility Lines and Sewer Connections

Future utility lines and sewer connections that must traverse the preserve shall be carefully designed to avoid breeding pools, and land disturbance should be minimized. Sewer lines from multiple customers shall be connected to a common collector outside the preserve to minimize lines traversing the preserve. Please refer to map Figure A for the location of the preservation area

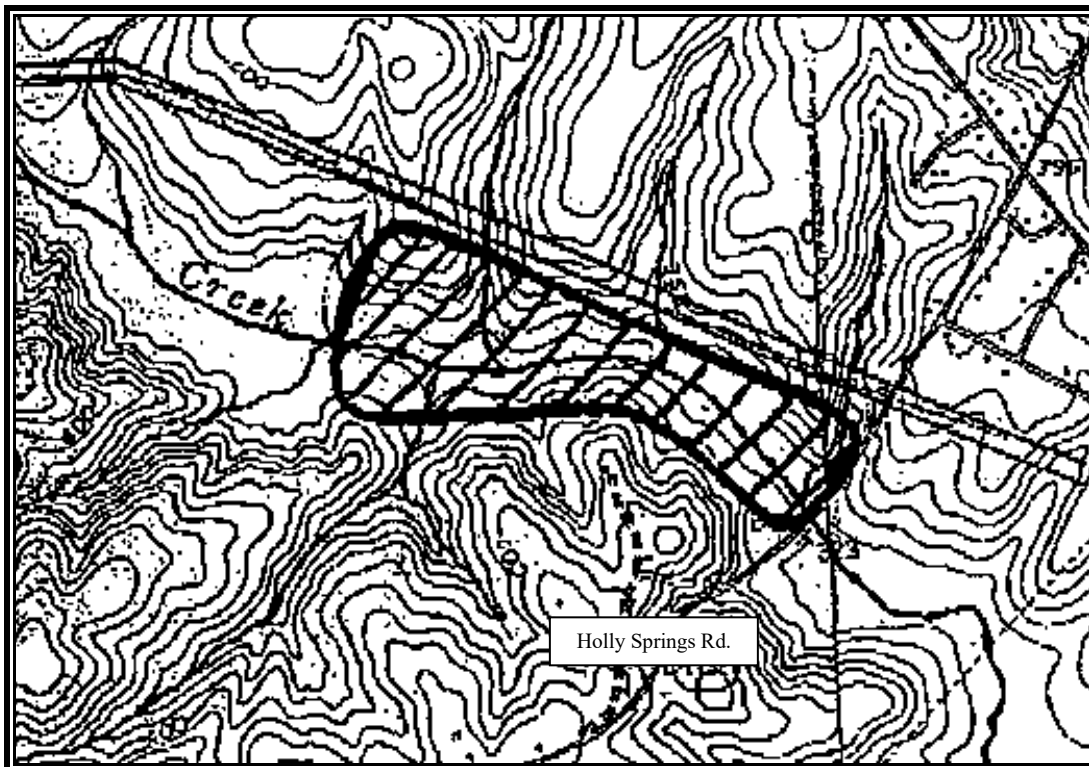


Figure A

B. Monitoring

Monitoring may be required for projects undertaken in or adjacent to the preserve area. Monitoring will consist of inspecting breeding pools during the winter and early spring for salamander eggs or larvae.

C. Conservation Easements

Permanent conservation easements will be required to preserve the Middle Creek floodplain and adjacent slopes from the sewer line corridor northward to the powerline/gasline right-of-way, and from SR 1152 westward to a north/south line approximately 400 feet west of Pool 15 shown on Figure B. This area encompasses approximately 45 acres.

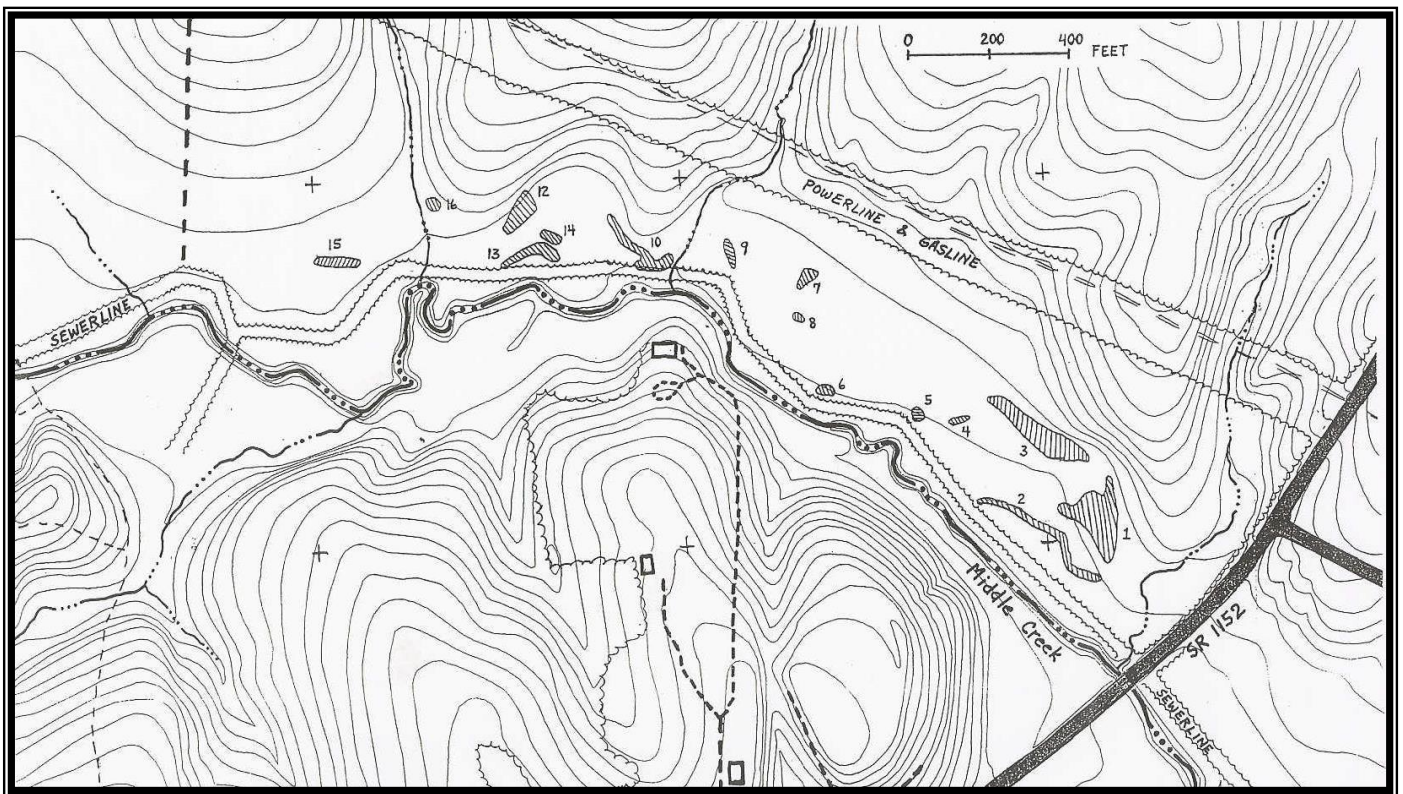


Figure B

10.06

RIPARIAN BUFFERS

All Land disturbance adjacent to perennial and intermittent streams must comply with both Town and State Riparian buffer regulations as contained

in Section 4.8.4 Riparian Conservation Buffers and Section 15A NCAC 02B.0233 Neuse River Basin: Nutrient Sensitive Waters Management Strategy: Protection and Maintenance of Existing Riparian Buffers. Tree protection strategies outlined in Section 10.02 of these standards must be utilized and the following items listed below may be required in the development process for development adjacent to the riparian areas.

A. Mitigation

Mitigation may be required by the Town for impact to those riparian buffer zones regulated by the Town, specifically NRB 3, CFB 1 and CFB 2 as described in the Table of Uses contained in Table 4.8.-C of the Unified Development Ordinance, or in conjunction with waivers approved by the Town of Holly Springs Town Council. Mitigation practices shall be in accordance with guidelines established by the North Carolina Department of Environment and Natural Resources, Division of Water Quality.

B. Diffuse Flow Requirements (stormwater BMP's)

Diffuse flow is required for water entering Zones CFB 2, NRB 2, and NRB 3. All devices shall be in accordance with design practices approved by the North Carolina Department of Environment and Natural Resources, Division of Water Quality.

10.07 TOWN OF HOLLY SPRINGS SECONDARY AND CUMULATIVE IMPACTS MASTER MANAGEMENT PLAN (SCIMMP)

A Certification by a registered professional engineer is required to be placed on the development plan to state that the project is in compliance with the most current version of the Town of Holly Springs SCIMMP. Additional design requirements or analysis may be required in areas identified to have significant secondary and cumulative impacts to the Town's natural resources.

END OF SECTION 10.00

**SECTION 11.00
RECLAIMED WATER DISTRIBUTION SYSTEM**

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11.06 REPAIR OF RECLAIMED WATER SYSTEM

11.00 GENERAL

- A. All aspects of the design and construction of any portion of the reclaimed water distribution system shall, at a minimum, meet the requirements of the North Carolina Department of Environmental Quality (NCDEQ) Division of Water Resources (DWR). Requirements presented in the Town of Holly Springs Standard Specifications hereunder that are more restrictive or go above and beyond the requirements of DWR are required by the Town of Holly Springs.
- B. All Reclaimed water systems must be designed per North Carolina Administrative Code Title 15A (15A NCAC) – Environmental Quality, Subchapters 02T, 02U, and 18C latest revisions, the governing regulations.
- C. Extensions of the existing reclaimed water distribution system must adhere to any and all Policy Statements and/or Master Plans pertaining to the reclaimed water distribution system and receive prior approval from the Executive Director of Utilities and Infrastructure Services, prior to consideration.
- D. Reclaimed water main extensions may require a detailed hydraulic report, signed and sealed by a North Carolina Professional Engineer, be submitted to the Executive Director of Utilities and Infrastructure Services and receive approval prior to construction drawing submittal.
- E. All utility extension permits must be obtained prior to construction. Refer to the Town Code of Ordinances Section 16 for further requirements.
- F. Reclaimed water shall be utilized and distributed in accordance with 15A NCAC 02U Sections .0500 through 0.0700.
- G. Any reclaimed water that leaves the reclaimed water distribution system other than by means of a properly permitted use must be disposed of into the Town of Holly Springs sanitary sewer system. This includes any reclaimed water line flushing, and/or line breaks unless otherwise allowed by NCDEQ rules. De minimus runoff from distribution air relief valves and blow-off is deemed permitted per NCDEQ rules. Any reclaimed water that is not a properly permitted use or sent to a sanitary sewer must be reported and handled as if it were a wastewater spill.

11.01 RECLAIMED WATER DISTRIBUTION PIPE

All new irrigation systems located within the Town's reclaimed service area desiring to obtain water service for such system from the Town must connect to the reclaimed water system, if reclaimed water is available to the property. Design must be in accordance with Chapter 16 Article IV of the Holly Springs Town Code of Ordinances. These areas are shown on the Reclaimed Water Distribution Service Area Map located on the Town's website.

A. DESIGN

1. Location: Reclaimed water lines shall be extended along the roadway to the adjacent property line. All public reclaimed water mains shall be located within dedicated right of way or dedicated easements with a minimum width of 20 feet. See Section 2.10 for allowable landscape plantings within a Town of Holly Springs easement.
2. Sizing: Reclaimed water mains shall be sized in accordance with good design procedures to provide adequate pressures throughout the system or as directed by the Executive Director of Utilities and Infrastructure Services. The minimum pipe size for reclaimed water mains shall be 4 inches in accordance with the reclaim hydraulic model.
3. Installation: All utility extension permits must be obtained prior to construction utilizing appropriate application forms from NCDEQ and/or the town. All reclaimed water mains shall have a minimum cover of 4 feet and a maximum of 6 feet measured from the top of the pipe to the finished grade. When reclaimed water mains are installed along a roadway which does not have curb and gutter, the reclaimed water main shall be installed at sufficient depth to prevent conflict with future road improvements or vertical alignment changes.
4. Relation to Potable Water Mains and Other Utilities
 - a) Reclaimed water distribution lines shall be located at least 10-feet horizontally from any water line, unless local conditions or barriers prevent a 10-foot lateral separation. If these separation distances cannot be met, the piping and integrity testing procedures shall meet water main standards in accordance with 15A NCAC 18C. Reclaimed water distribution lines shall meet the separation distances to sewer lines in accordance with 15A NCAC 02T .0305.
 - b) Reclaimed water mains should only cross sanitary sewer mains or potable water mains at an approximate 90 degree angle.
 - d) The minimum separation between reclaimed water mains and storm sewer mains must be either 5 feet horizontal or 2 feet horizontal with a vertical separation of 24 inches unless otherwise approved by the Executive Director of Utilities and Infrastructure Services. Where storm sewers cross reclaimed water with a vertical separation of less than 24 inches the segment of reclaimed water pipe shall be ductile iron pipe at least one whole pipe length from the crossing point with joints equivalent to water main standards.

- e) Where reclaim water main crosses under storm sewer main with a vertical separation less than 24 inches then reclaim water must be ductile iron minimum of 10 feet each side of crossing and properly marked as reclaim.
- f) Where sanitary sewer crosses reclaimed mains, a vertical separation of 18 inches must be maintained.
- g) Reclaimed water distribution lines shall not be less than 50 ft from a well unless the piping and integrity testing procedures meet water main standards, but in no case shall they be less than 25 feet from a private well or 50 ft from a public well.

5. Identification of Reclaimed Piping

a. General:

- i. All new distribution piping in the reclaimed water system, including service lines, valves and other appurtenances should either be colored purple (Pantone 522 or similar) and embossed or be integrally stamped/marked "CAUTION: RECLAIMED WATER – DO NOT DRINK," or be installed with a purple identification tape, and a purple polyethylene vinyl wrap.
- b) Polyethylene Wrap: Buried ductile iron pipe and fittings shall be wrapped with a purple colored polyethylene membrane conforming to ANSI A21.5, and installed in accordance with AWWA C105. The polyethylene sheets shall be 8 mils thick, minimum, and be colored purple (Pantone 522 or similar).
- c) Tracer Wire: Tracer wire shall be installed on all reclaimed piping. Tracer wire shall be installed as shown in the Details. Approved Wire Connectors shall be used to attach wire together.

d) Identification Tape:

- i. Identification tape should be prepared with white or black printing on a purple field (Pantone 522 or similar) having the words "CAUTION: RECLAIMED WATER – DO NOT DRINK." The overall width of the tape should be at least 3 inches.
- ii. Identification tape should be installed on the top of the distribution piping longitudinally and should be centered over the pipe. The identification should be continuous in its coverage on the pipe and should be fastened to each pipe length no more than 10 feet apart. Tape attached to sections of pipe before they are placed in the trench should

have flaps sufficient for continuous coverage. Other satisfactory means of securing the tape during backfill of the trench may be used if suitable for the work, as determined by the Executive Director of Utilities and Infrastructure Services.

- iii. The identification tape differentiating the reclaimed water piping from other utility lines should be consistent throughout the service area.

e) Signage:

- i. The public shall be notified of the use of reclaimed water.
- ii. Advisory signs shall be posted around reclaimed water irrigation activities in public areas, adjacent to ponds used to store reclaimed water in public areas, at decorative water features that use reclaimed water, and at other locations indicated in a Major User Agreement.
- iii. All advisory signs should be colored purple (Pantone 522 or similar), should read “CAUTION: RECLAIMED WATER – DO NOT DRINK,” The sign shall reference the TOHS Utilities and Infrastructure Services Department. Additionally, signage shall provide emergency number of 919-577-1090 and the Town’s website.

Commented [KF1]: Revised language to include signage color and other requirements.

Commented [RI2R1]: @Emily Koncz - this is the reclaimed update Karen and I had hoped to get into the last round. Can you add this to the Oct update please? Thank you!

B. MATERIALS

1. Material: All reclaimed water main distribution pipe 4” thru 12” diameter shall be C900 PVC pipe. All reclaimed water main distribution pipe greater than 12” diameter shall be C905 PVC. Ductile Iron Pipe shall only be used in special cases and with the Executive Director of Utilities and Infrastructure Services approval. New manufacturers must submit requests for approval to the Executive Director of Utilities and Infrastructure Services. Additional information such as catalogs, list of installations in the area or material samples may be required. A written response will be mailed to the applicant accepting or rejecting the product within 90 days of the receipt of all necessary information.

2. Ductile Iron Pipe:

- a) This material shall only be used for reclaimed water lines with Executive Director of Utilities and Infrastructure Services’ approval.
- b) Buried ductile iron pipe and fittings shall be wrapped with a purple colored polyethylene membrane conforming to ANSI A21.5, and installed in accordance with AWWA C105. The polyethylene sheets shall be 8 mils thick, minimum, and be colored purple (Pantone 522 or similar).
- c) Ductile iron pipe shall be designed and manufactured in accordance with AWWA C150 and C151. The minimum required pressure ratings for ductile iron pipe installed at a Type 2 laying condition are tabulated below. For all

other installations other than specified, the laying condition or the minimum pressure class rating shall be increased in accordance with AWWA C151.

Pipe Diameter	Depth of Cover	Pressure Class
6-8 -inch	3-20 feet	350 psi
10-12 -inch	3-14 feet	350 psi
14-20 -inch	3-10 feet	250 psi
24-64 -inch	3 - 8 feet	150 psi

- d) Pipe joints shall be of the push-on type as per AWWA C111. Pipe lining shall be cement mortar with a seal coat of bituminous material in accordance with AWWA C104. Galvanized steel pipe will not be allowed as a material for reclaimed water mains or reclaimed water service lines.

3. PVC Pipe:

- a) PVC pipe (4" to 12") shall be designed and manufactured in accordance with AWWA C900. PVC pipe larger than 12" shall be designed and manufactured in accordance with AWWA C905. The PVC pipe shall be made of virgin PVC resin that provides chemical and physical properties that meet or exceed cell class 12454-B as defined in ASTM D1784. All PVC pipe shall be supplied in standard laying lengths of 20 feet. Pipe shall be furnished in factory packaged units, with each joint plainly marked with the manufacturer's name, pressure class, size, etc. PVC pipe shall have integral wall, bell and spigot joints fabricated with elastomeric gaskets that meet or exceed the performance requirements of ASTM D3139 and F477. Fittings used on PVC pipe shall be AWWA C153 compact ductile iron fittings.
- b) All PVC pipe supplied for reclaimed water applications shall be color coded purple (Pantone 522 or similar) as required by 15A NCAC 02U – Reclaimed Water).
- c) Furnish pipe for the following minimum pressure classes as indicated. Diameter 4"-12", C900 Pressure Class 150, SDR 18 Diameter 14" and larger, C905 Pressure Class 165, DR18.

4. Steel Encasement for reclaimed water pipes are required for the following Street Classifications to avoid traffic disruption in the future:

- Controlled Access Highway

For carrier pipes that employ cathodic protection anticorrosion systems, the carrier and casing pipes shall be effectively insulated from one another. Carrier and casing shall be cathodically protected as a unit.

See Section 5.03 Boring and Jacking for more casing pipe size requirements.

C. INSTALLATION

1. Ductile iron pipe 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. At a minimum, all ductile iron pipe shall be installed at a Type 2 laying condition as specified by AWWA C600.
2. PVC pipe shall be installed in accordance with AWWA C605. At a minimum, all PVC pipe shall be installed at a Type 3 laying condition as specified by AWWA C605.
3. 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.
4. 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.
5. All pipes shall be in nominal lengths of eighteen or twenty feet and shall be installed with at least 48 inches of cover below the finished subgrade. Pipe shall be laid on true lines as directed by the Executive Director of Utilities and Infrastructure Services. 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 the 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 shop drawings showing the complete assembly to scale.
6. 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.
7. Valves in the existing Town of Holly Springs water system shall not be operated without a minimum notice of 24 hours to the Executive Director of Utilities and Infrastructure Services and the Director of Public Utilities. The Contractor shall

operate valves only in accordance with Town of Holly Springs Engineering Design and Construction Standards.

11.02 VALVES AND APPURTENANCES

A. VALVES

1. General

- a) Valves shall be installed on all branches from feeder reclaimed water mains according to the following schedule: 4 valves at crosses; 3 valves at tees. When a loop section of reclaimed water line is connected back into the feeder reclaimed water main within a distance of 200 feet or less, only one valve will be required in the feeder reclaimed main. Reclaimed water main extensions or mains extending at a project phase line shall include a valve and one additional standard length of pipe with a cap and a temporary blow-off assembly.
- b) Where no reclaimed water line intersections are existing, a main line valve shall be installed at every 100 feet per 1-inch diameter main up to a distance of 1000 feet between valves. In addition, the Town of Holly Springs reserves the right to require additional isolation valves where necessary for efficient operation and maintenance.
- c) Valves shall be properly located, operable and at the correct elevation. All valves and reducers shall be rodded to the tee or cross if one is located within 10 feet as shown in the Details. If reducers cannot be rodded, concrete blocking or other restraining methods will be required. The maximum depth of the valve nut shall be 5 feet. When valve extension kits are used, they must be manufactured by the same company which manufactured the valve.

2. Combination Air Valves

- a) Combination air valves shall be installed at all high points of reclaimed water lines 12" inches in diameter or larger and at other locations as directed by the Town of Holly Springs. The reclaimed water main shall be installed at a grade which will allow the air to migrate to a high point where the air can be released through an air valve. A minimum pipe slope of 1 foot in 500 feet should be maintained. The valve shall have a minimum two (2) inch NPT inlet and 200-PSIG working pressure. Combination air valves shall be sized by the Engineer and approved by the Town of Holly Springs.
- b) Combination air valves shall be of the single housing style that combines the operation of both an air/vacuum and air release valve. The valve must meet the requirements of AWWA C512 and be installed in accordance with the Details.

- c) Manholes installed for the combination air valves shall meet all requirements of Section 7.00.

3. Gate Valves

- a) Gate valves 2 inches and greater shall meet all requirements of AWWA C500 for a working pressure of 200 psi. All gate valves shall be mechanical joint with iron body, bronze mounting double disc parallel seat type with a non-rising stem and open left with a double O-ring seal.
- b) Gate valves, up to and including 12 inches, shall be installed in a vertical position.
- c) Gate Valves 16 inches and larger must be approved by the Executive Director of Utilities and Infrastructure Services. They may be installed horizontally and equipped with bevel gears, grease case, rollers, tracks scrapers, and a bypass located on the side of the body (fully revolving disc valves shall not require rollers), or vertically and be equipped with spur gears enclosed in a grease case and with a bypass located on the side of the body. In either case, the roller and scraper operators shall be installed in a manhole that meets all requirements of Section 7.00.

4. Resilient Seat Wedge Gate Valves: Resilient seat wedge gate valves shall be manufactured in accordance with AWWA C509 for a working pressure of 200 psi. All shall be mechanical joint with iron body, open left with a non-rising stem and two O-ring stem seals. All ferrous surfaces, both inside and outside, shall be protected by a fusion-bonded epoxy coating.

5. Butterfly Valves: Butterfly Valves may be installed in reclaimed water mains 24 inches or greater with the permission of the Executive Director of Utilities and Infrastructure Services. All butterfly valves shall meet the requirements of AWWA C504 with mechanical joints, 2 inch open left operating nut. Valves installed on reclaimed waterlines at depths greater than 6' (measured to top of pipe) shall be installed in a manhole (see Section 7.00) as shown in the Details. Valves designated by the Town of Holly Springs to potentially have a remote actuator shall be installed in a manhole (see Section 7.00) as shown in the Details.

6. Valve Boxes

- a) Valve boxes shall be cast iron, screw or telescopic type, with a 5-inch opening. Valve box ring adjustments will not be allowed. All valve boxes shall be furnished with an approved operating key which shall allow operation by authorized personnel only.
- b) Valve box covers shall be square in shape (NOT round) and shall be designed for AASHTO H-20 truck loadings. All valve box covers shall be of non-

interchangeable shape with potable water covers, and cast on the top surface with a recognizable inscription indicating "Reclaimed Water". All valve box covers shall be painted purple (Pantone 522 or similar).

- c) The valve box shall be centered over the wrench nut and seated on compacted backfill without touching the valve assembly. All valve boxes shall be encased in a trowel finished 2' x 2' x 6" pad of 3000-psi concrete beneath the asphalt with the cover flush with the top of the pavement or flush with the finished grade. Precast concrete valve box encasements may not be used for valve box encasement outside of paved areas. The maximum depth of the valve nut shall be 5 feet. When valve extension kits are used, they must be manufactured by the same company that manufactured the valve.

B. APPURTENANCES

1. Pipe Fittings: Pipe fittings shall be cast or ductile iron designed and manufactured as per AWWA C110. Sizes of fittings up to and including 12 inches shall be designed for an internal pressure of 250 psi, and larger size fittings shall be designed for an internal pressure of 150 psi. Compact ductile iron mechanical joint fittings designed and manufactured as per AWWA C111 are also acceptable. Joints for fittings shall be mechanical and lined with cement mortar with a seal coat of bituminous material, all in accordance with AWWA C104.

2. Blowoffs

- a) Blowoffs installed at the end of cul-de-sacs shall be a minimum of 2 inches. Blowoffs installed on transmission and distribution mains shall be a minimum of 2 inches. Where there is not sufficient pressure to thoroughly flush the system, a larger blowoff will be required.
- b) Blowoff assemblies shall be constructed as shown in the Details. The valves shall be gate type with a non-rising stem and a 2-inch operating nut, O-ring seals and screwed ends. A full-size valve is required on mains that are planned to be extended.
- c) Blowoffs shall be directed in a non-erosive manner to a stabilized grassed area at least 50 ft. from a jurisdictional feature or directed into the closest sanitary sewer manhole. Blowoffs installed at the end of cul-de-sacs should be tied into a sanitary sewer manhole where available.

3. Thrust Restraint: Reaction blocking for all fittings or components subject to hydrostatic thrust shall be securely anchored by the use of concrete thrust blocks poured in place or restrained joint piping as described below

- a. Concrete thrust blocks shall be poured in place with reaction areas as shown in the Details. No concrete shall interfere with the removal of fittings. Material for reaction blocking shall be 3000 psi concrete. A minimum 4 mil plastic shall

cover the fitting to ensure that no concrete will interfere with removal of the fitting.

- b. PVC Bell Joint Restraint - All PVC bell joints shall be restrained for both C900 and C905 PVC pipe. The bell joint restraint shall consist of either an approved restrained PVC joint provided by the same manufacturer of the PVC pipe or an approved bell joint restraint harness. All bell joint restraint harness assemblies shall be made of ductile iron pipe (DIP), coated with a manufacturer applied epoxy coating or polyester powder coating, including stainless steel bolts, nuts and rods. The bell joint restraint harness shall be manufacturer approved for use with PVC pipe and rated for at least 200-psi with a 3:1 safety factor.
- c. All valves and fittings shall be restrained to C900 or C905 pipe with an approved wedge action retainer gland or other approved restraining method. All DIP fittings for reclaimed water use shall be identified by purple painting or wrapping with polyethylene wrap (Pantone 522 or similar). Alternative restraining methods and mechanical joint restraints may be used upon approval by the Executive Director of Utilities and Infrastructure Services.

11.03 RECLAIMED WATER SERVICE TAPS

A. DESIGN

1. Individual reclaimed water services, and multiple branch services, shall be provided from the reclaimed water main to each reclaimed water meter for single customer locations in accordance with the Details. All connections shall be made by wet taps. Service connections shall be made perpendicular to the reclaimed water main and shall run straight to the reclaimed water meter.
2. All reclaimed water meter boxes and vaults shall be located at the edge of the serviced lot's right of way or easement. Reclaimed water meter boxes shall not be placed in streets, sidewalks, parking areas or obstructed by fencing or buildings. Exceptions to these conditions will be at the direction of the Executive Director of Utilities and Infrastructure Services.
3. All reclaimed service connections to existing and new reclaimed water mains shall be made by a Contractor licensed in North Carolina, and in accordance with these Standards.
4. Water meters shall be sized based on applicant water budget calculations using the approved method. Water meter size shall be determined from the following table; or as otherwise specified by the Executive Director of Utilities and Infrastructure Services. Multiple branch services size shall be determined by the designer.

METER SIZING GUIDE		
Meter Size (inches)	Flow Range (GPM)	
3/4" PD	0 - 20	
1" PD	20 - 50	
1½" PD	50 - 100	
2" C	100 - 200	
3" C	200 - 400	
4" C	400 - 600	
PD = Positive Displacement T = Turbine (may be required on a case-by-case basis) C = Compound (must be sized on a case-by-case basis)		

5. Service taps greater than 2 inches shall be made by a Contractor of the Developer.

B. MATERIALS

1. Taps:

Direct taps shall not be allowed on C900 or C905 PVC mains. The maximum allowable size for saddle taps is 2". All taps larger than 2-inches shall be installed by inline fittings or tapping sleeves. All tapping of C900 or C905 PVC mains shall be implemented with shell type cutting tools classified for use with PVC pipe that retains the coupon cut while penetrating the pipe wall, use of twist drill bits and auger bits shall be prohibited.

The maximum size of direct taps without a fitting, tapping sleeve or saddle for ductile iron mains shall be as follows:

Main Size (inches)	Tap Size (inches)
4" main	3/4" tap
6" main	1" tap
8" main	1 1/4" tap
10" main	1 1/2" tap
12" main	2" tap

2. **Tapping Sleeves:** Tapping Sleeves shall be made of either cast iron or stainless steel. The sleeve shall be two-piece with mechanical joint to the main line and flanged to the tapping valve. Cast iron shall meet AWWA C110

specifications. Stainless steel shall meet AWWA C223 specifications. All sleeves shall require full circumferential gasket. All tapping sleeves shall be manufactured and approved for installation on the specific main line pipe material (DIP, C900, C905).

3. Tapping Saddles: Tapping Saddles shall be used on reclaimed water mains 16 inches and larger. Saddles shall be made of ductile iron providing a factor of safety of 2.5 with a working pressure of 250 psi. Saddles shall be equipped with an AWWA C110 flange connection on the branch. Sealing gaskets shall be O-ring type, high quality molded rubber having an approximate 70 durometer hardness, placed into a groove on the curved surface of the saddles. Straps shall be alloy steel. The maximum size saddle outlet for each size of pipe to be tapped shall be as follows:

<u>Size pipe to be tapped</u>	<u>Maximum size Saddle Outlet</u>
16"	8"
18"	8"
20"	10"
24" and larger	12"

4. Corporation Stops: Corporation Stops shall be ball type, made of brass and complete with a compression or flared coupling and AWWA Standard threads as per AWWA C800. Taps shall be located at 10:00 or 2:00 o'clock on the circumference of the pipe. Service taps shall be staggered alternating from one side of the reclaimed 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. No burned taps will be allowed and each corporation stop will be wrapped with Teflon tape for ductile iron pipe reclaimed water mains. No tapping shall be made where rodding is placed.
5. Service Saddles: Service saddles shall be bronze body (85-5-5 waterworks brass) and double strap for taps with silicon bronze nuts conforming to ASTM A98 and factory installed grade 60 rubber gaskets. Service saddles shall be approved by the manufacturer for use on C900/C905 PVC mains.
6. Service Tubing: Copper service tubing shall be type K soft copper tubing per ASTM B88. No union shall be used in the installation of the service connection of 100-feet or less. The longest available length of service line shall be used with no unions (e.g. for 3/4 inch, only 1 union will be allowed for each 100 foot section). Unions shall be made with flare or compression type couplings. Copper service tubing shall be installed reclaimed locating tape, spirally wrapped from the tap through the setter.
7. Coppersettors for ¾ and 1-inch Reclaimed Water Services: All ¾ and 1-inch reclaimed water services shall be installed with coppersettors as shown in the

Details. All copper setters shall be as manufactured by Mueller or Ford at the dimensions shown in the Details. All copper setters shall be installed with a lockable angle ball valve assembly and outlet angle check valve on all size setters. Copper setters shall be installed with flare fittings and all copper setter assemblies shall be provided as shown in the Details with galvanized brace pipes for additional stability. All installations shall provide the copper setter properly aligned with the meter box reader lid such that the meter is clearly visible below the reader lid.

8. Meter Boxes for ¾-inch services: ¾-inch meter boxes shall be light weight polymer concrete as shown in the Details. Meter boxes for ¾-inch reclaimed water services shall provide a cover opening of 11 X 18 inches and boxes shall measure at least 18-inches in depth. Meter boxes and covers shall be rated for “heavy duty” uses, such as alleys, driveways, parking lots, etc. Standard meter box covers shall not bolt down to the box. The box interior walls and covers shall be consistently color-coded purple (Pantone 522 or similar). All covers shall include a 4 X 6 inch cast iron reader lid with the words “RECLAIMED WATER – DO NOT DRINK” cast into the lid in 1-1/2” tall lettering. The Town of Holly Springs reserves the right to require all meter box covers to include brackets and housing for “ITRON” compatible transponders for automated meter reading systems. All meter boxes and covers shall be installed as shown in the Details.
9. Meter boxes for 1-inch services: 1-inch meter boxes shall be light weight polymer concrete as shown in the Details. Meter boxes for 1-inch reclaimed water services shall provide a cover opening of 11 X 18 inches and boxes shall measure at least 18-inch in depth. Meter boxes and covers shall be rated for “heavy duty” uses, such as alleys, driveways, parking lots, etc. Standard meter box covers shall not bolt down to the box. The box interior walls and covers shall be consistently color-coded purple (Pantone 522 or similar). All covers shall include a 4 X 6 inch cast iron reader lid with the words “RECLAIMED WATER – DO NOT DRINK” cast into the lid in 1½” tall lettering. The Town of Holly Springs reserves the right to require all meter box covers to include brackets and housing for “ITRON” compatible transponders for automated meter reading systems. All meter boxes and covers shall be installed as shown in the Details.
10. Meter boxes for 1½ and 2-inch services: 1 1/2” and 2” meter boxes shall be light weight polymer concrete as indicated in the Standard Details. All meter box interiors and covers shall be consistently color-coded purple (Pantone 522 or similar). Covers shall be marked on the top surface with a recognizable inscription indicating “RECLAIMED WATER – DO NOT DRINK” in 1-1/2” tall lettering. Piping for 1 1/2 and 2 inch reclaimed water meters shall be constructed from brass and copper tubing and shall be equipped with angled check valve outlets and by-pass flanged valve or by-pass flanged ball valve inlets. The box shall have an open bottom to allow drainage through stone.

11. Meter Vaults: Meter vaults and access doors within street right of way shall meet HS-20 loading requirements and shall be located outside of travel areas. The access double doors shall be aluminum with a flush drop lift handle, stainless steel hinges and bolts, a stainless steel slam lock, an automatic hold open arm, and compression springs to allow for easy opening. Covers shall be marked on the top surface with recognizable inscription indicating “Reclaimed Water-Do Not Drink”
12. Reclaimed Water Meters: Reclaimed water meters for ¾” to 2” services will be provided by the Town of Holly Springs. Larger meters shall be provided by the developer as directed by the Executive Director of Utilities and Infrastructure Services. Reclaimed water meters, registers and covers shall be purple (Pantone 522 or similar).

11.04 RECLAIMED WATER IRRIGATION SYSTEMS

A. GENERAL

All reclaimed water irrigation systems within public street right of way require an encroachment agreement from the Town of Holly Springs or NCDOT prior to installation. Plans designating the location, size, material, and depth shall be submitted with the agreement application to the Engineering Department.

Pipe material for the irrigation mainline proposed to be used within the public right of way shall be Schedule 40 PVC or greater. All pipe, fittings, and appurtenances shall be purple (Pantone 522 or similar). A minimum depth of 2 feet of cover shall be provided.

A soil evaluation is necessary in order to determine the loading rate for irrigation permits. All development within the reclaim service area will need to complete an independent soil evaluation prior to submitting a reclaim irrigation permit.

All reclaimed water irrigation systems are required to secure permits from the Code Enforcement Department and the Utilities and Infrastructure Services prior to installation and shall be inspected after installation. A separate meter is required for irrigation systems.

For single family irrigation design, a CID, PE, or LA is required to develop the plan. For non-single family irrigation system designs, a PE must develop the plan.

Impoundments for reclaimed water storage for large scale irrigation systems or aesthetic/decorative water features shall be designed in accordance with 15A NCAC 02U – Reclaimed Water.

Service lines from mainline tap to the meter are installed and identified per the Town of Holly Spring’s Standard Details. There shall be no direct cross-connection between potable and reclaimed water supplies.

B. **DESIGNS**

Sprinklers chosen and located to maintain the following setbacks from the irrigation area to the following features:

- 1.) 25 feet from surface waters [perennial and intermittent streams, wetlands] not classified as tidal salt waters or high-quality water (SA).
- 2.) 100 feet from surface waters [perennial and intermittent streams, wetlands] classified as tidal salt waters or high-quality water (SA).
- 3.) 100 feet from any water supply well (not including monitoring wells).
- 4.) Sprinklers located on a steep slope have check valves installed on all the heads on that irrigation zone.
- 5.) No mainlines or valves shall be allowed within the utility/devil strip. Laterals will be allowed and shall be placed within 1 ft of sidewalk.
- 6.) The zoning of the irrigation system must allow that plants with different water requirements (such as grass and shrubs) are on separate zones. In addition, the irrigation design should consider the different microclimates found in most landscapes (such as north facing grass areas vs. south facing grass areas) and separate those microclimates into zones. These zoning practices may add slightly to the installation cost of an irrigation system, but can have a dramatic effect on system efficiency.
7. Guidelines on pressure at the head/emitter: Spray Heads 20 to 35 psi; gear rotors 60 psi or less; impact rotors 60 psi or less; drip emitters 40 psi or less.
8. Large commercial systems which have the potential to place undue burdens (demand or pressure requirements) on the Town of Holly Springs' public reclaimed distribution system must include on-site storage and/or pumping facilities. This determination will be made by the Executive Director of Utilities and Infrastructure Services. Design, operation, and maintenance of such on-site facilities shall be the sole responsibility of the applicant. These additional facilities must be designed in accordance with 15A NCAC 02U – Reclaimed Water.
9. Rain sensors must be installed to reduce the likelihood of overwatering. Rain sensors are required to remain in service at all times to prevent overwatering and/or ponding of reclaimed water.

C. **STREET CROSSING**

All irrigation line street crossings shall be contained within a ductile iron or steel casing pipe. The Town of Holly Springs may, in some instances, permit irrigation systems installed in the medians of Town-maintained roadways. These systems must also have french drains installed behind the curb and gutter and piped to a storm drainage collection system. These systems shall be allowed only when some permanent mechanism is established for the private perpetual maintenance of the system(s).

D. HOSE BIDS

Hose bibs are not permitted for the reclaimed water system.

E. RAIN SENSORS

Rain sensors must be installed to reduce the likelihood of overwatering. Rain sensor must remain in operation to prevent ponding or runoff.

11.05 TESTING AND INSPECTION

A. GENERAL

1. All reclaimed water used in testing and inspection must be disposed of properly as described in Section 11.00.
2. All materials must be approved by the Inspector prior to installation. Materials rejected by the Town of Holly Springs' Inspector shall be immediately removed from the job site.
3. Under no circumstance shall any waterline system valve be operated without prior approval by the Construction Inspector. Damage to Town of Holly Springs infrastructure resulting from illegal operation of valves shall be the responsibility of the Contractor. In addition, the Contractor shall be subject to a fine for operating a valve without prior approval.
4. The Contractor shall furnish all materials, labor, equipment, and shall pay for the water used to perform all testing and inspections to the satisfaction of the Construction Inspector. The Contractor shall obtain a Blowoff Permit from the Town of Holly Springs Engineering Department for use when blowing off reclaimed water mains.
5. Reclaimed water service taps shall not be made until after all main testing is completed, and bacteriological testing is satisfactory.

B. TESTING

1. Hydrostatic Testing

- a) All valves in the Town of Holly Springs reclaimed water system shall be operated by the Town of Holly Springs. A section of reclaimed water main which is to be hydrostatically tested shall be slowly filled with water at a rate which will allow complete evacuation of air from the line. Hand pumps shall not be used for the pressure testing of reclaimed water mains. Taps used for testing purposes shall be removed after testing. The corporation stops shall be removed and a threaded tapered plug shall be installed on the line.

When approved by the Town of Holly Springs, the Contractor may utilize potable water or reclaimed water via an approved hydrant meter and RPZ assembly for testing and disinfection of new reclaimed mains which are not physically connected to a live reclaimed water supply. Once reclaimed water has been introduced into the system no direct connection to potable water will be allowed and an approved air gap assembly must be used.

- b) Any measured leakage not within the allowable limits as specified in the following table shall require repair of the reclaimed water main and additional testing until the standards are met. For pipe sizes other than those shown, the Contractor shall test within the allowable leakage amounts as specified by AWWA C600-99. All visible leaks shall be repaired regardless of the amount of leakage.

Pipe Size (Inches)	Allowable Leakage at 200-psi (Gal./Hr. per 1000 feet of pipe)
4	0.43
6	0.64
8	0.85
12	1.28
16	1.70
20	2.12
24	2.55

2. Chlorination

- a) All additions or replacements to the reclaimed water system shall be chlorinated before being placed in service under the supervision of the Town of Holly Springs' Inspector in the following manner:
 - i. Taps shall be made at the control valve at the upstream end of the reclaimed water main and at all extremities of the line including valves.
 - ii. A solution of water containing 70% HTH available chlorine shall be introduced into the reclaimed water main by regulated pumping at the control-valve tap. The solution shall be of such a concentration that the reclaimed water main shall have a uniform concentration of 50 ppm total

chlorine immediately after chlorination. The chart below shows the required quantity of 70% HTH compound to be contained in solution in each 1,000 feet section of line to produce the desired concentration of 50 ppm.

Pipe Size (inches)	Pounds High Test Hypochlorite (70%) per 1000 feet of line
6	1.76
8	3.12
10	4.84
12	7.00
14	9.52
16	12.44
20	19.52
24	28.00

- iii. The HTH Solution shall be circulated in the reclaimed water main by opening the control valve and systematically manipulating blowoffs and taps at the reclaimed water main extremities. All reclaimed water leaving the system during this test must be disposed of through either an approved use or sent to the sanitary sewer. The HTH solution must be pumped in at a constant rate for each discharge rate so a uniform concentration will be produced in reclaimed water mains.
- iv. HTH solution shall remain in reclaimed water mains for no less than 24 hours or as directed by the Town of Holly Springs' Inspector.
- v. Extreme care shall be exercised at all times to prevent the HTH solution from entering existing reclaimed water mains.

3. Bacteriological Sampling

- a) Free residual chlorine after 24 hours shall be at least 10 ppm or the Town of Holly Springs' Inspector will require that the lines be re-chlorinated.
- b) Flushing of reclaimed water mains may proceed after 24 hours, provided the free residual chlorine analysis is satisfactory. Reclaimed water leaving the system because of line flushing must be returned to a sanitary sewer. Flushing shall be continued until an orthotolidine check (or other method approved by the Town of Holly Springs) shows that the reclaimed water mains contain only the normal chlorine residual. Samples for bacteriological analysis shall be collected by the Town of Holly Springs' Inspector 24 hours after flushing is completed. The Contractor shall furnish the sample bottles, the testing agency and such help as may be required to secure these samples. The Contractor shall also submit the test results to the Town of Holly Springs' Development Inspector.

- c) If test results are unsatisfactory, the Contractor shall immediately rechlorinate reclaimed water mains and proceed with such measures as are necessary to properly sterilize those reclaimed water mains.
- d) The new reclaimed water system shall be valved off from the existing reclaimed water system until a satisfactory bacteriological sample has been obtained and the Town of Holly Springs' Inspector has authorized the use of the new reclaimed water system.

C. INSPECTIONS

- 1. Approved plans and permit must be issued and available on-site before any inspections are performed.
- 2. Underground Inspections – before work is covered up/back filled:
 - a) Inspection of main line tap and piping to meter box;
 - b) Inspection of underground piping from meter box through irrigation system from meter to end of system to insure compliance with approved plan and standards;
- 3. Final Inspection
 - a) Includes inspection of the location of all heads, type of heads, spacing of heads and throw pattern of each head and correct pressure;
 - b) Testing the system to ensure compliance with approved plans and Town of Holly Springs Ordinance;
- 4. A map of the approved valve and head layout shall be provided by the Contractor to the property owner and a copy placed near or with the timer.
- 5. All zones shall be clearly labeled in the timer cabinet.
- 6. Responsible entity shall be listed on inner door of timer (for emergency contact purposes).
- 7. Verification of required setbacks (reclaimed water).

D. CROSS CONNECTION CONTROL

- 1. Backflow prevention on potable water services serving any property that is also served with reclaimed water is required in accordance with the Federal Safe Drinking Water Act. At all locations where reclaimed water service is provided, the public potable water supply shall be protected by installation of an approved backflow prevention device.

- a. For Residential Properties: prior to receiving reclaimed water service, a dual check valve shall be installed on each residential customer's potable water meter in order to protect the potable water system. A Reduced Pressure Principal (RPZ) type backflow prevention device downstream of the potable water meter is not required when the only reclaimed water use is landscape irrigation.
- b. For Multi-family complexes and commercial properties: master-metered potable water service and master-metered reclaimed water service shall be required to install a Reduced Pressure Principal (RPZ) type backflow prevention device downstream of the master potable water meter.

11.06 REPAIR OF RECLAIMED WATER SYSTEM

Reclaimed water that leaves the system due to a leak or break in the system must be reported and handled as if it were a wastewater spill.

A. Reclaimed Water Main Line Repairs

1. Joint leaks of Cast Iron Pipe, Ductile Iron Pipe, and PVC pipe shall be repaired by use of a bell joint leak repair clamp as manufactured by Rockwell, or other approved equal.
2. Line Breaks or Punctures shall be repaired by a full circle repair clamp as manufactured by Rockwell, Mueller, or other approved material.
3. Line Splits or Blow Outs shall be repaired by replacing the damaged section with ductile iron pipe with a cast iron coupling at each end. The following cast pipe couplings shall be used for each pipe material indicated:
 - a) Ductile Iron Pipe - Rockwell 431 cast coupling or other approved equal.
 - b) PVC Pipe – Rockwell 411 cast coupling or other approved equal.

B. Reclaimed Water Service Line Repairs

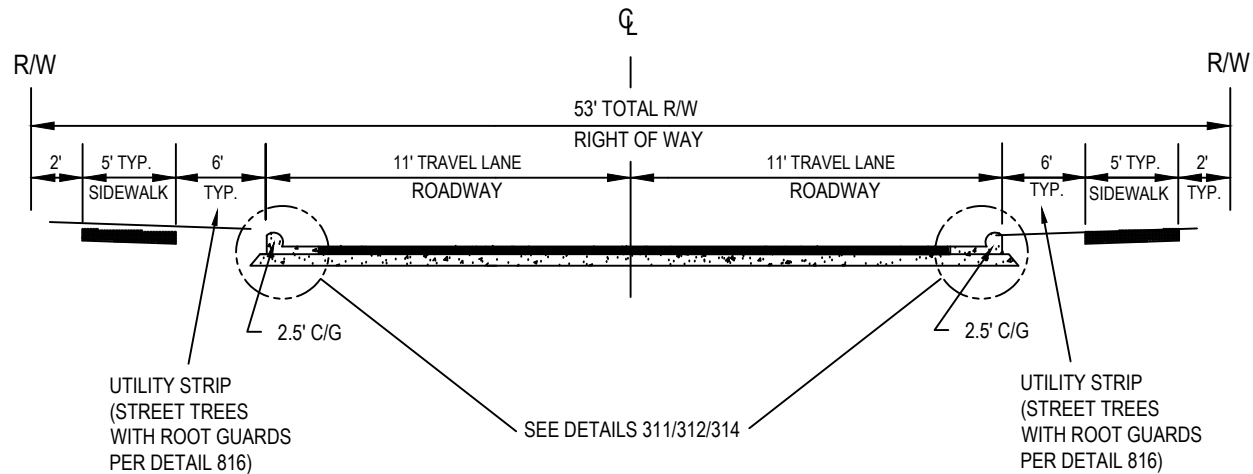
1. A reclaimed water service line severed between the reclaimed water main and the reclaimed water meter shall be repaired using new type K copper tubing and bronze or brass 3-piece flared unions.
2. A corporation stop pulled out of a reclaimed PVC pipe water main shall have a new service saddle and a new corporation stop installed on the reclaimed water main.
3. A corporation stop pulled out of a ductile iron pipe shall have a full circle repair clamp placed over the old tap hole. A new tap shall be made and a new corporation stop installed on the reclaimed water main.

END OF SECTION 11.00

**MINIMUM
PAVEMENT DESIGN**

1-1/2" 9.5B
1-1/2" 9.5C
8" A.B.C.

STAGE CONSTRUCTION FOR
SURFACE AT TWO LIFTS SO
PROPER TAPER OCCURS AT
TRANSITION.



RESIDENTIAL STREET WITH SINGLE SIDE ON-STREET PARKING

NOTES:

1. NORMAL CROWN OF 1/4" PER FOOT UNLESS OTHERWISE SPECIFIED BY THE DIRECTOR OF ENGINEERING.
2. PAVEMENT DESIGN SHALL BE AS SHOWN, OR AS CALCULATED, WHICHEVER IS GREATER.
3. PLEASE REFERENCE THE COMPREHENSIVE TRANSPORTATION PLAN FOR ADDITIONAL CROSS SECTIONS.

DRAWING NOT TO SCALE

MINIMUM STREET STANDARD FOR RESIDENTIAL STREETS

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS302

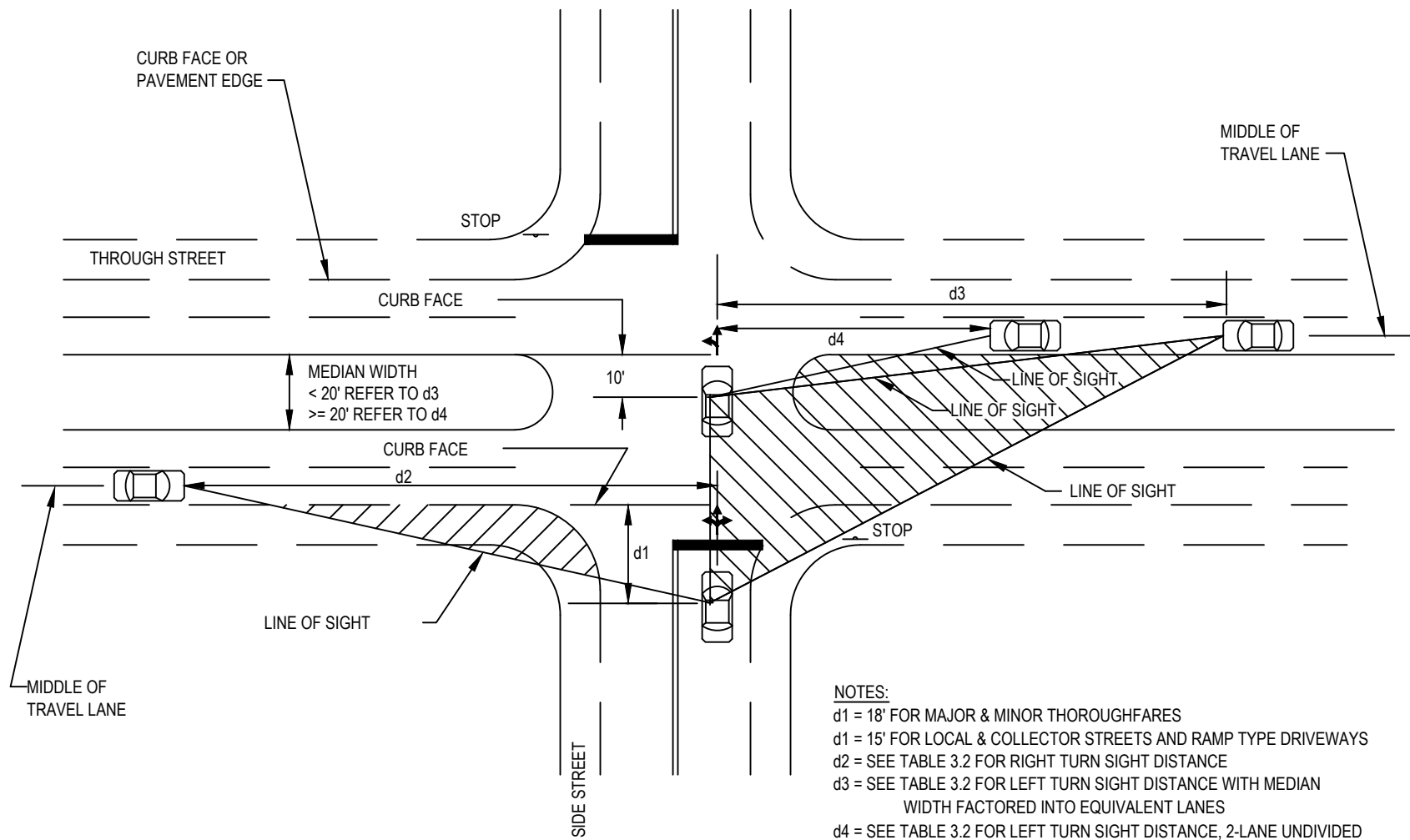
DATE

REVISIONS

12/7/21

11/19/24





DRAWING NOT TO SCALE

INTERSECTION SIGHT DISTANCE STOP SIGN CONTROL MULTI-LANE ROADWAY

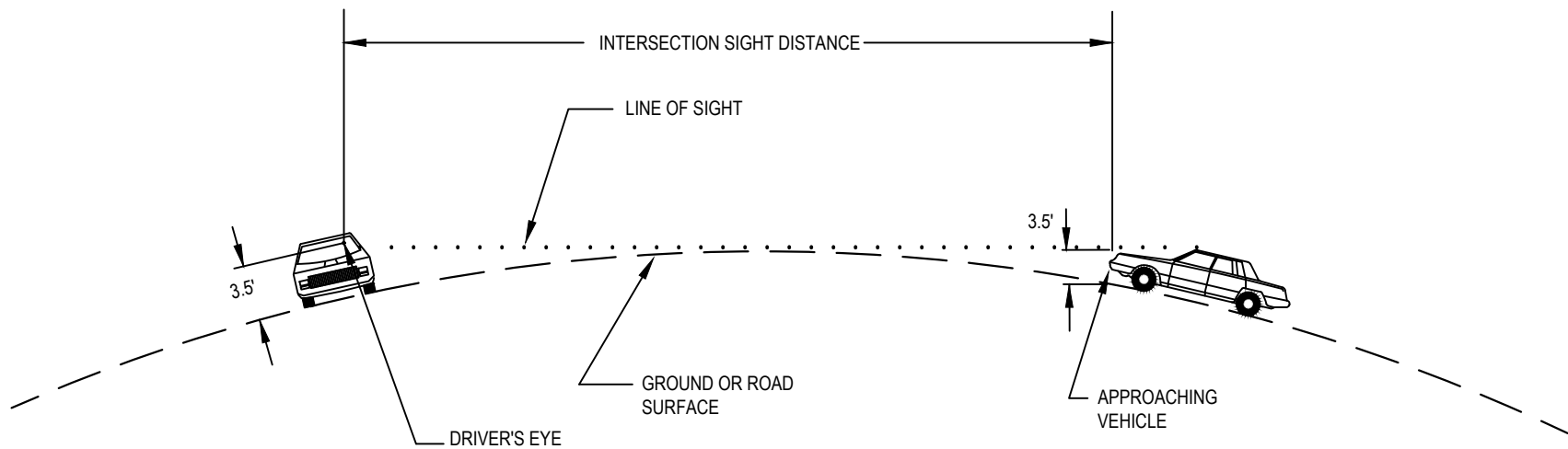
STANDARD DETAIL NUMBER: HS333

DATE REVISIONS

12/7/21
11/19/24

TOWN OF HOLLY SPRINGS





DRAWING NOT TO SCALE

MEASUREMENT OF VERTICAL INTERSECTION SIGHT DISTANCE

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS337

DATE

REVISIONS

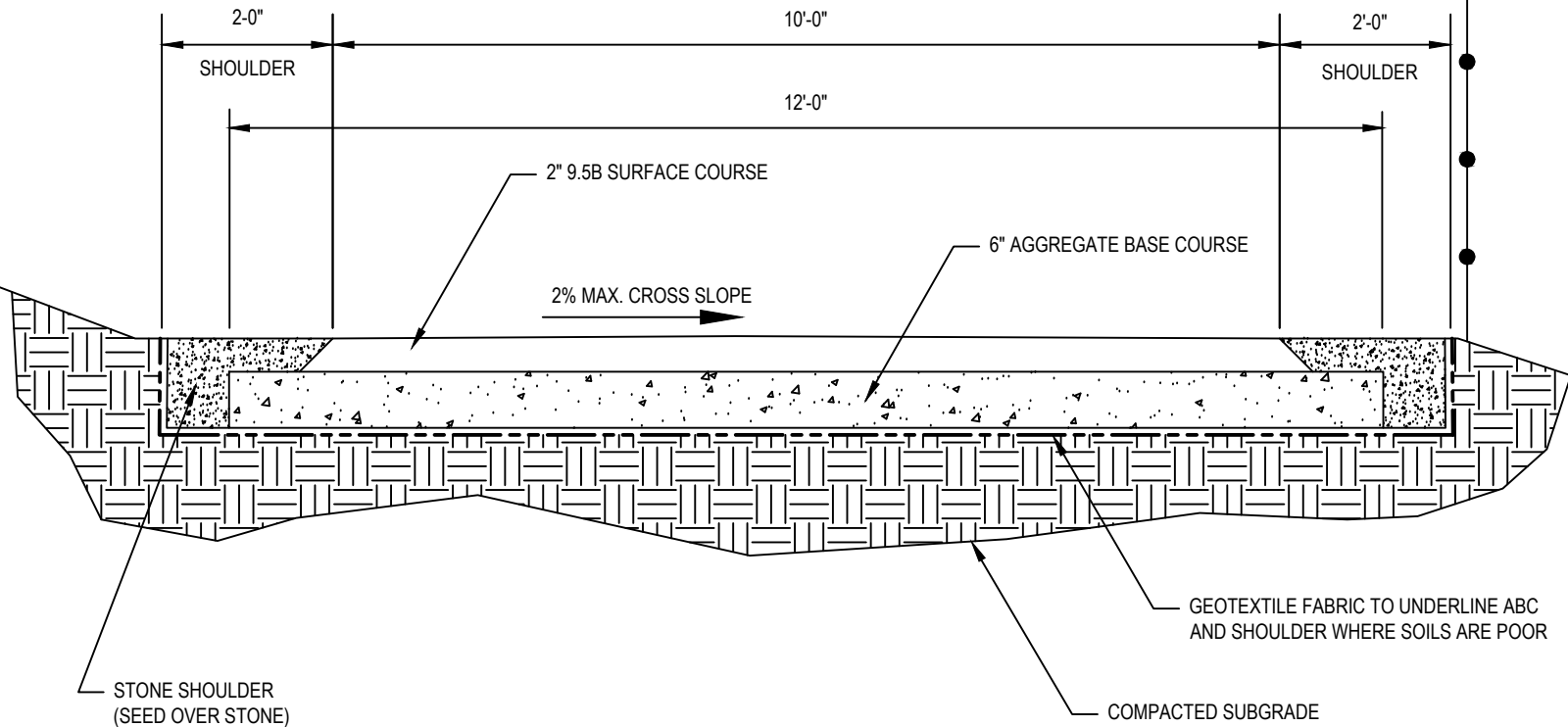
8/30/19

11/19/24



SIDE SLOPES SHALL BE LESS THAN 3:1 (TYP.)
UNLESS OTHERWISE INDICATED ON LAYOUT PLANS.
CUT AND FILL SLOPES SHALL TIE INTO EXISTING
SLOPES TO CREATE AN EVEN TRANSITION.

42" SAFETY RAIL 2' FROM EDGE OF
PAVEMENT IF SIDE SLOPE EXCEEDS 6'
OF DROP AT 3:1 UNLESS SHOULDER IS
5' OR MORE



NOTES:

1. CROSS SLOPE DIRECTION VARIES. SEE LAYOUT PLANS FOR DIRECTION OF SLOPE.
2. CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING ALL SLOPES DISTURBED BY CONSTRUCTION.
3. CONCENTRATED FLOW MUST CROSS THE GREENWAY IN AN APPROVED STORM DRAIN

DRAWING NOT TO SCALE

10' ASPHALT GREENWAY TRAIL

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS340

DATE REVISIONS

7/24/18
11/19/24



NOTES:

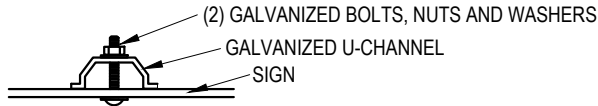
1. 42" MINIMUM BURY DEPTH FOR SIGN TYPES WITH THIS DETAIL, PER NCDOT STANDARDS.

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.

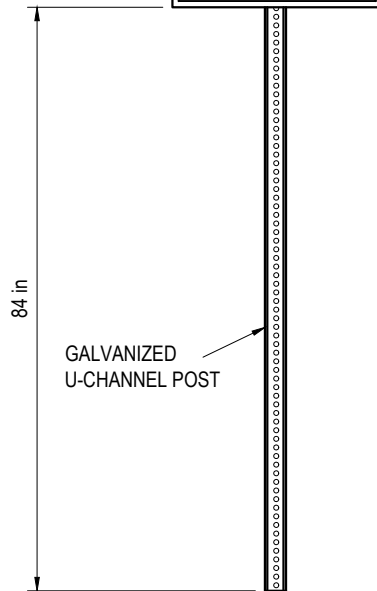
4. ALL SIGNS MUST MEET MUTCD STANDARDS AND GUIDELINES.

THE SIGN BLADE CONNECTOR IS FURNISHED BY NC DEPT. OF CORRECTIONS: BLADE BRACKETS & CROSS PIECES.

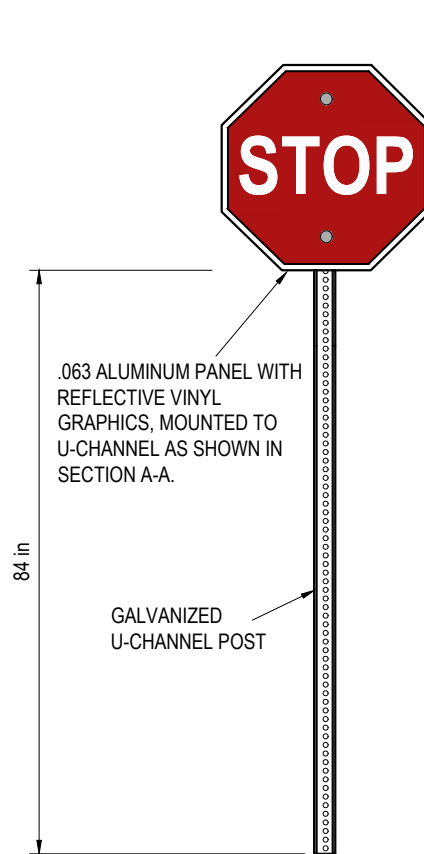


SECTION A-A
TYPICAL SIGN TO
POST CONNECTION

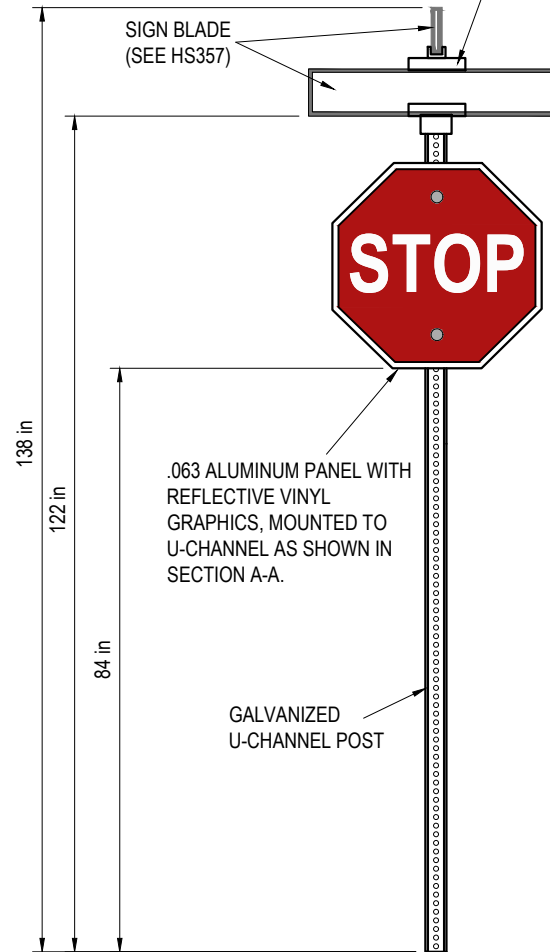
TRAFFIC
CONTROL SIGN
SIZE VARIES



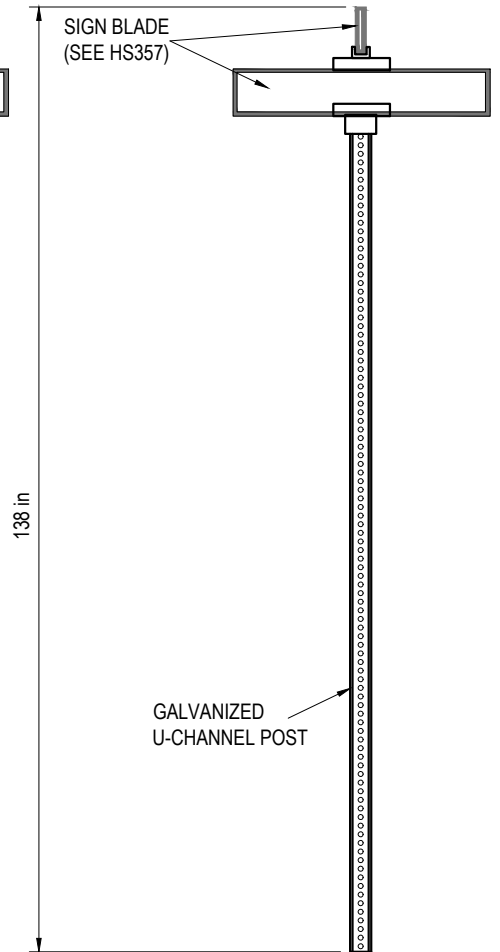
TRAFFIC CONTROL
SIGN



STOP SIGN



STOP & STREET
SIGN COMBO



STREET NAME
BLADE ONLY

DRAWING NOT TO SCALE

STANDARD TRAFFIC CONTROL AND STREET NAME SIGN AND POSTS

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS359

DATE REVISIONS

4/18/11
6/11/24
11/19/24



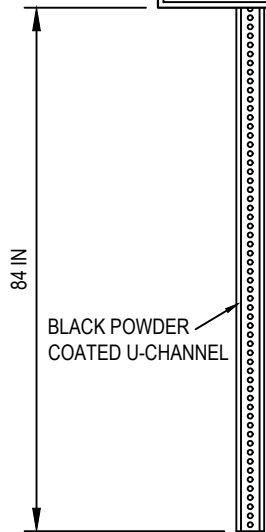
NOTES:

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.

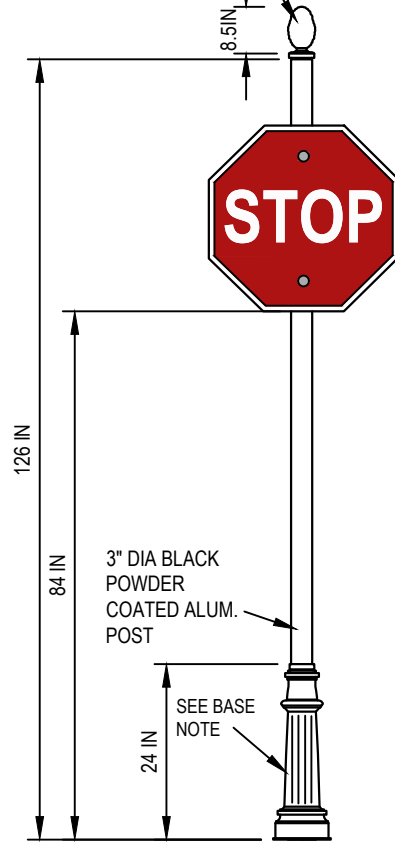
6. ALL MOUNTING HARDWARE SHALL BE BLACK.

TRAFFIC CONTROL SIGN
SIZE VARIES
(BACK OF SIGN
PAINTED
BLACK)



TRAFFIC CONTROL SIGN

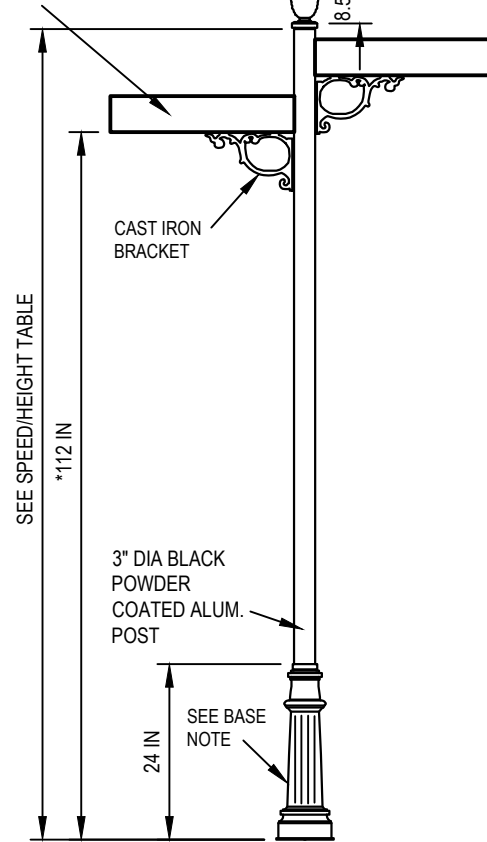
DECORATIVE BLACK
POWDER COATED ALUM.
PINEAPPLE FINIAL
IMPERIAL POST SYSTEMS
D SERIES FINIAL #7 OR
EQUIVALENT.



STOP SIGN

TOWN STANDARD
STREET BLADE
MOUNTS INSIDE A
CUSTOM EXTRUDED
BLACK POWDER
COATED ALUM. FRAME.
(2 BLADES PER UNIT)

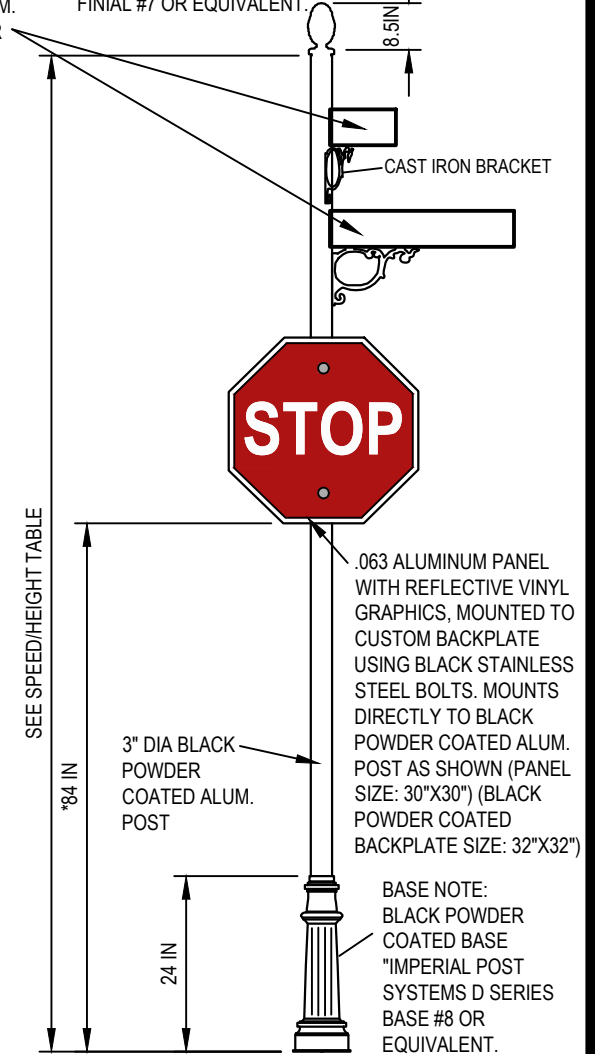
DECORATIVE BLACK
POWDER COATED ALUM.
PINEAPPLE
FINIAL IMPERIAL POST
SYSTEMS D SERIES
FINIAL #7 OR
EQUIVALENT.



STREET NAME
BLADE ONLY

TOWN STANDARD STREET
BLADE MOUNTS INSIDE A
CUSTOM EXTRUDED BLACK
POWDER COATED ALUM.
FRAME. (2 BLADES PER
UNIT)

DECORATIVE BLACK POWDER
COATED ALUM. PINEAPPLE FINIAL
IMPERIAL POST SYSTEMS D SERIES
FINIAL #7 OR EQUIVALENT.



STOP SIGN
WITH BLADES

*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

4/5/19
6/11/24
11/19/2024



NOTES:

1. 42" MINIMUM BURY DEPTH FOR BREAKAWAY GALVANIZED U-CHANNEL PER NCDOT STANDARDS.

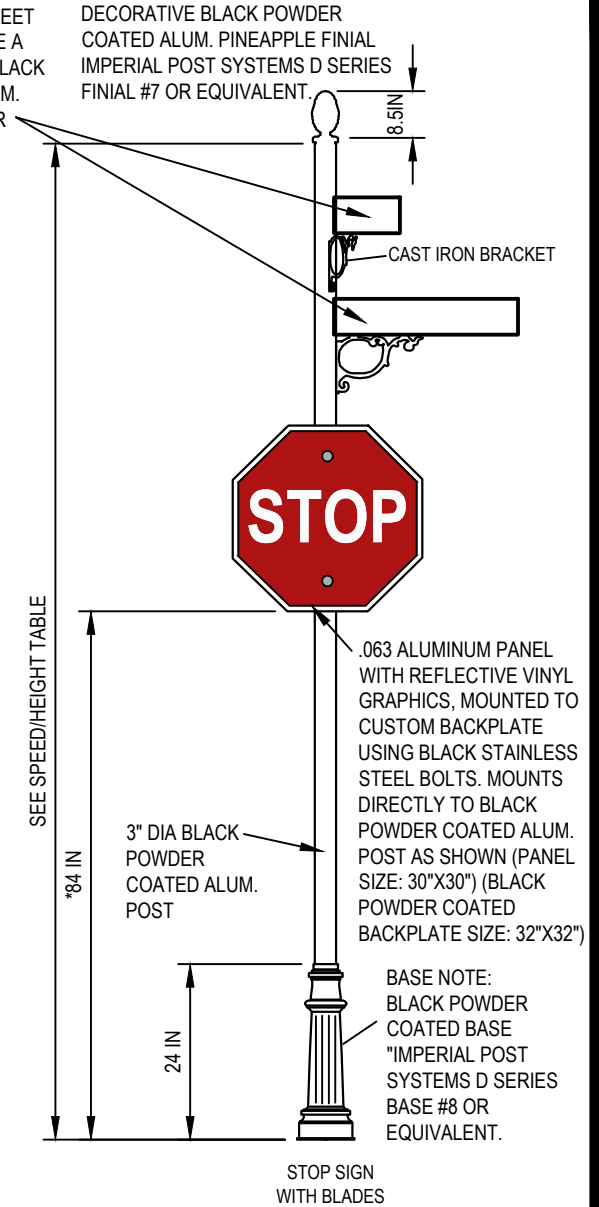
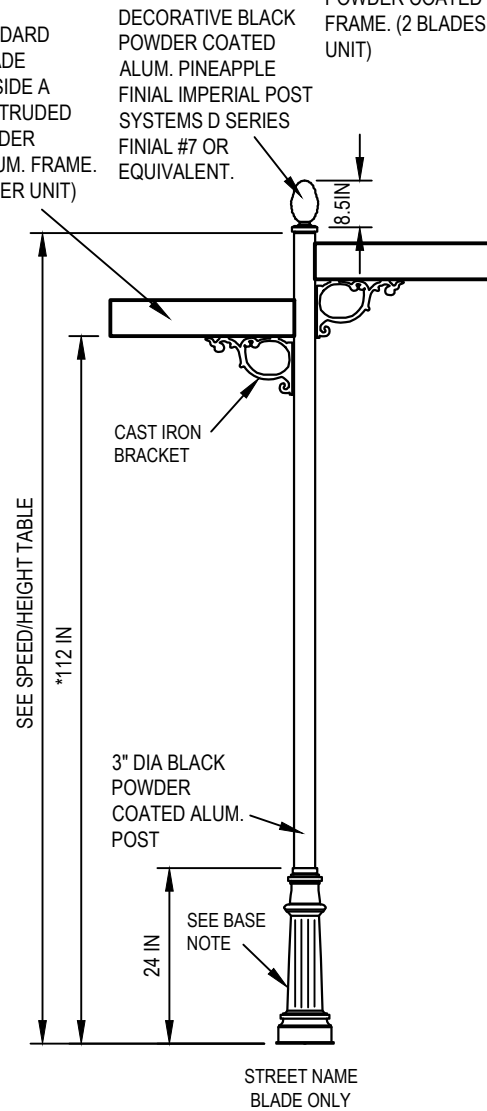
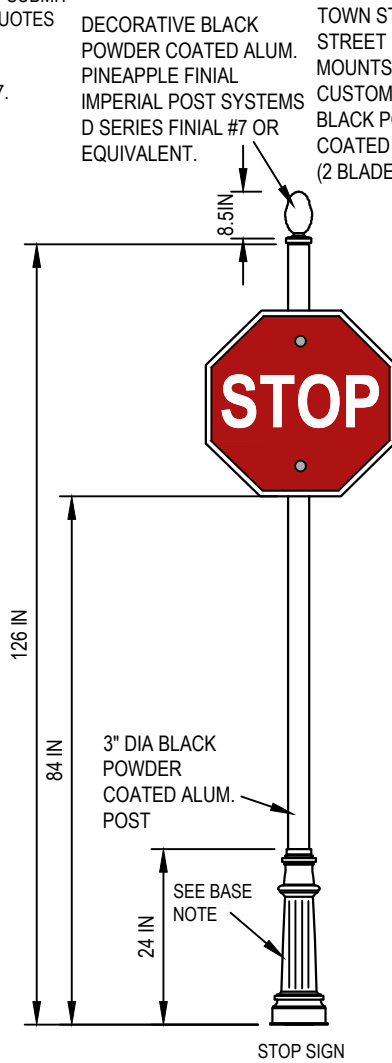
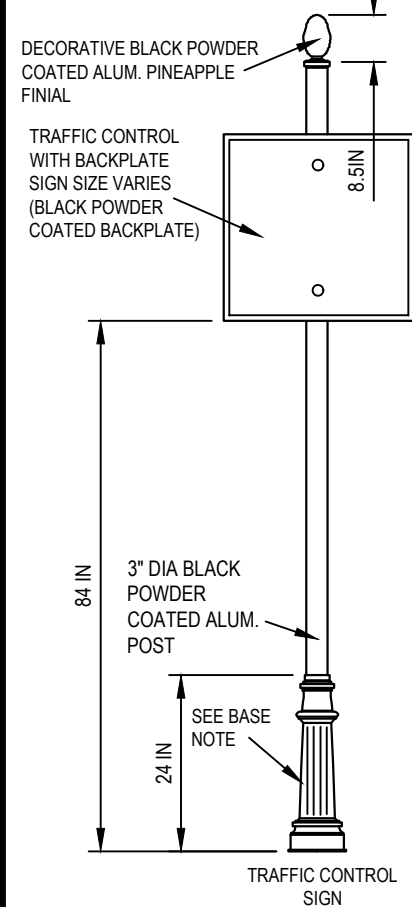
2. ALL POLES SHALL BE BREAKAWAY, SUPPLIERS TO SUBMIT FHWA AND/OR NCDOT APPROVAL LETTER WITH QUOTES REGARDING PROPOSED BREAKAWAY DETAIL.

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"

UPGRADED TRAFFIC CONTROL AND STREET NAME SIGN AND POSTS FOR DOWNTOWN

TOWN OF HOLLY SPRINGS

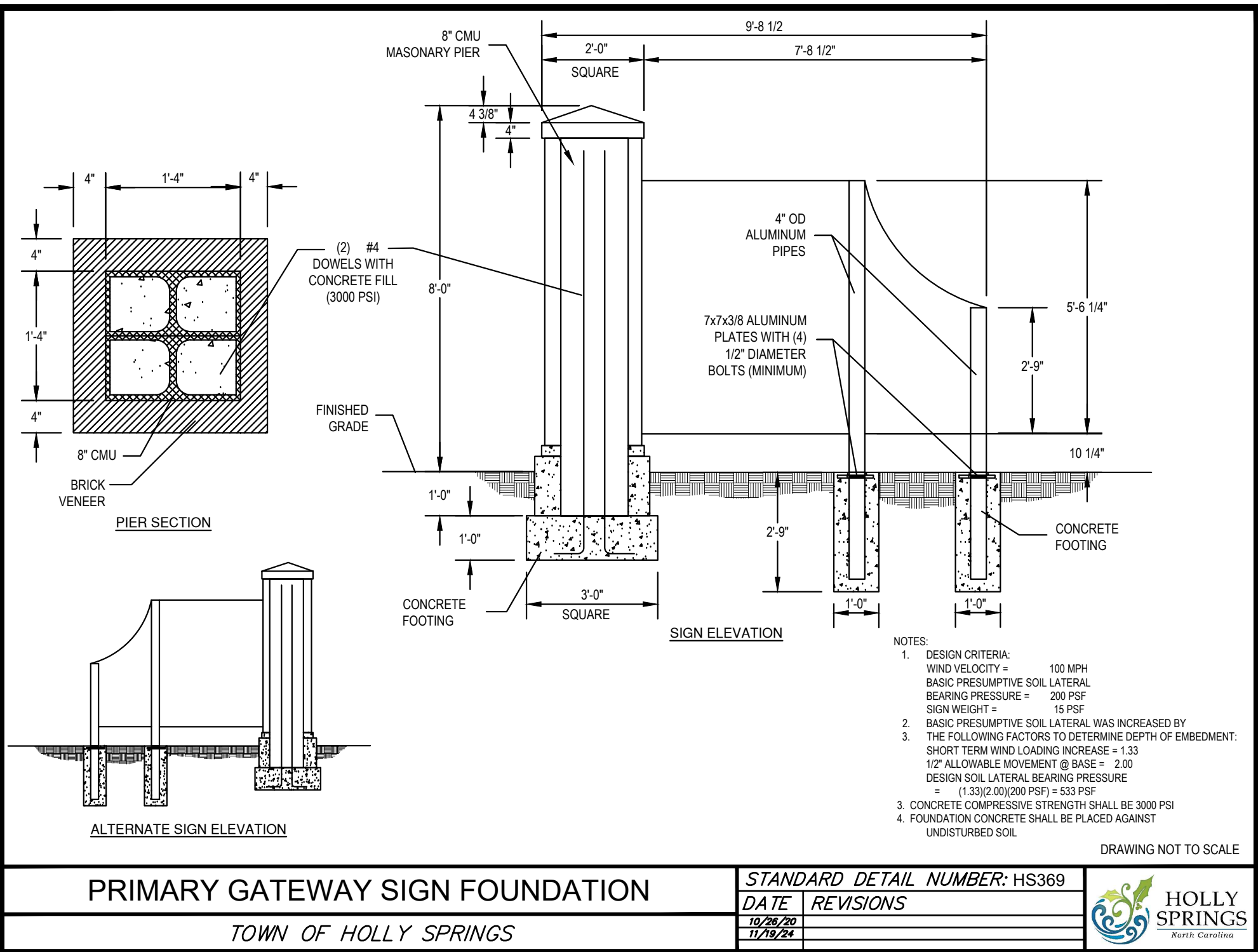
STANDARD DETAIL NUMBER: HS361

DATE REVISIONS

4/5/19
6/11/24
11/19/24

DRAWING NOT TO SCALE





PRIMARY GATEWAY SIGN FOUNDATION

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS369

DATE REVISIONS

10/26/20
11/19/24

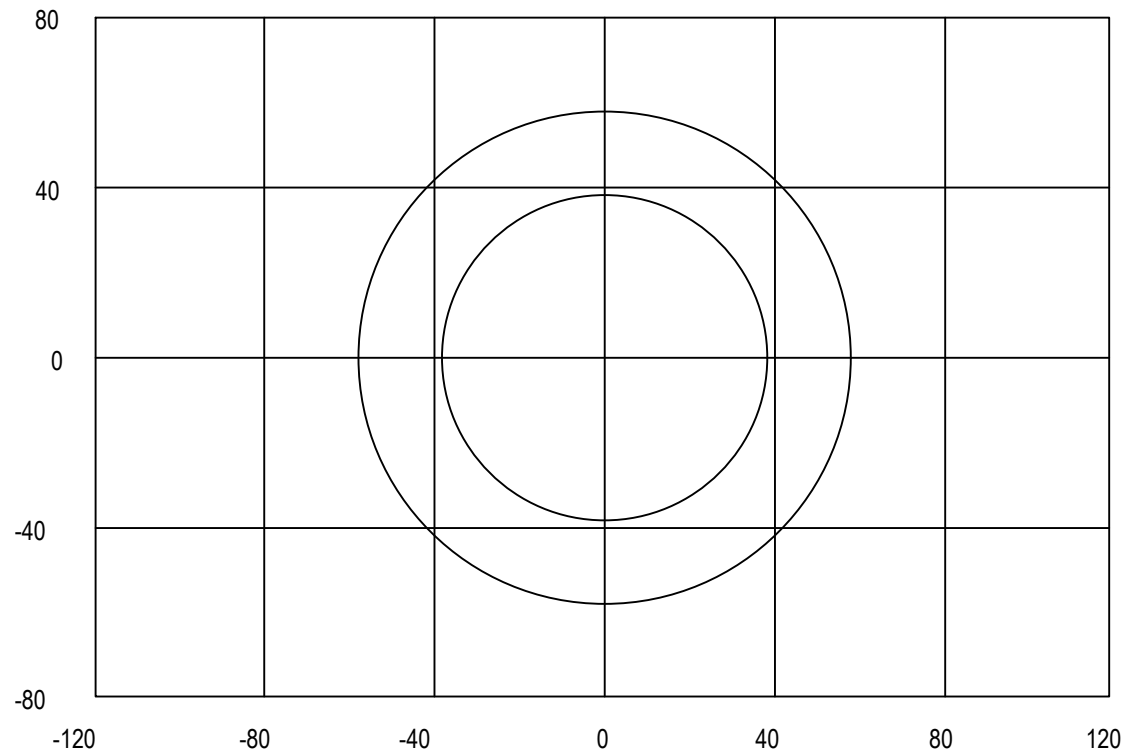


ISOFOOTCANDLE CURVES

FIXTURE: MITCHELL LED w/TOP HAT, R/B/M
MOUNTING HEIGHT: 16FT
LIGHT SOURCE: 50W LED'S, 4000K
PATTERN: TYPE V, B3-U3-G3

ASSY # LFIX-MTCHTR-LED-50-BLK-MULTIV-PVT-P

NOTE: THE FOOTCANDLE READINGS BELOW ARE MAINTAINED AND HAVE BEEN DEPRECIATED FOR LAMP LUMEN DEPRECIATION AND LUMINAIRE DIRT DEPRECIATION, FOR INITIAL FOOTCANDLES, DIVIDE THE READINGS BELOW BY .85.



LEGEND (OUTER TO INNER): 0.100 , 0.200 , 0.300

ML 4A



NOTE:
ALL PEDESTRIAN LIGHTS
ARE TO BE PLACED AT
THE ROW LINE.

16' STYLE V
+LPOLE-SS-AB-AL-16FT-BLK-3T-PVT-P

16' STYLE VIII BREAKAWAY POLE
+LPOLE-SB-AB-AL-16FT-BWAY-RECT-HOLLY-P

DRAWING NOT TO SCALE

DOWNTOWN DISTRICT PEDESTRIAN LIGHT FIXTURE

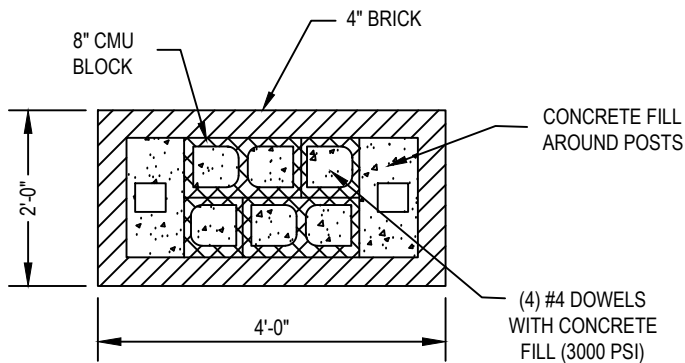
TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS370

DATE REVISIONS

9/16/20
11/19/24

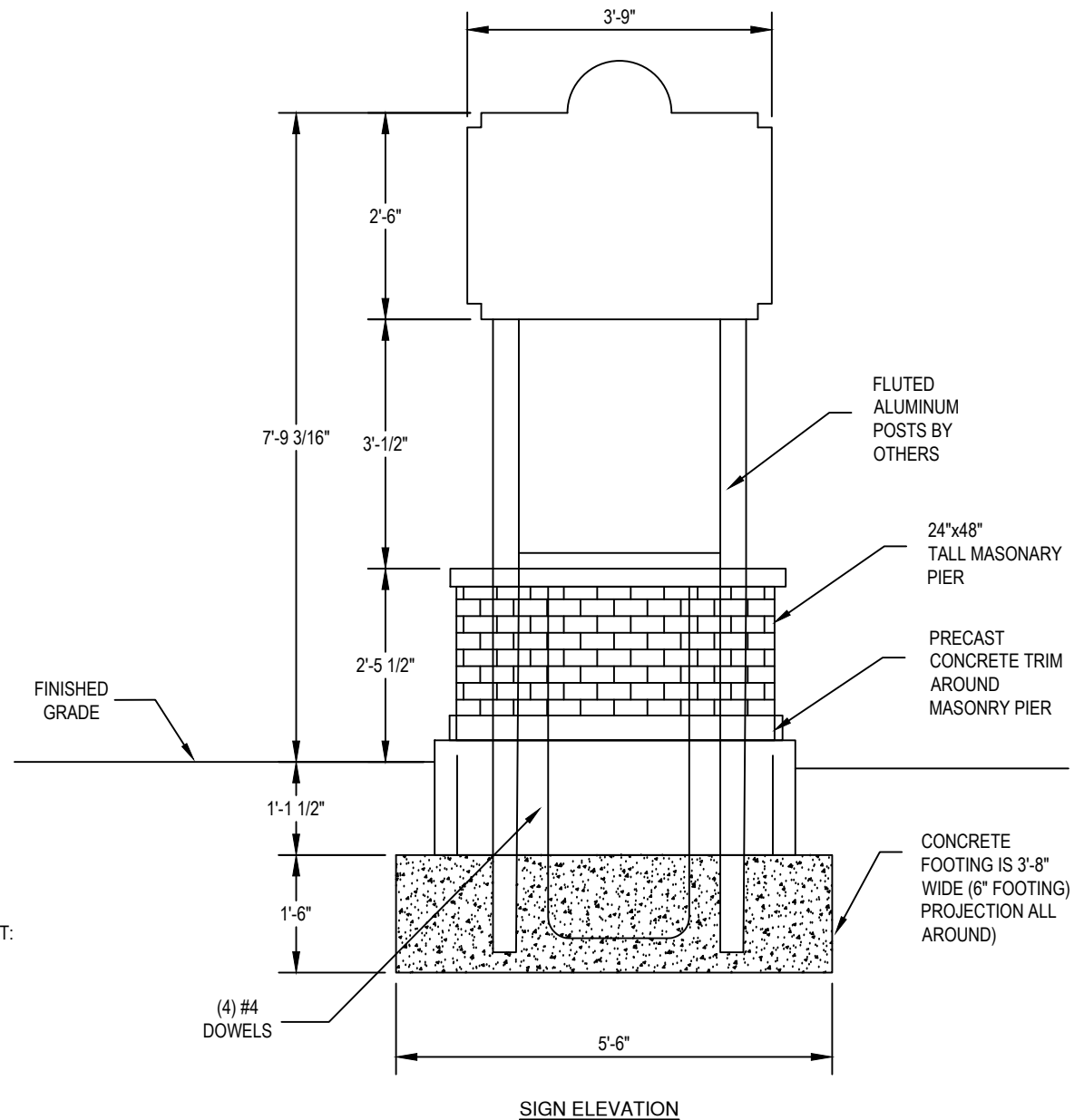




PIER SECTION

NOTES:

- DESIGN CRITERIA:
WIND VELOCITY = 100 MPH
BASIC PRESUMPTIVE SOIL LATERAL BEARING PRESSURE = 200 PSF
SIGN WEIGHT = 15 PSF
- BASIC PRESUMPTIVE SOIL LATERAL WAS INCREASED BY
- THE FOLLOWING FACTORS TO DETERMINE DEPTH OF EMBEDMENT:
SHORT TERM WIND LOADING INCREASE = 1.33
1/2" ALLOWABLE MOVEMENT @ BASE = 2.00
DESIGN SOIL LATERAL BEARING PRESSURE
= $(1.33)(2.00)(200 \text{ PSF}) = 533 \text{ PSF}$
- CONCRETE COMPRESSIVE STRENGTH SHALL BE 3000 PSI
- FOUNDATION CONCRETE SHALL BE PLACED AGAINST UNDISTURBED SOIL



DRAWING NOT TO SCALE

SECONDARY GATEWAY SIGN FOUNDATION

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS373

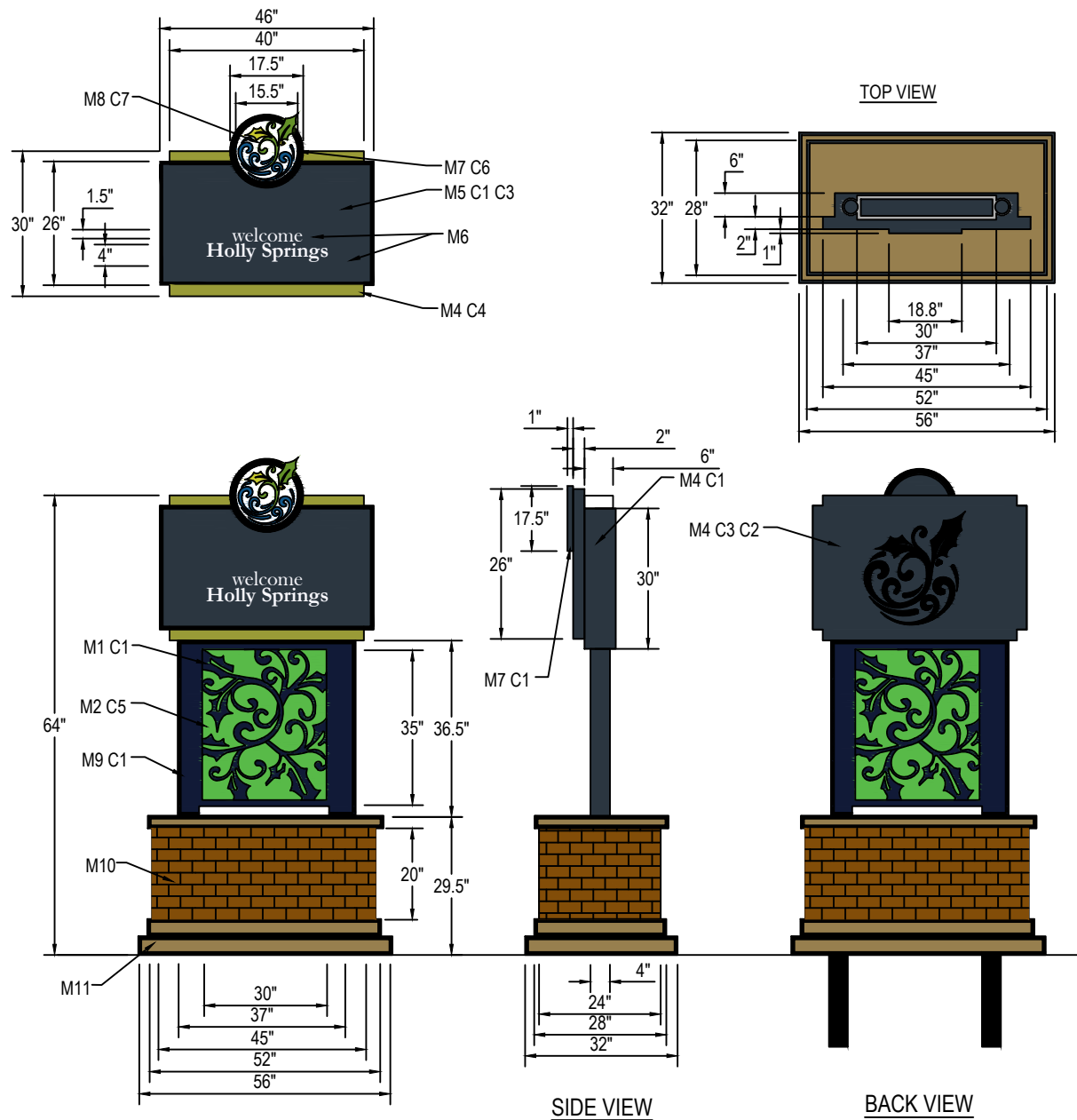
DATE REVISIONS

10/26/20
11/19/24



NOTES:

1. "WELCOME" font to be Futura Bk BT
2. "HOLLY SPRINGS" font to be Garamond MT Regular
3. Sign face to face oncoming traffic



DRAWING NOT TO SCALE

SECONDARY GATEWAY SIGN

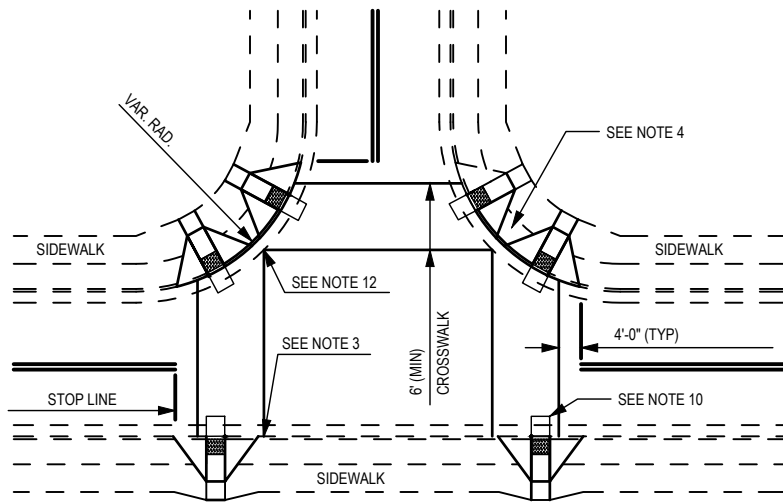
TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS374

DATE REVISIONS

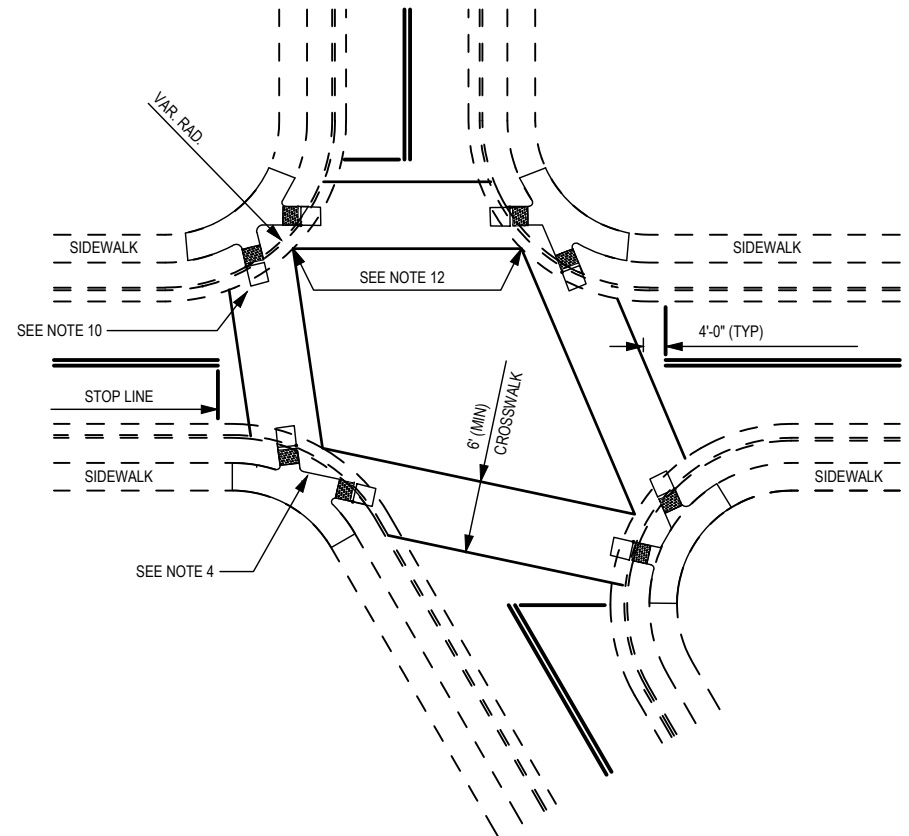
10/30/20
11/19/24



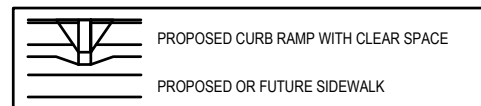
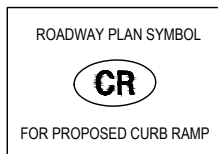


DETAIL SHOWING TYPICAL LOCATION OF CURB RAMPS,
PEDESTRIAN CROSSWALKS AND STOP LINES FOR TEE INTERSECTIONS

RAMP AND DETECTABLE WARNING SURFACE MUST BE ORIENTED STRAIGHT WITH THE DIRECTION OF TRAVEL SO THAT THE PEDESTRIAN CROSSES PERPENDICULAR TO THE ROADWAY. THE RAMP OPENING CAN NOT ANGLE INTO THE ROADWAY.



DETAIL SHOWING TYPICAL LOCATION OF CURB
RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES



ALLOWABLE LOCATIONS

..... DUAL RAMP RADII ANY

DRAWING NOT TO SCALE

CURB RAMP LOCATION

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS388

DATE REVISIONS

12/19/23
11/19/24



NOTES:

1. "WELCOME" font to be Futura Bk BT
2. "HOLLY SPRINGS" font to be Garamond MT Regular
3. Sign face to face oncoming traffic

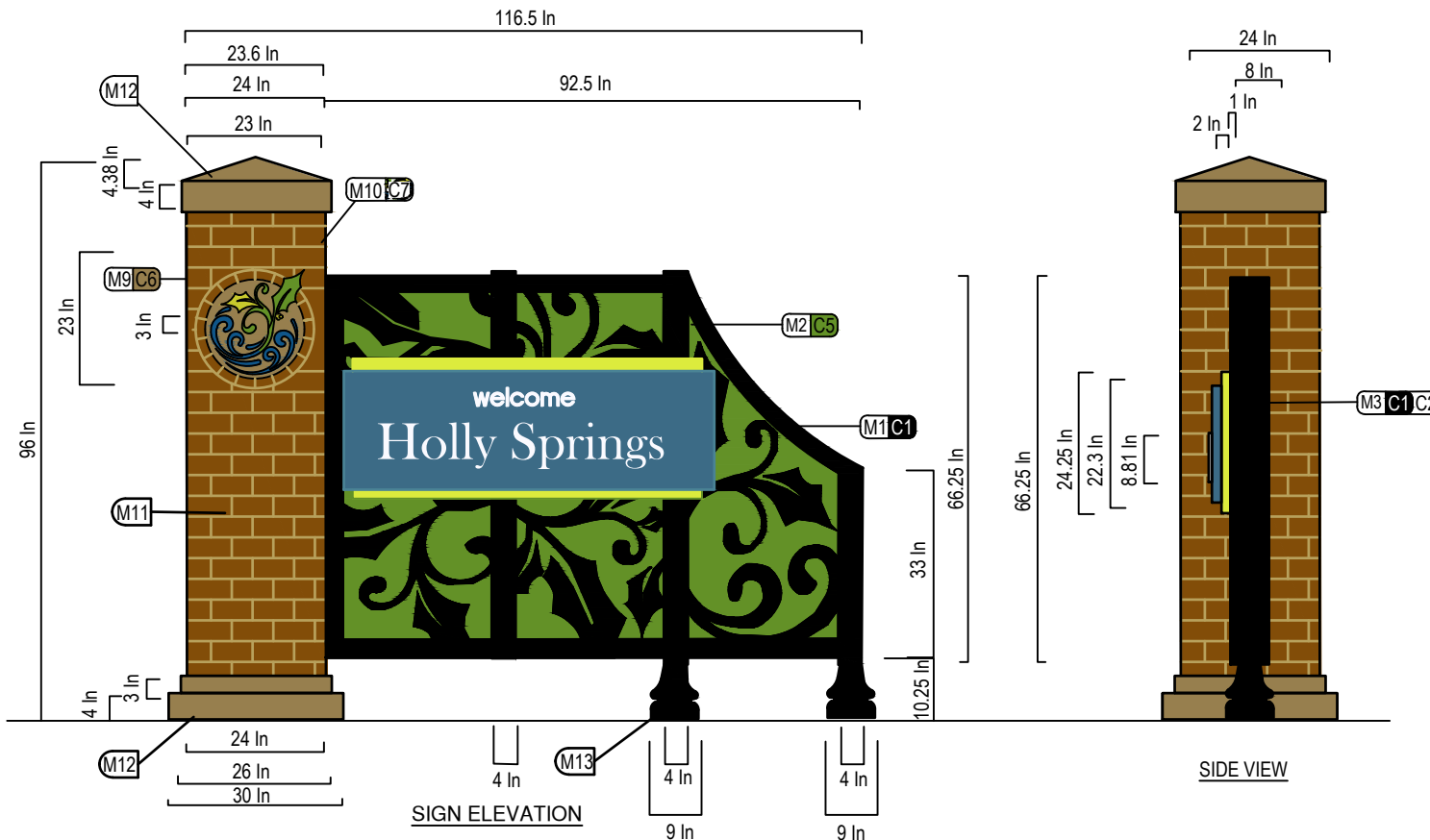
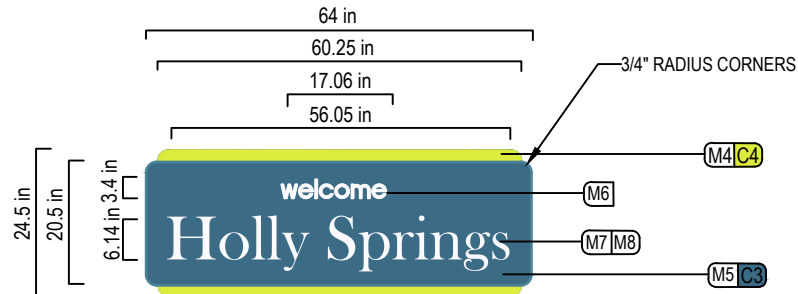
MATERIALS/COLORS:

- M1 .1875 Thick Aluminum
- M2 .177" Clear Polycarbonate
- M3 Fabricated Aluminum Cabinet; 8" deep
- M4 Fabricated Aluminum 1" deep background panel
- M5 Fabricated Aluminum 2; deep cabinet; cut through copy
- M6 .188" White Acrylic
- M7 .5" Clear Acrylic
- M8 .125" opaque white acrylic
- M9 25 MM (1") PVC
- M10 .375" thick aluminum, spacers (depth tbd)
- M11 Brick - Williamsburg #60
- M12 Precast - Wheat
- M13 10.25" Cast Mini Americana Base

- C1 Paint - Black; semi-gloss
- C2 Paint - Anti Graffiti Clear Coat; back of cabinet only
- C3 Paint - Blue PMS 7469C; semi-gloss
- C4 Paint - Gold PMS 585C; semi-gloss
- C5 Paint - Translucent Green PMS 7490C; subsurface
- C6 Paint - faux finish to match precast cap/base
- Paint - custom airbrush logo

Illumination: Pure White LED illumination (green panels and text on sign panel) 100v-277v Variable 12V IP68 - Waterproof - Power Supplies

- PMS 7469C
- PMS 7490C
- PMS 585C
- PMS 2603C
- PMS 3025C
- PMS 7455C



SIGN ELEVATION

SIDE VIEW

ALTERNATE SIGN ELEVATION

DRAWING NOT TO SCALE

PRIMARY GATEWAY SIGN

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS398

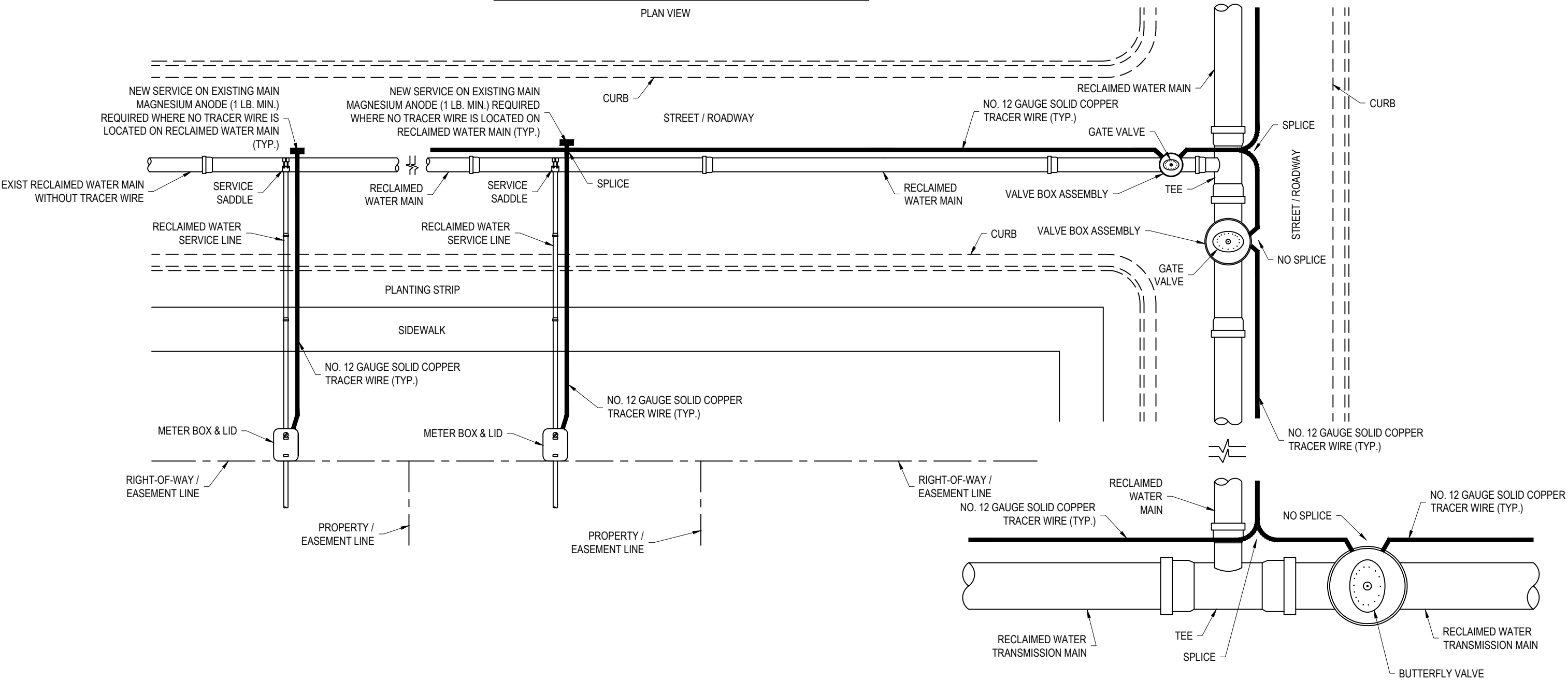
DATE REVISIONS

11/19/24



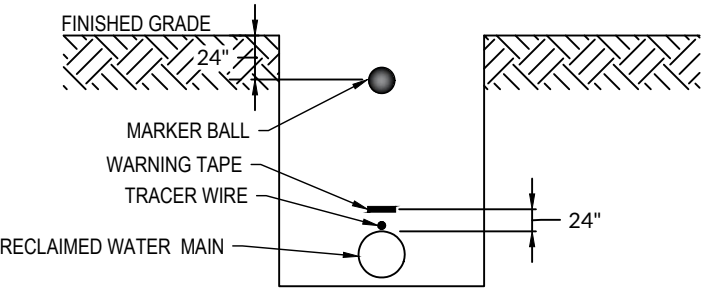
STREET VIEW - RECLAIMED WATER MAIN TRACER WIRE

PLAN VIEW



TRENCH DETAIL

PROFILE VIEW



- NOTES:
1. TRACER WIRE SHOWN AWAY FROM PIPE FOR CLARITY. TRACER WIRE SHALL BE INSTALLED IMMEDIATELY ADJACENT TO THE RECLAIMED WATER PIPE. TRACER WIRE SHALL BE FASTENED TO THE PIPE WITH ZIP TIES AT 10 FOOT INTERVALS.
 2. TRACER WIRE SHALL BE SOLID COPPER NO. 12 WITH 30 MILS PURPLE HDPE INSULATION.
 3. LOCATOR POST REQUIRED FOR 30 INCH AND LARGER DISTRIBUTION MAINS ONLY.

1 OF 2 DRAWING NOT TO SCALE

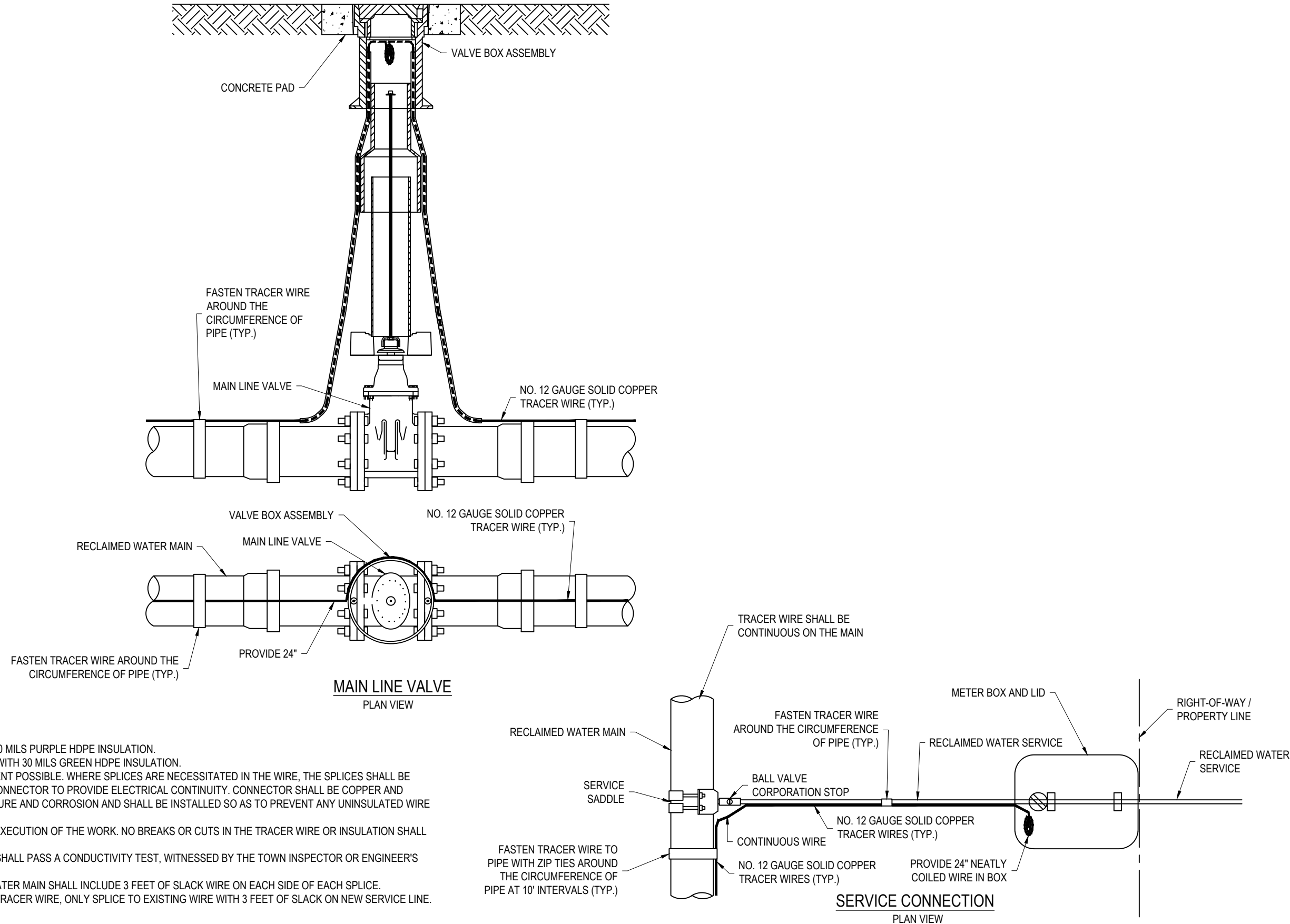
TRACER WIRE - PVC PRESSURE PIPE (RECLAIMED WATER MAIN)

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS501

DATE REVISIONS

6/11/24
11/19/24



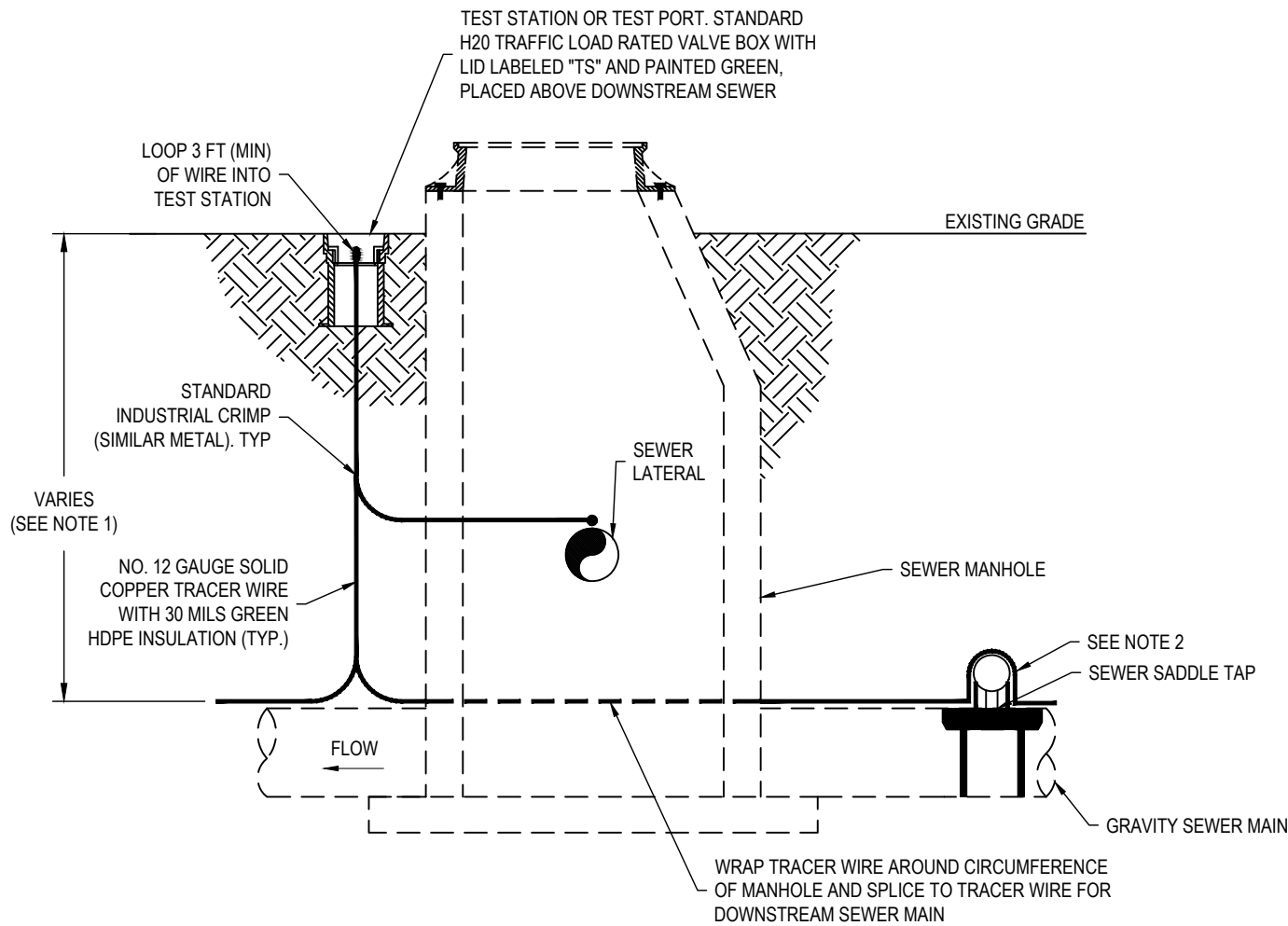
- NOTES:
1. TRACER WIRE SHALL BE AWG NO. 12 GAUGE SOLID COPPER WITH 30 MILS PURPLE HDPE INSULATION.
 2. SEWER FORCE MAIN SHALL BE AWG NO. 12 GAUGE SOLID COPPER WITH 30 MILS GREEN HDPE INSULATION.
 3. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. WHERE SPLICES ARE NECESSITATED IN THE WIRE, THE SPLICES SHALL BE SECURELY BONDED TOGETHER WITH AN APPROVED INDUSTRIAL CONNECTOR TO PROVIDE ELECTRICAL CONTINUITY. CONNECTOR SHALL BE COPPER AND INSULATION SHALL BE REPAIRED AS DETAILED TO SEAL OUT MOISTURE AND CORROSION AND SHALL BE INSTALLED SO AS TO PREVENT ANY UNINSULATED WIRE EXPOSURE.
 4. TRACER WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OR CUTS IN THE TRACER WIRE OR INSULATION SHALL BE PERMITTED.
 5. PRIOR TO ACCEPTANCE (POST PUNCH LIST) EACH WIRE SEGMENT SHALL PASS A CONDUCTIVITY TEST, WITNESSED BY THE TOWN INSPECTOR OR ENGINEER'S REPRESENTATIVE.
 6. SPLICES IN THE PRIMARY TRACER WIRE ALONG THE RECLAIMED WATER MAIN SHALL INCLUDE 3 FEET OF SLACK WIRE ON EACH SIDE OF EACH SPLICE.
 7. FOR INSTALLING A NEW SERVICE LINE ON AN EXISTING MAIN WITH TRACER WIRE, ONLY SPLICE TO EXISTING WIRE WITH 3 FEET OF SLACK ON NEW SERVICE LINE.

TRACER WIRE - PVC PRESSURE PIPE (RECLAIMED WATER MAIN)

TOWN OF HOLLY SPRINGS

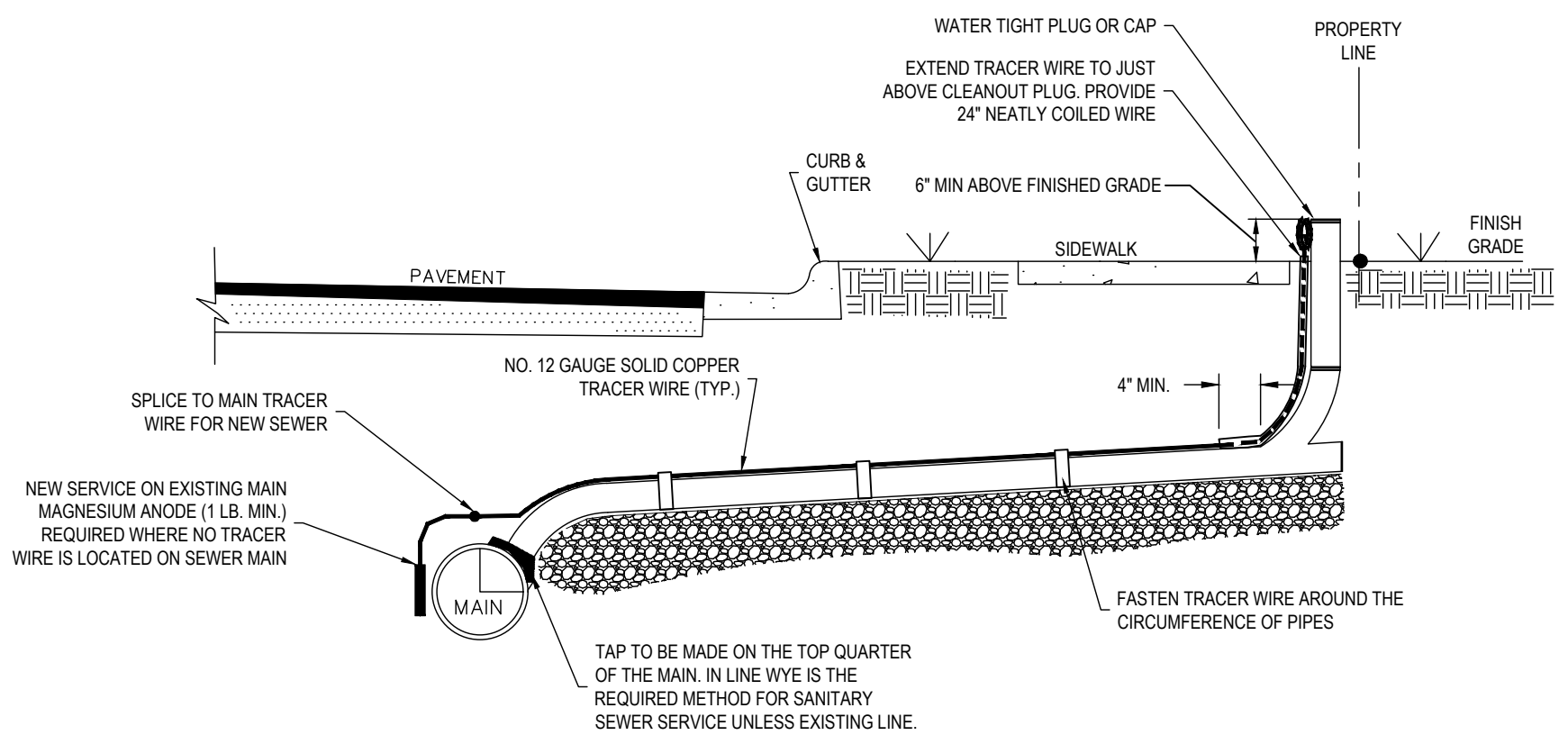
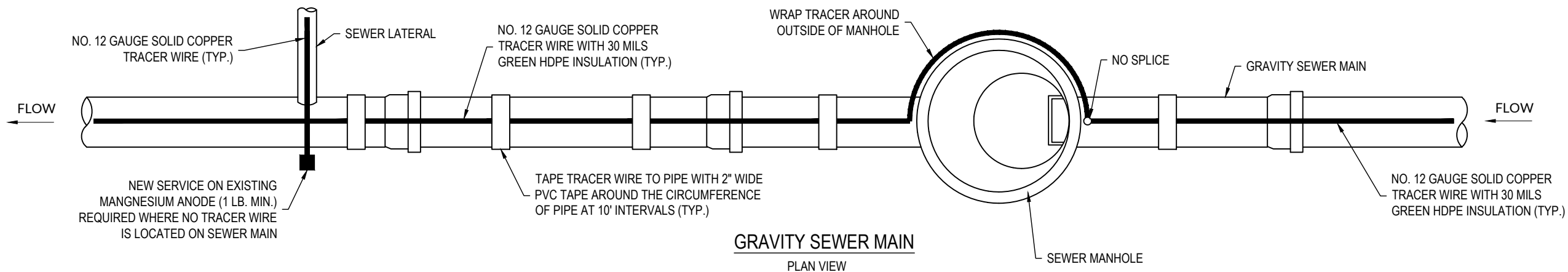
STANDARD DETAIL NUMBER: HS501

DATE	REVISIONS
6/11/24	
11/19/24	



- NOTES:**
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FEET, THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION DEEPER THAN 8 FEET, THE TRACING WIRE SHALL BE INSTALLED AT A DEPTH OF 7-8 FEET. THE WIRE SHALL BE PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. NO BREAKS OR CUTS IN THE TRACER WIRE SHALL BE PERMITTED.
 2. WHERE LATERAL TAPS ARE MADE BY SERVICE SADDLES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SADDLE AND MAIN.

TYPICAL SECTION



SERVICE CONNECTION

- NOTES:**
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. WHERE SPLICES ARE NECESSITATED IN THE WIRE, THE SPLICES SHALL BE SECURELY BONDED TOGETHER WITH AN APPROVED INDUSTRIAL CONNECTOR TO PROVIDE ELECTRICAL CONTINUITY. CONNECTOR SHALL BE COPPER AND INSULATION SHALL BE REPAIRED TO SEAL OUT MOISTURE AND CORROSION AND SHALL BE INSTALLED IN A MANNER SO AS TO PREVENT ANY UNINSULATED WIRE EXPOSURE.
 2. THE CLEANOUT AT THE RIGHT OF WAY AND OR EASEMENT SHALL SERVE AS THE TEST PORT.
 3. SPLICED CONNECTIONS SHALL BE ALLOWED BETWEEN THE MAIN LINE TRACER WIRE AND THE LATERAL TRACER WIRE.
 4. FOR NEW SEWER TAPS ON EXISTING MAINS VOID OF ANY TRACER WIRE, PROVIDE A 1 LB. MAGNESIUM ANODE FOR THE TRACING WIRE TERMINATION AT THE POINT OF THE NEW TAP ON THE EXISTING SEWER MAIN. PLACE ANODE AT BOTTOM EDGE OF TRENCH AWAY FROM MAIN & LATERAL.
 5. PRIOR TO ACCEPTANCE (POST PUNCH LIST) EACH WIRE SEGMENT SHALL PASS A CONDUCTIVITY TEST, WITNESSED BY THE TOWN INSPECTOR OR ENGINEER'S REPRESENTATIVE.

DRAWING NOT TO SCALE

TRACER WIRE - GRAVITY SEWER DETAILS

TOWN OF HOLLY SPRINGS

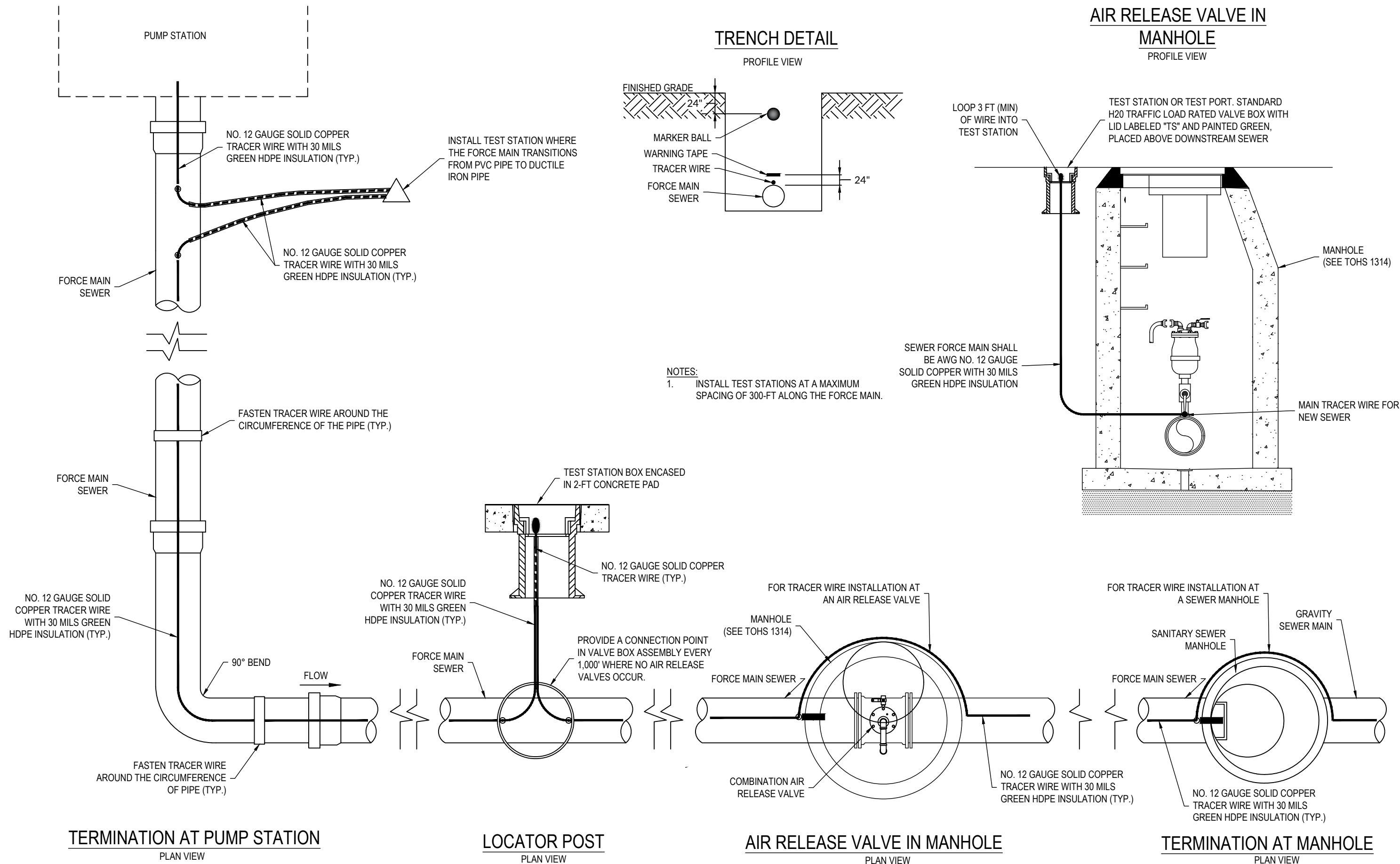
STANDARD DETAIL NUMBER: HS502

DATE REVISIONS

6/11/24

11/19/24





TRACER WIRE - FORCE MAIN

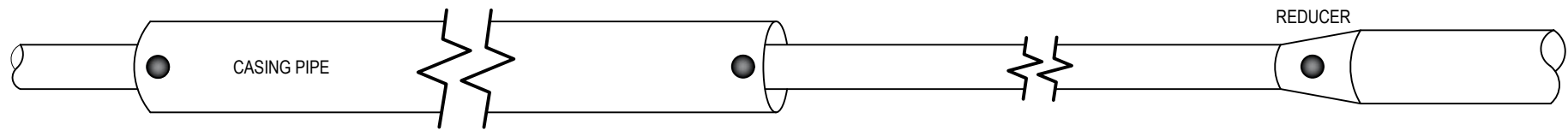
TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS503

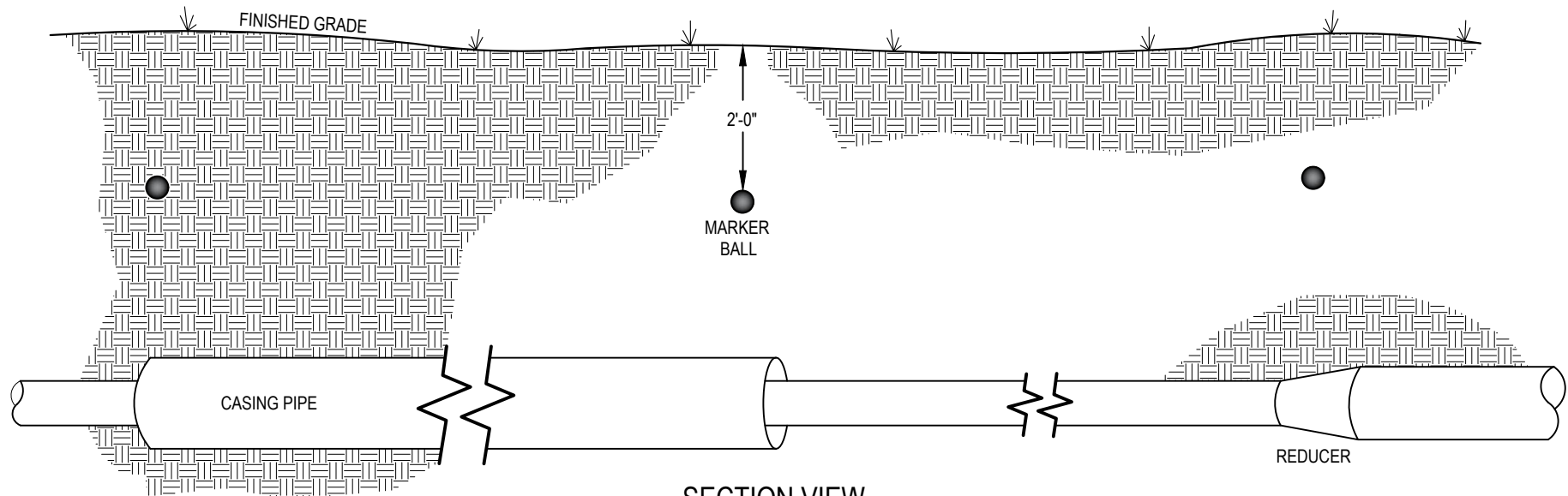
DATE REVISIONS

6/11/24
11/19/24

DRAWING NOT TO SCALE



PLAN VIEW



SECTION VIEW

UTILITY MARKER BALL COLOR

GREEN - SEWER

BLUE - POTABLE WATER

PURPLE - RECLAIMED WATER

● = PRE-PROGRAMMED 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

TOWN OF HOLLY SPRINGS

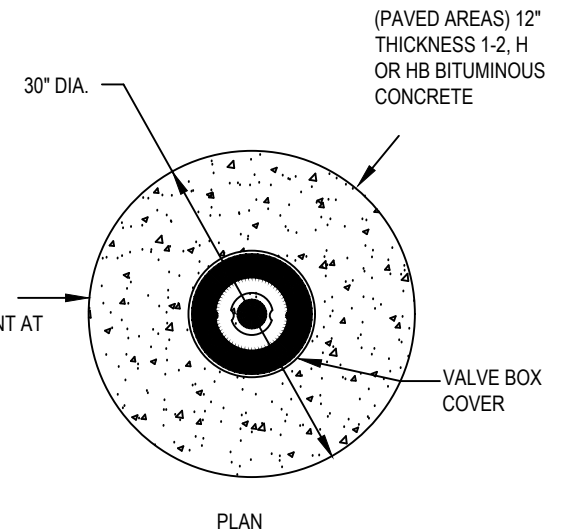
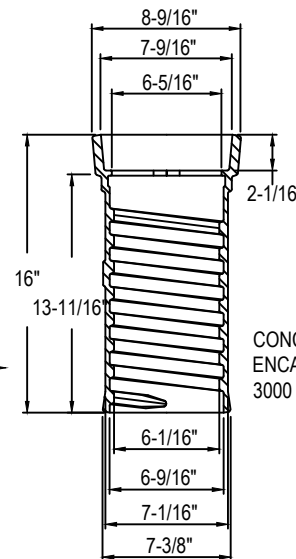
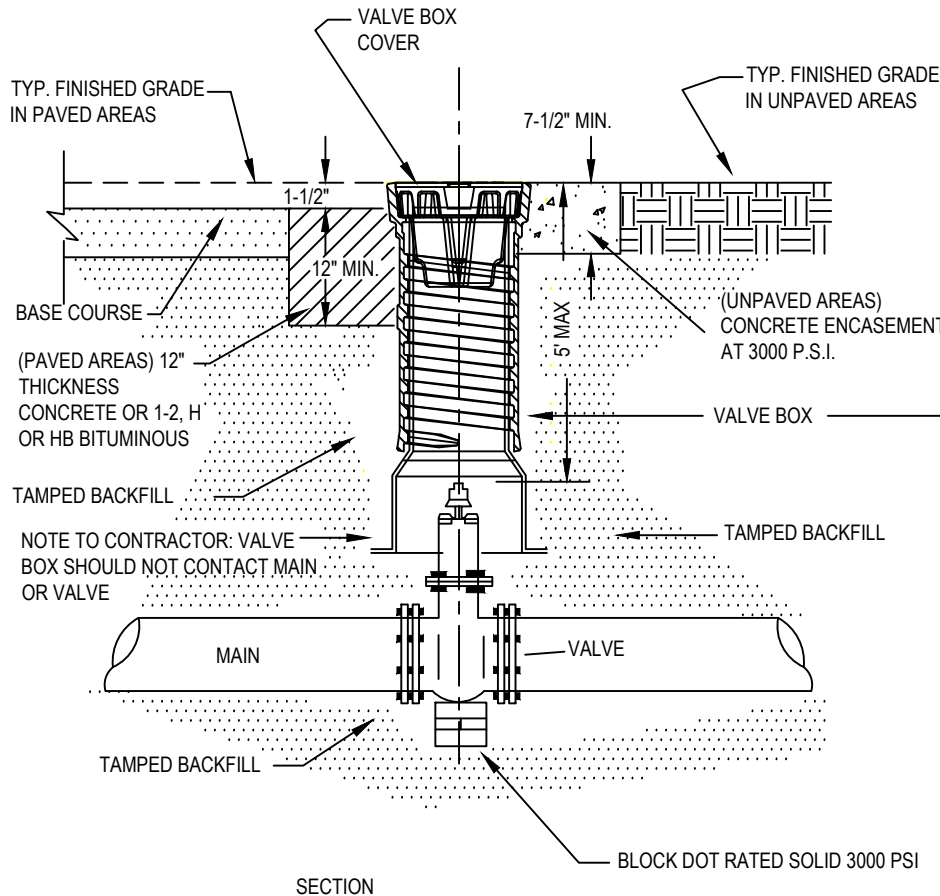
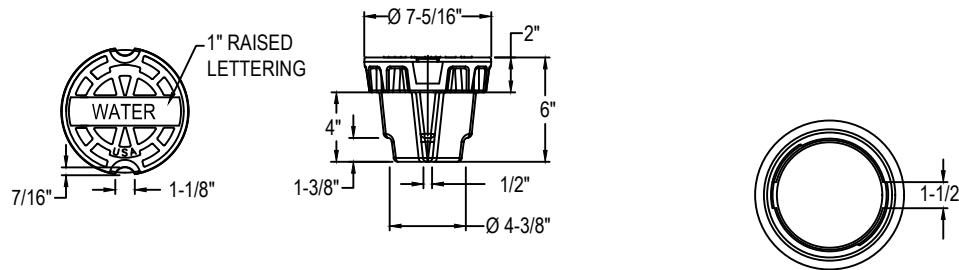
STANDARD DETAIL NUMBER: HS504

DATE

REVISIONS

2/22/19
11/19/24





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

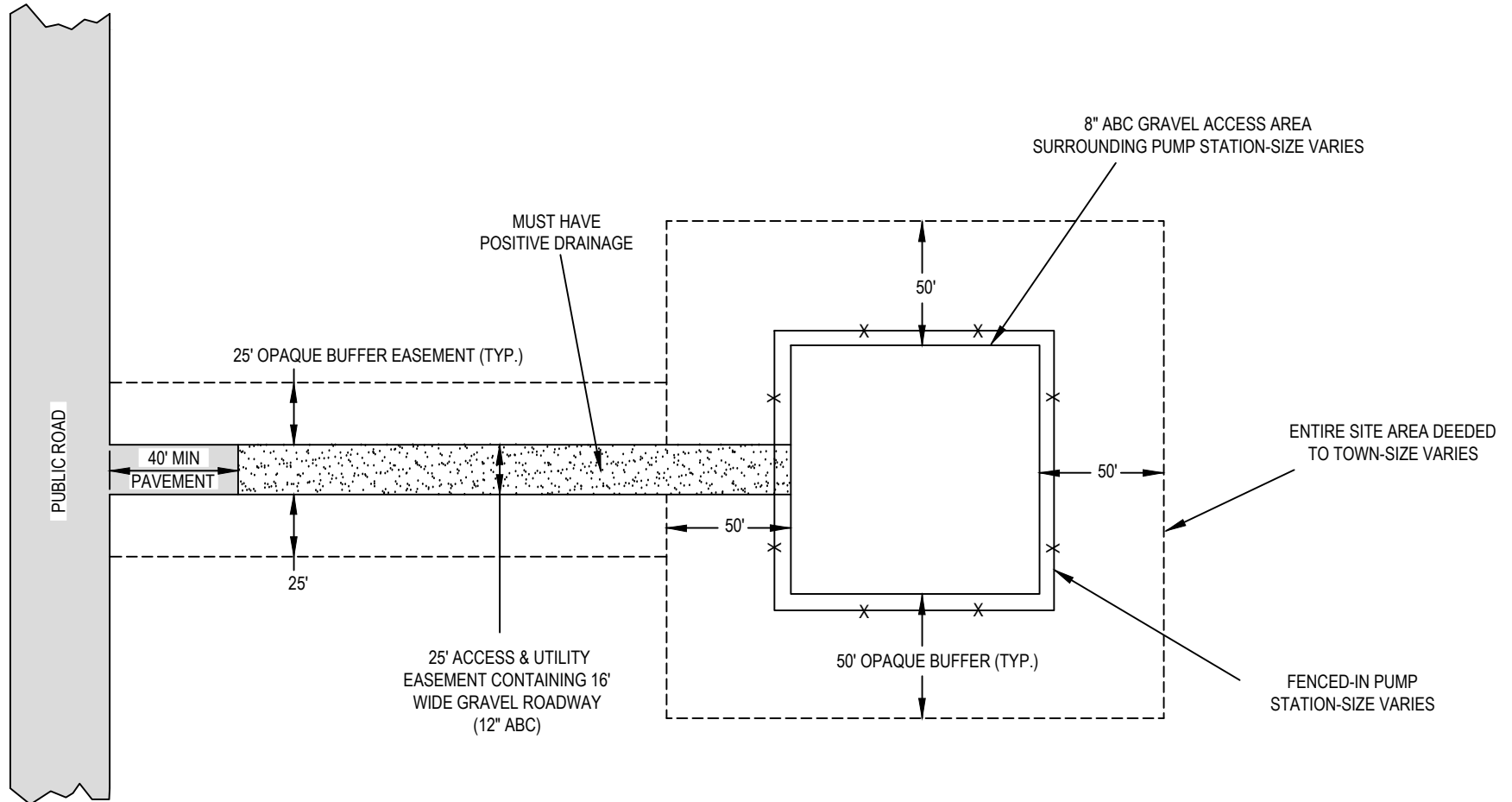
TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS601

DATE REVISIONS

8/4/17
11/19/24





DRAWING NOT TO SCALE

PUMP STATION ACCESS AND BUFFERS

TOWN OF HOLLY SPRINGS

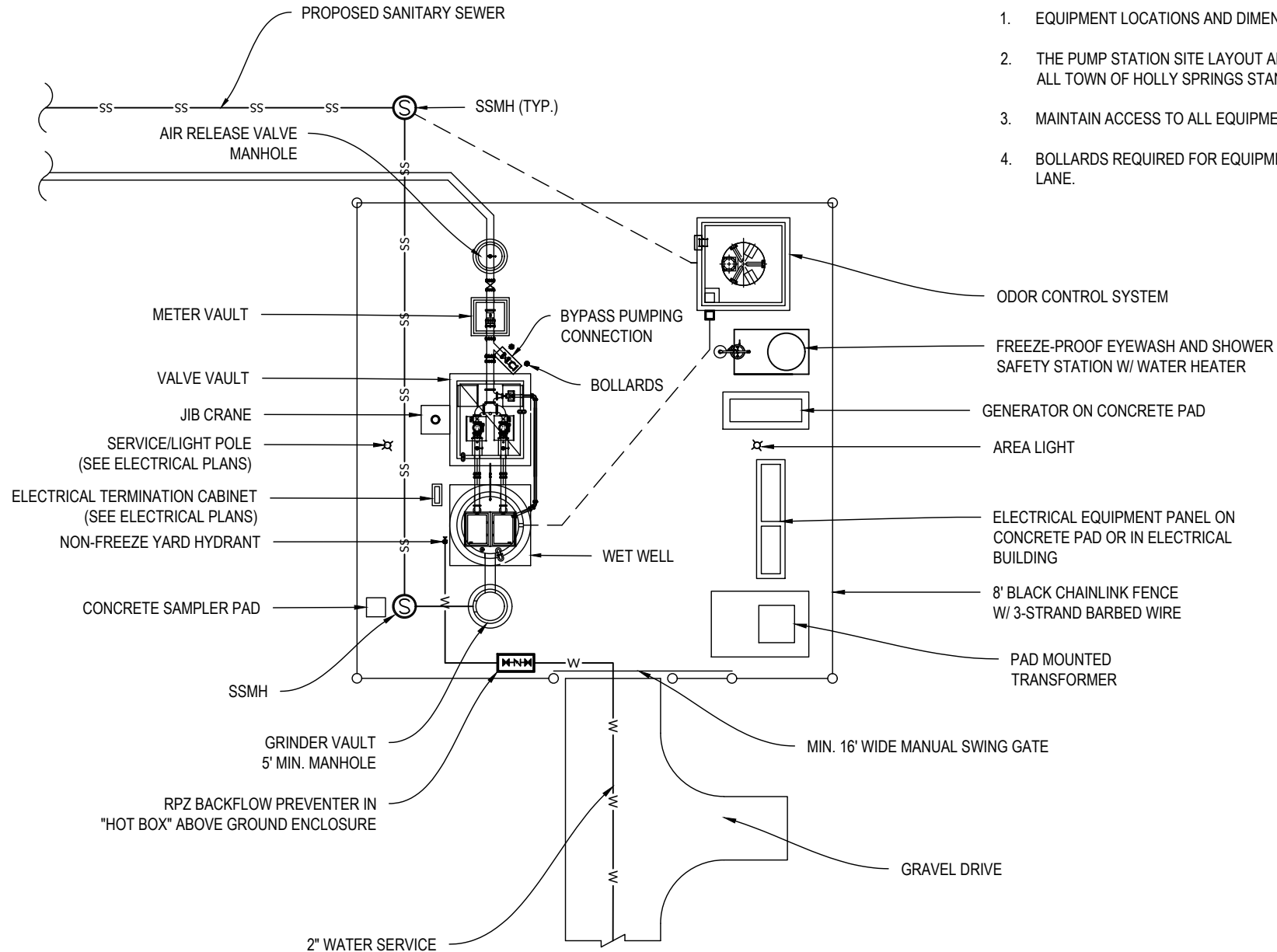
STANDARD DETAIL NUMBER: HS1301

DATE	REVISIONS
7/24/09	
6/11/24	
11/19/24	



NOTES:

1. EQUIPMENT LOCATIONS AND DIMENSIONS MAY VARY.
2. THE PUMP STATION SITE LAYOUT AND DESIGN SHALL MEET ALL TOWN OF HOLLY SPRINGS STANDARD REQUIREMENTS.
3. MAINTAIN ACCESS TO ALL EQUIPMENT AND STRUCTURES.
4. BOLLARDS REQUIRED FOR EQUIPMENT IN THE TRAVEL LANE.



1 OF 2

DRAWING NOT TO SCALE

PUMP STATION LAYOUT < 10 HP

TOWN OF HOLLY SPRINGS

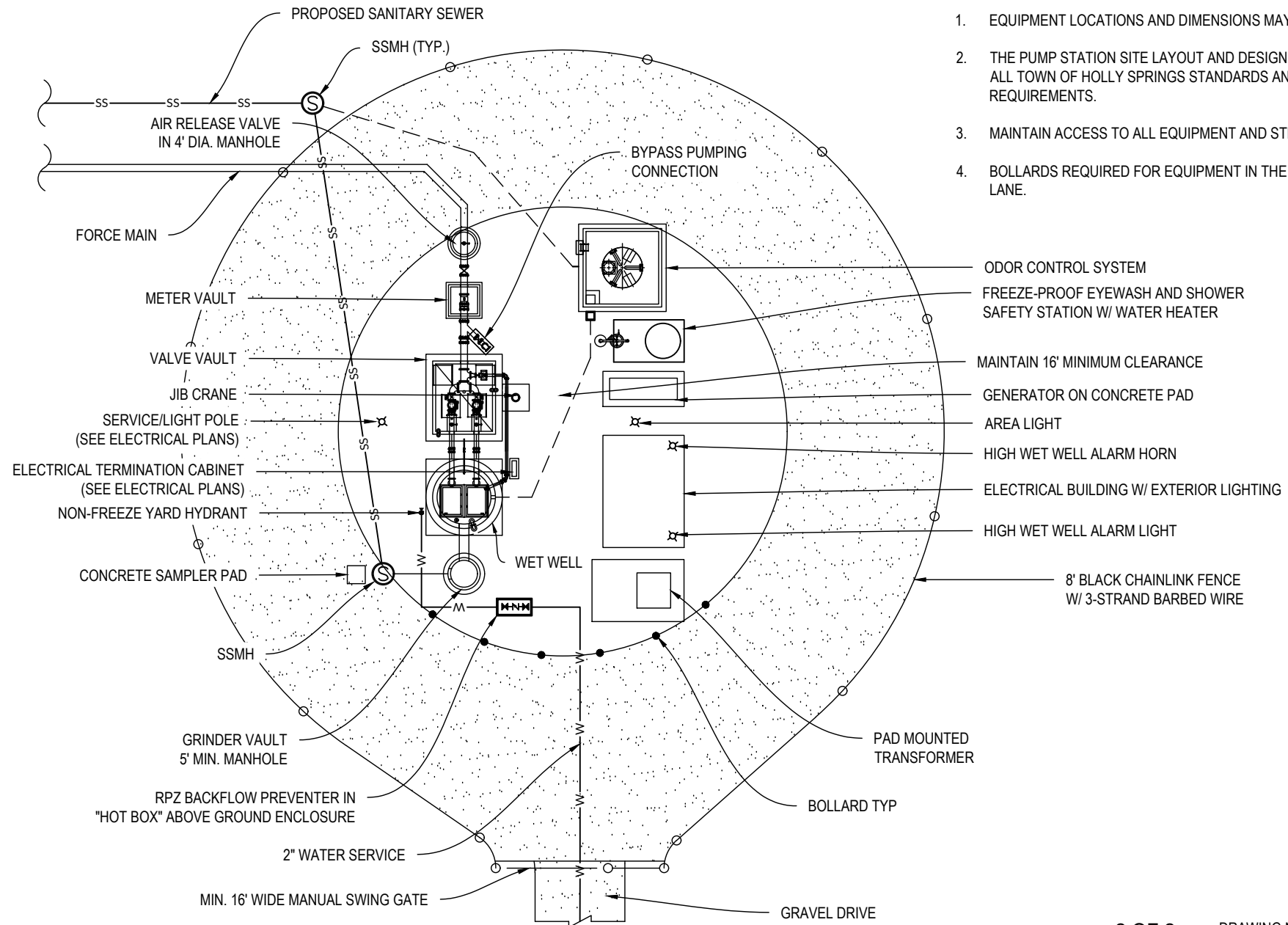
STANDARD DETAIL NUMBER: HS1302

DATE	REVISIONS
6/11/24	
11/19/24	



NOTES:

1. EQUIPMENT LOCATIONS AND DIMENSIONS MAY VARY.
2. THE PUMP STATION SITE LAYOUT AND DESIGN SHALL MEET ALL TOWN OF HOLLY SPRINGS STANDARDS AND REQUIREMENTS.
3. MAINTAIN ACCESS TO ALL EQUIPMENT AND STRUCTURES.
4. BOLLARDS REQUIRED FOR EQUIPMENT IN THE TRAVEL LANE.



2 OF 2

DRAWING NOT TO SCALE

TYPICAL PUMP STATION SITE LAYOUT

TOWN OF HOLLY SPRINGS

STANDARD DETAIL NUMBER: HS1302

DATE

REVISIONS

6/11/24

11/19/24





Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 14.

Consent Agenda

Title: FY25 Vehicle and Equipment Installment Finance Agreement

Strategic Priority Area: Organizational Excellence

Staff Resource: Tina Stroupe, Finance

Action(s):

- Approve Installment Purchase Agreement (IPA) with Cogent Leasing and Finance, Inc.
- Approve Resolution 24-29 for financing terms and documents and authorize Town Manager to sign and execute agreement for the FY25 installment purchase financing of vehicles and equipment with Cogent Leasing and Finance in the amount of \$1,810,312.

Explanation:

- Installment Purchase Agreements are one of several financing mechanisms available to local governments. Authority is provided in NC General Statute 160A-20.
- Vehicles and equipment do not require Local Government Commission (LGC) approval.
- The total amount for vehicle and equipment purchases to include tax, tags and upfits will not exceed \$1,810,312.
- This funding will acquire twenty-nine vehicles or equipment for the following departments: Fire (2), Finance (1), Parks and Recreation (6), Police (10), Public Works (4), and Utilities and Infrastructure (6).

Background:

- Six proposals were received with interest rates ranging from 3.86% to 5.4%
- Cogent Leasing and Finance submitted a proposal with an interest rate of 3.86% for a 59-month term.
- The purchase of these items and the intent to finance were approved in the FY 2024-2025 budget.
- The attached resolution authorizes the Town Manager to sign and execute the agreement and authorizes staff to proceed with closing the loan and obtaining the funds.

Funding Source(s):

Operating Budget - Installment Financing

Attachment(s):

1. 2025-0902 RFP Equipment & Vehicle Financing_POSTED
2. Bid Record RFP 2025-0902 Equipment & Vehicle Financing FY25 11.13.24
3. 24-29 FY25 Resolution Approving Financing Terms with Cogent Leasing and Financing Inc_
4. FY25 Vehicles and Equipment List_FINANCED ONLY for TC as of 11.14.2024 -Updated

Town Council Business Meeting
November 19, 2024

TOWN OF HOLLY SPRINGS, NORTH CAROLINA
REQUEST FOR PROPOSALS
RFP# 2025-0902 EQUIPMENT AND VEHICLE FINANCING
Issue Date: October 7, 2024
Due Date: October 25, 2024 by 2:00 PM

I. PURPOSE

The Town of Holly Springs desires to secure and enter into an installment financing agreement pursuant to NC General Statute §160A-20 in the principal amount not to exceed \$1,810,312 (bank qualified) for the purpose of financing the purchase, upfit and North Carolina Tax and Tag costs of various vehicles and equipment. The Town is soliciting proposals to provide the necessary financing, subject to the terms and conditions set forth in this Request for Proposals.

II. BACKGROUND

- The Town bond rating is AAA with Standard and Poor's and Aa1 with Moody's Rating Services.
- The Town of Holly Springs ***Comprehensive Annual Financial Report*** for the most recently audited year ending June 30, 2023, is available on the Town of Holly Springs web site <https://www.hollyspringsnc.gov/DocumentCenter/View/46902/Holly-Springs-Annual-Comprehensive-Financial-Report-FY23>.

III. CONTRACT SPECIFICATIONS

1. The desired amount of the financing is not to exceed \$1,810,312.
2. The desired term of the financing will be 59 months.
3. The amortization schedule shall not require a payment prior to May 1, 2025.
4. Installment payments are to be made in level, semi-annual payments, payable in arrears.
5. The interest rate is to be fixed for the entire term of the agreement.
6. The interest rate(s) proposed must be guaranteed through December 16, 2024. The desired closing date is November 22, 2024. The closing date may not surpass November 26, 2024.
7. The Town of Holly Springs desires prepayment of the principal at any time without penalty.
8. The Town of Holly Springs obligation under the installment financing agreement will be secured by financing statements and security interests in all or a portion of the equipment and vehicles being financed as negotiated between the Town of Holly Springs and the awarded bidder. No deficiency judgment may be rendered against the Town of Holly Springs for breach of a contractual obligation under the installment financing agreement, the taxing power of the Town of Holly Springs will not be pledged to secure repayment there under.
9. The Installment Financing Agreement must include a non-appropriation clause, a non-substitution clause is not acceptable.
10. Successful bidder will file on behalf of the Town of Holly Springs any IRS documentation required by the U.S. Treasury.
11. Successful bidder shall be chartered in North Carolina by the North Carolina Commissioner of Banks.

IV. PROPOSAL SUBMISSION INSTRUCTIONS

Proposals must be submitted electronically, via email, to the contact listed below by the response due date. Please reference the solicitation name and number in the email's subject line. Upon receipt, all responses and supporting materials become property of the Town and are subject to public record. Proposals submitted after the stated due date and time will **NOT** be accepted and deemed non-responsive.

Brettany DeVold, Purchasing Manager
RFP# 2025-0902 Equipment and Vehicle Financing
brettany.devold@hollyspringsnc.gov

Format

Proposals shall be submitted in a single, digital PDF file and contain the content described below.

Content

Proposals must satisfy the criteria outlined below to be responsive to this solicitation.

1. Cover Letter: Provide the legal name, address, and telephone number of the firm along with the designated contact's name, title, email address, and telephone number. Include a statement attesting to the proposal's accuracy and signed by an individual authorized to execute binding legal documents for the firm.
2. Required Form 1: "Proposal Form"
3. The terms of repayment. Please attach amortization schedule for 59 months.
4. A copy of your proposed Installment Financing Agreement.

V. QUESTIONS INSTRUCTIONS

Respondents shall submit all questions, in writing, to the contact listed below. When submitting questions, please reference the solicitation name and number, as well as the page and section, if applicable.

Tina Stroupe, Finance Director
Tina.stroupe@hollyspringsnc.gov

VI. CONTRACT AWARD

The standard of award will be based on the lowest total financing cost (including both interest cost, upfront fees and expenses), and terms deemed to be in the best interests of the Town. Contract award is subject to approval by Town Council.

REQUIRED FORM 1

**PROPOSAL FORM
RFP# 2025-0902 EQUIPMENT AND VEHICLE FINANCING**

Proposals shall include pricing based on gross funding (without consideration of investment earnings) and the requirements and terms set forth in this solicitation. **Pricing must be all-inclusive and cover every fee/cost of the scope/services that the Town will be financially responsible for.** Cost must be in United States Dollars and rounded to the nearest quarter of a dollar. If there are additional costs associated with the services, please add them in the spaces provided. You may also include a separate page in the pricing response section of your proposal submission if additional space is required.

Proposals shall be guaranteed through December 16, 2024.

LOAN AMOUNT:	\$1,810,312 (not to exceed)
TERM:	59 months
INTEREST RATE (fixed):	%
SEMI-ANNUAL PAYMENT AMOUNT:	\$
TOTAL INTEREST PAID OVER LIFE OF LOAN:	\$

ALL FEES/COSTS: List all additional costs associated with this transaction, including origination or placement fees, escrow fees, counsel fees and expenses, information detailing capped fees or expenses, etc.

EXCEPTIONS: List any exceptions to the contract specification set forth in Section III of this Request for Proposals.

No additional charges to the Town of Holly Springs for this installment financing agreement will be permitted. All charges must be listed in this proposal. By submitting this proposal, the lender agrees to the contract specifications set forth in Section III of this Request for Proposals, with the exception of the following:

VII. DISCLOSURES

Town's Rights and Options.

The Town reserves the right, at the Town's sole discretion, to take any action affecting this solicitation, this solicitation process, or the services or facilities subject to this solicitation, that would be in the best interests of the Town, including:

- To supplement, amend, substitute, or otherwise modify this solicitation, including the schedule, or to cancel this solicitation, at any time;
- To require any respondent to supplement or clarify its bid or provide additional information relating to its response;
- To investigate the qualifications, experience, capabilities, and financial standing of each respondent submitting a bid;
- To waive any defect or irregularity in any bid received;
- To reject any or all bids;
- To share the bids with Town employees and contractors, in addition to the Evaluation Committee, as deemed necessary by the Town;
- To award all, none, or any part of the services and enter into contracts with one or more of the respondents deemed by the Town to be in the best interest of the Town, which may be done with or without re-solicitation;
- To discuss and negotiate with any respondents their bid terms and conditions, including but not limited to financial terms; and
- To terminate discussions and negotiations with any respondent at any time and for any reason.

Accuracy of Solicitation and Related Documents.

Each respondent must independently evaluate all information provided by the Town. The Town makes no representations or warranties regarding any information presented in, or otherwise made available during this procurement process, and assumes no responsibility for conclusions or interpretations derived from such information. Additionally, the Town will not be bound by or responsible for any explanations or conclusions regarding this or any related documents other than those provided by an addendum issued by the Town. Respondents may not rely on any oral statement by the Town or its agents, advisors, or consultants.

If a respondent identifies potential errors or omissions in this or any other related documents, the respondent should immediately notify the provided contacts of such potential discrepancy in writing. The Town may issue a written addendum if it determines correction is necessary.

Expense of Bid Preparation.

The Town accepts no liability and respondents will have no actionable claims for reimbursement of any costs or expenses incurred while participating in this solicitation process. This includes expenses and costs related to bid submission, submission of written questions, attendance at Prebid conference, contract negotiations, or activities required for contract execution.

Vendor Inclusion

The Town's vendor management philosophy supports a fair, open, and inclusive process that offers the same access and information to all vendors. The Town provides an email alert option to allow vendors optimal notice and access to all solicitations as they are posted. This can be found on the Town of Holly Springs website at the following hyperlink: <https://www.hollyspringsnc.gov/2456/Bids-Requests-for-Proposals>.

Dispute Resolution Process

No services shall be delayed or postponed pending the resolution of any dispute unless Town otherwise agrees in writing. Any and all suits or actions to enforce, interpret or seek damages with respect to any provision of, or the performance or non-performance of, this Agreement shall be brought exclusively in the General Court of Justice of North Carolina sitting in Wake County, North Carolina and it is agreed by the parties that no other court shall have jurisdiction or venue with respect to such suits or actions. For any amount in controversy in excess of \$15,000 the Contractor shall participate in the Town's dispute resolution process which shall be considered part of Basic Services or Scope of Work unless specifically agreed otherwise herein. The Town's dispute resolution process is to engage in prelitigation mediation under the rules of Mediation for Superior Court notwithstanding the amount in controversy.

Confidentiality

Responses to the solicitation will become public records and, therefore, will be subject to public disclosure after contract award. However, North Carolina General Statutes Section 132-1.2 provides a method for protecting some documents from public disclosure. If the Consulting firm follows the procedures prescribed by those statutes and designates a document confidential or trade secret, the Town will withhold the document from public disclosure to the extent that is entitled or required to do so by applicable law, and will return the document after selection.

Equal Employment Opportunity

The Town of Holly Springs does not discriminate in administering any of its programs and activities. The firm awarded the contract for work must have a written policy and will be required to ensure that no person shall be denied employment, fair treatment or be discriminated against on the basis of race, sex, gender, religion, age, national origin, or handicap.

Minority/Women/Small Business Enterprise

It shall be the practice of the Town of Holly Springs to provide minority-owned, women owned, and small business enterprises (collectively "M/W/SBE") as well as other responsible vendors with fair and reasonable opportunity to participate in the Town's business opportunities including but not limited to employment, construction development projects, and material/services consistent with the laws of the State of North Carolina. The policy of the Town prohibits discrimination against any person or business in pursuit of these opportunities on the basis of race, color, national origin, religion, sex, age, disability, or veteran's status. It is further the policy of the Town to conduct its contracting and procurement programs so as to prevent such discrimination and to resolve all claims of such discrimination.

Good Faith Efforts.

The Town will make a good-faith effort to comply with G.S. 143-128.2, G.S. 143-128.4, where applicable, and to recruit and select small business entities. The governmental entity shall not limit or otherwise preclude any respondent from submitting a response so long as the respondent, itself or through its proposed team, is properly licensed and qualified to perform the work defined by this solicitation.

Contracting

Any installment financing agreement or other contract shall be construed and enforced in accordance with the laws of the State of North Carolina. Any controversy or claim arising because of contracting shall be settled by an action initiated in the appropriate division of the General Court of Justice in Wake County, North Carolina.

Conditions and Limitations

The Town expects to select a consulting firm from the bids submitted but reserves the right to reject any or all responses to the solicitation, to advertise for new responses, or to accept any response deemed to be in the best interest of the Town. A response to this solicitation should not be construed as a contract nor an indication of a commitment of any kind on the part of the Town nor does it commit either to pay for costs incurred in the submission of a response to this request or for any cost incurred prior to the execution of a final contract. The Town will reserve the right to dismiss any part or all of the contracted team when, in the Town's opinion, the project is not moving as scheduled or is hindered in any way by the actions or personalities of team members.

Bid Record

RFP# 2025-090

Financing Total = \$1,810,312

BANK	TERM (in months)	INTEREST RATE (fixed)
Cogent Leasing and Finance Inc.	59	3.860%
J.P. Morgan Chase Bank, N.A.	59	4.365%
Flagstar Public Funding Corp.	59	4.574%
First Bank (Fuquay Branch)	59	5.400%
Bank Funding LLC		
First American Equipment Finance		

2 Equipment & Vehicle Financing FY25

MAXIMUM ANNUAL INTEREST			MAXIMUM ANNUAL PRINCIPAL PAYMENTS			ANNUAL PAYMENT (per FY)	
\$	58,878.60	in FY26	\$	413,504.27	in FY28	\$	220,971.55
\$	68,150.42	in FY26	\$	385,250.02	in FY29	\$	203,295.93
\$	71,256.56	in FY26	\$	385,243.65	in FY29	\$	203,811.57
\$	84,288.13	in FY26	\$	362,062.40	equal/FY	\$	446,360.53

TOTAL INTEREST (life of loan)		TOTAL DEBT SERVICE	
\$	178,431.95	\$	1,988,743.95
\$	222,647.30	\$	2,032,959.30
\$	227,803.73	\$	2,038,115.73
\$	272,470.06	\$	2,082,782.06

NOTES

Broker - ineligible

Lease to own - ineligible



Resolution No. 24-29

Date Adopted: November 19, 2024

Effective Date: November 19, 2024

Resolution Approving Financing Terms with Cogent Leasing and Financing, Inc.

WHEREAS, the Town of Holly Springs (the “Town”) has previously determined to undertake a project for the financing of vehicles and equipment (“the Project”), and the Finance Director has now presented a proposal for the financing of such Project.

BE IT THEREFORE RESOLVED, as follows:

1. The Town hereby determines to finance the Project through Cogent Leasing and Financing, Inc. or affiliate thereof (“Lender”), in accordance with the proposal dated October 22, 2024. The amount financed shall not exceed \$1,810,312, the annual interest rate (in the absence of default or change in tax status) shall not exceed 3.86%, and the financing term shall not exceed 59 months from closing.
2. All financing contracts and all related documents for the closing of the financing (the “Financing Documents”) shall be consistent with the foregoing terms. The Finance Officer is hereby authorized and directed to execute and deliver any Financing Documents, and to take all such further action as they may consider necessary or desirable, to carry out the financing of the Project as contemplated by the proposal and this resolution.
3. The Town Manager is hereby authorized to sign and execute agreement and the Finance Officer is hereby authorized and directed to hold executed copies of the Financing Documents until the conditions for delivery of the Financing Documents have been completed to such officer’s satisfaction. The Finance Officer, further, is authorized to approve changes to any Financing Documents previously signed by Town officers or employees, provided that such changes shall not substantially alter the intent of such documents or certificates from the intent expressed in the forms executed by such officers. The Financing Documents shall be in such final forms as the Finance Officer shall approve, with the Finance Officer’s release of any Financing Documents for delivery constituting conclusive evidence of such officer’s final approval of the Document’s final form.
4. The Town intends that the adoption of this resolution will be a declaration of the Town’s official intent to reimburse expenditures for the project that is to be financed from the proceeds of the Lender financing described above. The Town intends that funds that have been advanced, or that may be advanced, from the Town’s general fund, or any other Town fund related to the project, for project costs may be reimbursed from the financing proceeds.

5. All prior actions of Town officers in furtherance of the purposes of this resolution are hereby ratified, approved and confirmed. All other resolutions (or parts thereof) in conflict with this resolution are hereby repealed, to the extent of the conflict. This resolution shall take effect immediately.

Adopted by the Holly Springs Town Council on this, the 19th day of November, 2024.

Town of Holly Springs by

ATTEST:

Sean Mayefskie, Mayor

Linda McKinney, Town Clerk



Department	Total to be Financed	To Purchase	Replacement for Unit #
Finance	\$ 27,229.57	Ford Maverick	1
Fire Department	\$ 48,375.69	Ford Explorer	1031
Fire Department	\$ 123,413.64	Ford Expedition Max (pursuit rated)	1068
Parks & Rec	\$ 69,112.88	F250 Crew Cab Diesel; *10K GVWR or below	1062
Parks & Rec	\$ 17,254.62	John Deere Z970R Ztrak Mower	NEW
Parks & Rec	\$ 17,254.62	John Deere Z970R Ztrak Mower	NEW
Parks & Rec	\$ 48,067.93	Ex Mark 96" Yanmar Diesel Lazer ZTR Mower	1145
Parks & Rec	\$ 16,441.60	John Deere Gator HPX615E	57
Parks & Rec	\$ 13,648.35	Gooseneck Trailer 14GN-25D5A-MRBK SN# 344498	NO #
Police Department	\$ 59,610.27	Ford Interceptor Hybrid	NEW
Police Department	\$ 39,520.57	2024 BMW R1250 RT-P Motorcycle	1029
Police Department	\$ 59,610.27	Ford Interceptor Hybrid	212
Police Department	\$ 63,558.27	Ford Interceptor Hybrid	NEW
Police Department	\$ 67,899.38	Ford F150 Responder	NEW
Police Department	\$ 59,610.27	Ford Interceptor Hybrid	NEW
Police Department	\$ 68,058.27	Ford Interceptor Hybrid	NEW
Police Department	\$ 68,058.27	Ford Interceptor Hybrid	NEW
Police Department	\$ 68,058.27	Ford Interceptor Hybrid	NEW
Police Department	\$ 68,058.27	Ford Interceptor Hybrid	NEW

Public Works	\$	81,914.80	Ford F250 Crew Cab Service Body	27
Public Works	\$	28,729.57	Ford Maverick	1005
Public Works	\$	55,635.81	Ford Transit 250	?
Public Works	\$	97,044.36	Mac Trailer - Tandem Axle, Live Floor, 45ft length	31
Utilities and Infrastructre	\$	43,480.77	Ford Explorer	126
Utilities and Infrastructre	\$	47,131.97	Ford F150 Extended Cab	232
Utilities and Infrastructre	\$	73,414.80	Ford F250 Crew Cab Service Body	1050
Utilities and Infrastructre	\$	44,631.97	Ford F150 Extended Cab	133
Utilities and Infrastructre	\$	129,180.98	DYNA-VAC MODEL# HE-1000-TR Industrial Vacuum Trailer	88
Utilities and Infrastructre	\$	203,369.20	2024-25 Ford Transit 350 High Roof w/ camera upfit	47
	\$	1,807,375.19		



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 15.

Public Hearings

Title: Multi-jurisdictional Hazard Mitigation Plan

Strategic Priority Area: Community Safety

Staff Resource: Jennifer Mathis, Police, Paul Liqueorie, Police Chief

Action(s):

Adopt Resolution 24-28 adopting the newly updated Wake County Multi-jurisdictional Hazard Mitigation Plan 2024.

Explanation:

- Staff requests Council's consideration to adopt Resolution 24-28 adopting the Wake County Multi-Jurisdictional Hazard Mitigation Plan (HMP).
- The purpose of the HMP is to identify, assess, and mitigate hazard risks to better protect the people and property within Wake County from the effects of natural and human-caused hazards.
- This plan documents progress on existing hazard mitigation planning efforts, updates the previous plan to reflect current conditions in the County including relevant hazards and vulnerabilities, increases public education and awareness about the plan and planning process, maintains grant eligibility for participating jurisdictions, maintains compliance with state and federal requirements for local hazard mitigation plans, and identifies and outlines strategies the County and participating jurisdictions will use to decrease vulnerability and increase resiliency.
- All local jurisdictions in Wake County have completed updates to the HMP, which comprises Wake County and its incorporated municipalities.
- The plan is available on the Wake County website here: [Wake County Hazard Mitigation Plan](#)
- The North Carolina Emergency Management Agency has approved the plan and each jurisdiction is asked to adopt the plan for compliance with the Federal Disaster Mitigation Act of 2000 (DMA 2000).
- DMA 2000 invokes new and revitalized approaches to mitigation planning and emphasizes the need for state and local government entities to closely coordinate on mitigation planning activities and makes the development of a hazard mitigation plan, a specific eligibility requirement for any local government applying for federal mitigation grant funds.

Background:

- As a comprehensive plan for reducing risk and building a resilient community, adopting the hazard mitigation plan ensures the Town of Holly Springs is able to take a more strategic approach to local plans and build upon best practices and mitigation measures.

- Adoption of the plan also ensures the Town is able to identify new risks throughout the county, and coordinate with partnering jurisdictions on goals and activities.
- Hazards profiled in this 2024 update include:
 - Dam Failure
 - Drought
 - Earthquake
 - Extreme Heat
 - Flood
 - Hurricane and Tropical Storm
 - Infectious Disease
 - Landslide
 - Severe Weather (Thunderstorm Winds, Hail, and Lightening)
 - Tornado
 - Wildfire
 - Cyber Threat
 - Hazardous Materials Incident
 - Radiological Incident
 - Terrorism

Funding Source(s):

N/A

Attachment(s):

1. 24-28 Adopting Wake County Hazard Mitigation Plan



Resolution No. 24-28

Date Adopted: November 19, 2024

Effective Date: November 19, 2024

**RESOLUTION ADOPTING WAKE COUNTY MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN**

WHEREAS, the citizens and property within THE TOWN OF HOLLY SPRINGS are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the county are particularly vulnerable to drought, extreme heat, hailstorm, hurricane and tropical storm, lightning, thunderstorm wind/high wind, tornado, winter storm and freeze, flood, hazardous material incident, and wildfire; and

WHEREAS, the Town of Holly Springs desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Part 6, Article 21 of Chapter 143; Parts 3, 5, and 8 of Article 19 of Chapter 160A; and Article 8 of Chapter 160A of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the Town of Holly Springs has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management; and

WHEREAS, it is the intent of the Town Council of the Town of Holly Springs to fulfill this obligation in order that the County will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

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

1. Adopts the Wake County Multi-Jurisdictional Hazard Mitigation Plan.

2. Vests the Town of Holly Springs Emergency Management with the responsibility, authority, and the means to:

- (a) Inform all concerned parties of this action.
- (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints the Town of Holly Springs Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Holly Springs Town Council for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted by the Holly Springs Town Council on this, the 19th day of November, 2024.

Town of Holly Springs by

ATTEST:

Sean Mayefskie, Mayor

Linda McKinney, Town Clerk





Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 16.

New Business

Title: Theater Platform and Seat Replacement Contract - 2023 Parks Bond Project

Strategic Priority Area: Vibrant Community

Staff Resource: LeeAnn Plumer, Parks & Recreation

Action(s):

- Award and authorize the Town Manager to sign and execute an agreement with Learning Environments, Inc. in the amount of \$263,700 and up to a 4% contingency for the replacement of the seating platform and 178 chairs at the Holly Springs Cultural Center Theater.
- Adopt the Parks and Recreation Capital Project Ordinance (24-38) and approve the updated project budget for an increase of \$25,000 for a total amount of \$275,000 for the contract to include 4% contingency.
- Authorize the Town Manager to approve any necessary change orders, contracts, or agreements to delivery the project that are within project scope, project budget (including contingency), and consistent with this Council action.

Explanation:

- This seating project will replace the telescopic platform and seats in the Holly Springs Cultural Center theater. The new seating system will provide a more stable feeling for patrons when walking on the platform and while sitting on the chairs, and will allow the system to retract when the full theater floor is needed.
- Following the Town's Procurement Policy, six firms were asked to provide pricing through an informal bid process. Learning Environments Inc. was the only responsive and responsible bidder.
- Staff conducted reference checks with Buncombe County Schools and the Milton Rhodes Center for the Arts (Winston-Salem) for the installation, operation and performance of both the Hussey brand seating system and of Learning Environments as the installation firm. Staff also visited the Milton Rhodes Center for the Arts to see the retractable system in action.
- Since the Cultural Center Theater is part of a Wake County owned building, staff has confirmed the notification and acceptance of this project scope with Wake County General Services Department.
- The timeline for installation is early summer 2025 when the scheduled use of the theater will be least impacted.

Background:

- The Cultural Center Theater seat replacement project was identified as a community need

Town Council Business Meeting
November 19, 2024

with the 2023 Parks Bond funding.

- Patrons regularly comment about how uncomfortable the seating can be and report feeling unstable when walking up/down the stairs.

Parks and Recreation Capital Project Ordinance (24-38)

- Capital project ordinances appropriate all funds for all projects within the project fund.
- The Cultural Center Theater Seating Replacement project had previously been approved in the Community Investment Plan for \$250,000.
- This ordinance would increase the prior appropriation for the Cultural Center theater seating from \$250,000 to \$275,000 using an additional \$25,000 in anticipated General Obligation Bond proceeds.
- A summary of the ordinance change is included in the attached materials.

Funding Source(s):

Community Investment Plan - Parks and Recreation General Obligation Bond

Attachment(s):

1. Holly Springs Cultural Center Quote 92324 Ascender Chairs 10 Rows
2. Parks and Rec Project Ordinance (24-38)
3. Parks and Rec Ordinance Change Summary for November 19



Phone: (336) 622 - 4296

Fax: (336) 622 - 4298

LEARNING ENVIRONMENTS, INC.

P.O. Box 1127 Liberty, North Carolina 27298

RE: **Holly Springs Cultural Arts Center**
Holly Springs, NC

09/26/24 (Bid Date)

We propose to **furnish and install** the equipment described below for the cost indicated.

GENERAL CONDITIONS

- 1) North Carolina Sales tax is included.
- 2) Prices are contingent upon delivery of material prior to: 3/31/25
- 3) This proposal is valid for forty-five (45) days.
- 4) Due to dynamic fluctuations in raw material costs this quote is valid for forty-five (45) days and will expire on **11/10/2024** after that date pricing will have to be refreshed
- 5) We have received and reviewed addendum: none
- 6) Final payment, including retainage, is due within sixty (60) days after completion of work, submission of closeout documents, and date of substantial completion under this contract.
- 7) Final payment is NOT to be contingent upon payment to the general contractor by a third entity not a party to this contract.

SCOPE OF WORK

New Telescoping Platform by Seatway

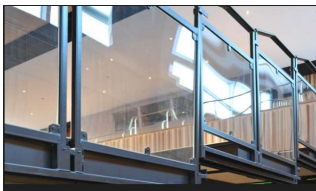
1 - new 9 Row platform + Row 0 = 10 Rows of seating with welded space frame decks, end aisles without rails. 160 Independently folding Ascender Chairs riser mounted + 18 Row 0 chairs on the front row. Row spacing is 36" compared to your existing 33" spacing. Row 0 chairs can be removed to accommodate ADA positions. Pricing includes Wood Fascia Boards and Aisle End Fill Panels.



Row 0 Chair Configuration



Ascender Chair with Independent Folding Mechanism



Acrylic Inlaid End Rails on Both Ends and Storage Trolley for End Rails

Total Cost of Above Items: \$263,700.00

Included: Freight, unloading, tax & installation
Removal and lawful disposal of existing platforms and chairs
Preparing of plans for building permit, cost of building permit.

Excluded: Running of wiring in building and all final electrical connections
End Rails / Wall mounted rails were discussed but Seatway cannot provide those.

NOTE: ANY REQUIRED ELECTRICAL WORK IS NOT INCLUDED IN THIS SCOPE OF WORK.

Sincerely,

Bryan Flowers

Bryan Flowers
Contract Administrator



Ordinance No. 24-38

Date Submitted: November 19, 2024

Date Adopted: November 19, 2024

**Parks and Recreation Capital Project Ordinance
HOLLY SPRINGS, NORTH CAROLINA**

BE IT ORDAINED by the Town Council of Holly Springs, North Carolina, that, pursuant to Section 13.2 of Chapter 159 of the General Statutes of North Carolina, the following capital project ordinance is hereby adopted:

SECTION I: The project authorized by this ordinance consists of parks and recreation capital projects.

SECTION II: The officers of this unit are hereby directed to proceed with the capital project within the terms of the budget contained herein.

SECTION III: Parks and Recreation Fees shall be deposited directly in the fund and the following amounts are appropriated for the project funds effective November 19, 2024:

Parks and Recreation Capital Project Fund	
Expenditures:	
Parks and Recreation Capital Project Fund	120,119,153
Total	120,119,153

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

Park and Recreation Capital Project Fund	
Revenues:	
Bond Proceeds	99,627,668
Transfer In	13,294,945
State Grants	3,734,340
Other Grants	2,300,000
Federal Grants	1,133,000
Miscellaneous Revenues	29,200
Total	120,119,153

SECTION V: The Finance Officer hereby directed to maintain within the project funds detailed accounting records.

SECTION VI: The Budget Officer is directed to include a detailed analysis of the past and future costs and revenues on this capital project in every budget submission made to the Town Council.

SECTION VII: The Town Manager is authorized to amend expenditures within the fund for expenditures that are authorized per section I of this ordinance that do not change the total appropriation within the fund.

SECTION VIII: Copies of this capital project 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 IX: 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 November 19, 2024, in accordance with the laws of the State of North Carolina.

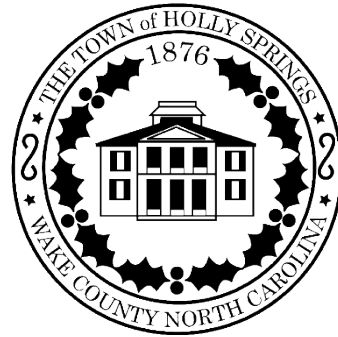
Adopted this, the 19th day of November 2024.

Town of Holly Springs by

Sean Mayefskie, Mayor

ATTEST:

Linda McKinney, Town Clerk



Ordinance Change Summary for November 19, 2024 – Parks and Recreation Capital Project

Previously Approved Parks & Recreation Capital Project Ordinance	\$120,094,153
Additional funding for Cultural Center Theater Seating Replacement	\$25,000
Parks and Recreation Capital Project Ordinance (24-38)	\$120,119,153



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 17.

New Business

Title: Comprehensive Plan Update for Sections 4, 5, & 6

Strategic Priority Area: Growth Management & Economic Vitality

Vibrant Community

Organizational Excellence

Staff Resource: Elizabeth Goodson, Development Services, Kendra Parrish, Utilities and Infrastructure

Action(s):

Authorize the Town Manager to negotiate and execute the contract for the Comprehensive Plan update (including utility development and water/sewer modeling) with Kimley-Horn & Associates, Inc, in an amount not to exceed \$1,199,909.00.

Explanation:

- The Town's Comprehensive Plan serves as the Town's primary planning document and policy guide on how the Town should grow and how that growth will be addressed through a wide range of infrastructure and other community design considerations. The Comprehensive Plan serves as the primary tool used by Town staff, the Planning Board, and Town Council in deciding priorities for public investment.
- Comprehensive Plans are updated periodically, typically within 10-20 year cycles, depending on the scope and speed of evolving community conditions.
- Staff recommends a contract for the Comprehensive Plan Sections 4 (Community Facilities), 5 (Infrastructure & Utilities), and 6 (Natural Areas) be awarded to Kimley-Horn & Associates, Inc.
- Kimley-Horn & Associates, Inc. has demonstrated the skills and experience to successfully complete the various aspects of this project, including utility system development and modeling, scenario planning, and policy development.
- This Plan update also includes integrating land use data with hydraulic modeling to enhance utility system capacity analysis capabilities and provide a valuable tool for effective water resource management now and in the future. The model allows the town to more easily and comprehensively test "what if" scenarios and helps make better decisions about designing and managing the overall water and sewer systems to keep them working smoothly and safely. Field work, testing and calibration will be completed to inform the model. The Town will hold a license for software that allows access to the model as a deliverable in the contract. However, periodic updates will be outsourced in the future.
- The project is proposed to be funded with:
 - \$500,000 in received revenues from an economic development agreement with Fuji Phase 2
 - \$250,000 in General Fund fund balance
 - \$199,909 in Utility Fund Reserves (will be reimbursed by fees collected from an

Town Council Business Meeting
November 19, 2024

- economic development project)
 - \$150,000 in existing Utility PAYGO appropriations (utilizing funds from a study no longer required that will be covered in this plan)
 - \$100,000 in prior appropriations for this project (to be transferred from General Fund PAYGO to Utility Fund PAYGO)
- The project is expected to begin in early January and be finished in approximately 12 months.

Background:

- Vision Holly Springs Comprehensive Plan was originally adopted in 2007 and contains six sections.
- The Town has been updating each section, most recently updating Section 1 Land Use & Character in 2019, Section 2 Comprehensive Transportation Plan in 2022, and Section 3 Parks, Recreation and Greenways Master Plan in 2021.
- Section 4 Community Facilities, Section 5 Infrastructure & Utilities, and Section 6 Natural Areas have not been substantially updated since 2009 and do not align with the most recently updated Sections. Once these sections are updated, the Comprehensive Plan will be complete with necessary updates.
- The Request for Qualifications (RFQ) was issued in March 2024 and proposals were received from four consultant teams.
- The firms were evaluated on a number of criteria, including the consulting team's relevant experience, proposed project strategy, and writing and graphic skills demonstrated in work samples.
- The top three firms were invited to interview.
- Following interviews, the selection committee recommends Kimley-Horn & Associates, Inc.

Funding Source(s):

Community Investment Plan - General Fund Fund Balance / Utility Fund Transfers / Economic Development Grant

Attachment(s):

1. DRAFT_ContractforPROFESSIONAL SERVICES_KHA_CompPlanUpdates
2. RFQ_2024_CompPlanSec4-6
3. RFQResponse_Kimley-Horn_HollySpringsComprehensivePlan



CONTRACT FOR PROFESSIONAL SERVICES
SUBJECT TO Q.B.S.

THIS AGREEMENT dated _____, between the **Town of Holly Springs**, North Carolina, for itself and its Successors & Assigns (hereinafter called the "Town") and **Kimley-Horn & Associates, Inc.** (herein after called the "Contractor").

Town hereby desires to enter into a contract for services with the Contractor and the Contractor agrees to enter into this contract and perform the Services as set forth below, in the manner and time hereinafter described, and both parties do hereby agree as follows:

SERVICES OF CONTRACTOR

The services of the Contractor shall be performed in the manner as described in **Exhibit A** (the "Proposal") as attached hereto and incorporated by reference. Contractor agrees to employ such personnel as may be needed to deliver services in the manner and time prescribed herein. Such personnel shall be employees of the Contractor, said Contractor being an independent contractor of the Town.

TOWN'S RESPONSIBILITIES

The Town shall make available the facilities to the Contractor and shall not impede the work of the Contractor except as necessary. Any additional Town responsibilities shall be listed in **Exhibit A**.

BIDDING COMPLIANCE:

The Town shall comply with the bidding laws of the State of North Carolina. Failure to do so shall make this Contract void. The Town's Contract Manager for this Contract is:

Julie Nicewinter, Development Services (Name, Department)
Email: Julie.nicewinter@hollyspringsnc.gov
Phone: (919) 567-4008

☒ The Contract Manager certifies that the Contractor was selected using Qualification Based Selection and in compliance with NCGS ch. 143, art. 3D. Request for Qualification #2024-0304 Consulting Services for Vision Holly Springs Comprehensive Plan Update was

advertised on March 18, 2024 and, upon evaluation of all responses, the vendor was ranked as most qualified for this project.

OR

_____ An exemption was allowed by the Town Manager, and an Exemption Memorandum is attached as the last page of this Contract.

Contract Manager **Date Signed:**
Printed Name: Julie Nicewinter

Department Head/Supervisor **Date Signed:**
Printed Name: Beth Trautz

PAYMENT

The Town shall pay the Contractor the contract sum in the following manner:

___ Upon completion of the services listed in **Exhibit A**, the Contractor shall invoice the Town, and the Town shall have 30 days from receipt to pay. Contract total not to exceed \$_____ without prior written agreement by the Town and Contractor.

___ Payment on basis of Time and/or Materials as described in **Exhibit A**

X Description of Alternative Payment Terms:

Contractor shall provide the Town with monthly invoices for completed work based on the percentage completed on each task/subtask described in **Exhibit A**. Each invoice shall include a list of activities completed under the task/subtask. The project total is not to exceed **\$1,199,909.00**. The Contractor shall not perform any of the "Additional Services" listed in **Exhibit A** without the prior written approval of the Town. Should the Town and Contractor agree to proceed with any Additional Services, the Contractor shall bill the Town for those items according to the Rate Sheet included as the last page of **Exhibit A**.

TIME FOR RENDERING SERVICES

The times for rendering the services are set forth in **Exhibit A**, or as otherwise set forth below:

GENERAL CONSIDERATIONS

CONTRACT FOR PROFESSIONAL SERVICES

1. Standards of Performance.

- 1.1** The standard of care for all services performed or furnished by Contractor under this Agreement will be the care and skill ordinarily used by members of the Contractor's profession practicing under similar circumstances at the same time and in the same locality.
- 1.2** Contractor represents that, prior to submitting the Bid and executing this Contract, Contractor became and remains thoroughly acquainted with all matters relating to the performance of this Contract, all applicable laws and all of the terms and conditions of this Contract. All Services under this Contract shall be coordinated under and performed to the satisfaction of the Town Contact, taking into consideration the standard of care listed above. Town is authorized to withhold payment of any funds under this Contract until periodic performance of the Services has been inspected, accepted, and approved by the Town Contact.
- 1.3** Contractor shall be responsible for the technical accuracy of its services and documents resulting therefrom, and Town shall not be responsible for discovering deficiencies therein. Contractor shall correct such deficiencies without additional compensation except to the extent such action is directly attributable to deficiencies in Town furnished information.
- 1.4** Contractor and Town shall comply with applicable Laws or Regulations and Town mandated standards. This Agreement is based on these requirements as of its Effective Date. Changes to these requirements after the Effective Date of this Agreement may be the basis for modifications to Town's responsibilities or to Contractor's scope of services, times of performance, or compensation.
- 1.5** Contractor is an independent contractor of the Town. The Town and the Contractor mutually agree to indemnify and hold harmless each party from any claims of negligence brought forth. Contractor is familiar with the property and its condition.

2. Term and Termination.

- 2.1** The term for this contract is as long as necessary to complete the scope of work agreed to, but in no event shall it exceed two (2) years.
- 2.2** The mutual obligations of the Parties contained in this Agreement may be terminated:
- 2.2.1** For cause by either party upon 30 days written notice in the event of a failure by the other party to perform in accordance with the terms hereof.
- 2.2.2** For failure to consistently satisfy the Standards of Performance in the opinion of the Town Contact.
- 2.2.3** Upon mutual agreement.

3. Controlling Law.

3.1 This agreement is to be governed by the law of the State of North Carolina, regardless of any language in any quote, contract, agreement supplied by the Contractor.

3.2 Venue and jurisdiction are proper in the 10th Judicial District of North Carolina (Wake County).

4. Notices.

4.1 Any notice required under this Agreement will be in writing, addressed to the appropriate party at its address below, or given personally, or by regular, registered or certified mail postage prepaid, or by a commercial courier service. All notices shall be effective upon the date of the receipt.

4.1.1 For the Town:

Julie Nicewinter, Dev. Business Mgr. (Name, Title)
Development Services (Department)
P.O. Box 8 (Address)
Holly Springs, NC 27540
(919) 567-4008 (Phone)
Julie.nicewinter@hollyspringsnc.gov (e-mail)

4.1.2 For the Contractor/Vendor:

Nolan Raney, PE (Name, Title)
Kimley-Horn & Associates, Inc. (Company)
300 Morris St. Suite 200 (Address)
Durham, NC 27701
(919) 653-6625 (Phone)
Nolan.raney@kimley-horn.com (e-mail)

5. Severability.

5.1 Any provision or part of the Agreement held to be void or unenforceable under any Laws or Regulations shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Town and Contractor, who agree that the Agreement shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

6. Waiver.

6.1 Non-enforcement of any provision by either party shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Agreement.

7. Attorney's Fees.

7.1 In the event of a breach of this Agreement, the substantially prevailing party shall be entitled to an award of reasonable attorney's fees and costs relating to compelling performance under this Agreement.

8. Insurance & Indemnification Requirement. [☐ Check Here if a lower limit was approved]

8.1 Contractor shall provide professional liability insurance with limits of at least \$2,000,000.00 per occurrence and \$2,000,000.00 aggregate during the duration of the work under this Contract. Additionally, the Contractor shall supply workman's compensation insurance coverage to all employees within the statutory limits. Contractor shall supply proof of coverage to the Town within 10 days of execution of this contract and shall list "Town of Holly Springs" as additional insured to all general liability policies for the duration of the contract term. A certificate of insurance shall be attached hereto as **Exhibit B**.

8.2 The Contractor agrees to waive any and all claims against the Town from itself or its employees arising from work performed by the Contractor pursuant to this Contract, except for claims related to non-payment of amounts. The Contractor shall 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, or other expenses or liabilities of every kind and character 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 out of this Agreement and/or the performance hereof, that are proximately caused by the negligence, willful or wanton conduct, or breach of contract relating to the Contractor's work in under this Agreement or any addendums or modifications thereto, except to the extent that the same are by the negligence or willful misconduct of the Town. For such claims, the Contractor/Licensee 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 thereto, even if such claims are groundless, false, or fraudulent.

9. E-Verify.

9.1 Contractor hereby agrees to comply with N.C.G.S. § 64-25, et. seq. regardless of Contractor's status as an independent contractor and not an employee with the Town. The E-Verify Affidavit shall be attached hereto as **Exhibit C**.

10. Independent Contractor.

10.1 Contractor's status shall be that of an independent contractor and not an agent, servant, employee, or representative of Town in the performance of the Services. Contractor shall exercise independent judgment in performing duties under this Contract and is solely responsible for setting working hours, scheduling or prioritizing the workflow and determining how the work is to be performed. No term or provision of this Contract or act of Contractor in the performance of this Contract shall be construed as making Contractor the agent, servant or employee of Town, or making Contractor or any of its employees eligible for the fringe benefits, such as retirement, insurance and worker's compensation, which Town provides its employees.

10.2 Contractor's Control Over Services Provided. Contractor shall retain the unqualified right of control over the means, manner and methods by which the Services are performed, and the right to perform such Services at the locations and times that Service Provider independently determines, as approved by the Town. Contractor shall be responsible for providing all equipment, materials and supplies that Contractor determines are needed to timely provide the Services.

10.3 Contractor shall be responsible for the technical accuracy of its services and documents resulting therefrom, and Town shall not be responsible for discovering deficiencies therein. Contractor shall correct such deficiencies without additional compensation except to the extent such action is directly attributable to deficiencies in Town furnished information.

11. Non-Discrimination.

11.1 As a condition of this Contract, Contractor covenants that Contractor will take all necessary actions to insure that, in connection with any operations under this Contract, Contractor, its officers, employees and subcontractors, will not discriminate in the treatment or employment of any individual or groups of individuals on the grounds of race, color, religion, national origin, age, sex, sexual orientation, or handicap unrelated to job performance, either directly, indirectly or through contractual or other arrangements. Contractor shall also comply with all applicable requirements of the Americans with Disabilities Act, 42 U.S.C.A. §§12101-12213, as amended. In this regard, Contractor shall keep, retain and safeguard all records relating to this Contract or work performed hereunder for a minimum period of three (3) years from final Contract completion, with full access allowed to authorized representatives of Town, upon request, for purposes of evaluating compliance with this and other provisions of the Contract.

12. Contractor's Employees.

12.1 Contractor agrees and consents that the Town is allowing access to the Contractor to both publicly used and private sensitive Town facilities. Contractor, and any employee, agent, subagent, volunteer, or any person authorized to act on behalf of the Contractor shall maintain a professional demeanor at all times during the interaction with the Town's patrons and visitors to Town facilities. Contractor shall refrain from other commercial or political activity while performing this contract on Town Facilities. Contractor shall undergo criminal background checks on all employees and subcontractors working at the direction of the Contractor in this contract, and shall exclude any employees from working in any Town facility any employees that:

- 1) had a conviction of a any felony within the past 10 years;
- 2) has a conviction in the past 10 years of any violent crime or crime involving theft or dishonesty; or
- 3) is currently a registered sex offender.

13. Assignment.

13.1 Contractor shall not sell, assign, transfer or convey this Contract, in whole or in part, without the prior written consent of the Town. As an express condition of consent to any assignment, Contractor shall remain liable for completion of the Contract work in the event of default by the successor contractor or assignee.

14. Right of Review and Audit.

14.1 Town may review any and all of the services performed by Contractor under this Contract. Town is granted the right to audit, at Town's election, all of Contractor's records and billings relating to the performance of this Contract. Contractor agrees to retain such records for a minimum of three (3) years following completion of this Contract. Any payment, settlement, satisfaction, or release made or provided during the course of performance of this Contract shall be subject to Town's rights as may be disclosed by an audit under this section.

15. Non-Appropriations.

15.1 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 creating a delegation of governmental powers nor as a donation by or a lending of the credit of the town within the meaning of the constitution of the state. This agreement shall not directly or indirectly or contingently obligate the town to make any payments beyond those appropriated in the sole discretion of the town for any fiscal year in which this agreement is in effect; provided, however, that any failure or refusal by the town to appropriate funds which results in the failure by the town to make any payment coming due hereunder will in no way obviate the occurrence of the event of default resulting from such nonpayment. No deficiency judgment may be rendered against the town in any action for breach of a contractual obligation under this agreement and the taxing power of the town is not and may not be pledged directly or indirectly or contingently to secure any moneys due under this agreement.

16. Full Agreement. This Contract is the full agreement of the parties, and neither has, or is relying on any information not contained in this Contract or its Exhibits. The terms of this Contract supersede any conflicting terms which may be contained in any Exhibit attached hereto and incorporated by reference.

17. Modification. The Contract may not be modified except by either a Change Order or an Amendment. Any Change Order or Amendment must be made in writing, utilizing the appropriate Town form, approved by the Town (and Town Council, if necessary) and executed with the same formalities as this original contract.

18. Exhibit List. The following documents shall be attached hereto and incorporated by reference.

Exhibit A – Proposal and Scope of Work; Response to RFQ 2024-0304 by Contractor

Exhibit B – Certificate of Insurance

Exhibit C – E-Verify Affidavit

[Signature Page Follows]

DRAFT

TOWN OF HOLLY SPRINGS:

CONTRACTOR:

BY: _____
Randy J. Harrington, Town Manager
Date: _____

Signature _____
Name: _____
Title: _____

WITNESS:

WITNESS:

Linda McKinney, Town Clerk
Date: _____

Title: _____

Contract Manager: _____ Date: _____

Purchasing Manager: _____ Brettany DeVold
Date: _____

Purchase Order No.: _____ (if applicable)

Approved as to form:

John Schifano, Town Attorney Date: _____

This instrument has been pre-audited in the manner
Prescribed by the Local Government Budget and Fiscal
Control Act.

Tina Stroupe, Director of Finance Date: _____

EXHIBIT A

DRAFT

Attachment 1
November 2024

Town of Holly Springs
Comprehensive Plan Updates – Scope of Services

Project Understanding

The Town of Holly Springs desires to update sections of its Comprehensive Plan “Vision Holly Springs” to meet the Town’s significant growth and needs.

- Section 5: Utilities & Infrastructure was last updated in 2009, and the Town desires to update this section, to align with other Comprehensive Plan updates that have occurred over the past five years. The project would also include updating the Town’s water hydraulic model and creating a new sanitary sewer model to assist with CIP and Comprehensive Planning.
- Section 4: Community was last updated in 2009, and the Town desires to update this section, to align with other Comprehensive Plan updates that have occurred over the past five years.
- Facilities and Section 6: Natural Areas was last updated in 2009, and the Town desires to update this section, to align with other Comprehensive Plan updates that have occurred over the past five years.

Scope of Services

The Consultant will provide the services specifically set forth below.

Task 1 – Project Management

- A. Project Kickoff Meeting** – Schedule and conduct a virtual project kickoff meeting with Town staff upon receipt of Notice to Proceed. The meeting will be scheduled for a duration of 2 hours. The meeting shall:
 - 1. Include task leads and key staff members for each utility system / study area.
 - 2. Review key project objectives.
 - 3. Review the overall work plan, project deliverables, and anticipated project schedules.
 - 4. Set dates for progress meetings and workshops.
 - 5. Develop and distribute meeting minutes.
- B. Project Coordination** – Ongoing project coordination will take place throughout the project duration. For this scope, coordination activities listed below are anticipated to occur for a duration of 18 months.
 - 1. Ongoing project management will occur monthly including subconsultant coordination, schedule updates, and the development of monthly progress reports.
 - 2. Meetings. The Consultant will participate in coordination meetings with Town staff as described below. The Consultant will provide an agenda for each meeting, and a summary to the Town after each meeting. The Town will be responsible for identifying the appropriate Holly Springs staff to attend each meeting. The Consultant will be responsible for setting up and hosting all virtual meetings.
 - a. Monthly project check-in virtual meetings. Includes up to three (3) Consultant staff members with Town staff. Assumes up to eighteen (18) check-in meetings throughout the project duration. Each meeting will be scheduled for a duration of 1

hour.

- b. **Town Staff Advisory Team Meetings.** The Consultant will participate in coordination meetings with the Town Staff Advisory Team throughout the project. It is anticipated that there will be one (1) in person meeting and four (4) virtual meetings scheduled over the 18-month planning process. Includes Consultant task leads and key staff members for each utility system / study area. Each meeting will be scheduled for a duration of 1.5 hours.
- c. **Project Technical Review Meetings.** The Consultant will participate in up to three (3) in person Project Technical Review Meetings throughout the project. Key entities in the Town and region may represent government, industry, engineering stakeholders, or others. Up to four (4) members of the Consultant team will attend each Technical Review meeting. Each meeting will be scheduled for a duration of 2 hours.

C. Project Management Plan – Develop and implement an overall project management plan.

1. Communicates the sequencing of tasks / project schedule.
2. A draft of the Project Management Plan will be developed and then refined to reflect feedback gathered during the initial Project Kick-Off Meeting.

Task 2 – Public Engagement

A. Public Involvement Plan - The Consultant will develop an equitable Public Involvement Plan (PIP) that outlines a coordinated stakeholder and public engagement strategy.

1. The PIP will outline production schedules for publicity materials, assign responsibilities for review and execution, and outline the public engagement approach and format.
2. The PIP will identify proposed engagement techniques relative to specific utility types.
3. The PIP will also include a discussion on the involvement of low income, underrepresented, and minority populations.

B. Public Outreach Materials / Online Presence

1. The Town will host project materials on the Town's website and will manage responses to public comments received via email.
2. The Consultant will assist the Town in creating content for newsletters, press-releases, and social media. Up to five (5) rounds of content are assumed as part of this scope and are anticipated to align with major milestones or public meetings.
3. It is assumed that the Town will utilize PublicInput.com for public outreach activities and will be responsible for posting / distributing content. The Consultant will assist the Town in creating content for outreach surveys / activities.

C. Meetings / Outreach Activities

1. **Public Meetings**
 - a. Up to two (2) traditional public meetings will be held during the duration of this plan. It is anticipated that the public meetings will be held at the Town facilities and that the Town will spearhead the distribution of Consultant created materials for the public meetings, secure the meeting space, and advertise the events.
 - b. Up to three (3) members of the Consultant team will attend each public meeting. Alternative equivalents to the public meeting format will be explored in the PIP. Each meeting will be scheduled for a duration of up to 2 hours.
2. **Pop-Ups**
 - a. Up to one (1) pop-up event focused on public education of utility systems, community facilities, and natural areas for the Town. A pop-up event could be an interactive booth in front of a store or school, or in tandem with other departmental

initiatives.

- b. It is anticipated that the Consultant will work the Town to identify a list of potential events to attend. Preference will be given to events that have no participation cost (e.g. booth fee, etc.) and are timed with public meetings. Up to four (4) members of the Consultant team will attend each Pop-Up event. Each pop-up event will be scheduled for a duration of up to 4 hours.

3. Stakeholder Interviews

- a. The Consultant will conduct up to eight (8) stakeholder interviews. It is assumed that four (4) interviews will be in person, and four (4) interviews will be virtual. The stakeholder interviews are assumed to be one (1) hour in length and will be conducted at Town facilities or through a virtual platform. Stakeholder interviews may consist of up to three (3) members of the Consultant team with individual attendees or small groups of Stakeholder participants.

4. Planning Board and Town Council Presentations / Work Sessions

- a. Up to two (2) meetings with the Planning Board or Town Council. When possible, meetings should be scheduled as joint work sessions.
- b. The Consultant will coordinate with Town staff to identify the preferred timing for these briefings. Town staff will be responsible for coordinating meeting logistics. Up to three (3) members of the Consultant team will attend each of these presentations. Each meeting is anticipated to last up to 3 hours.

Task 3 – Water and Sewer Modeling

A. Sanitary Sewer Hydraulic Model

1. Model Pipeline Network Development

- a. Consultant shall build a Model Pipeline Network of the collection system using the InfoWorks ICM hydraulic modeling software platform. Information to be used in building the hydraulic model includes available GIS data, as-builts, record drawings, and Town staff or interviews. Consultant shall apply engineering judgement to fill data gaps where required for the model development. This scope includes up to 80 hours of as-built research to populate attribute information. Limited field survey of manholes or other buried infrastructure is included in Task 8. The model pipeline network will include gravity sewer mains 10-inch and larger with smaller pipes included to maintain connectivity. For the basis of this scope, there is approximately 22.5 miles of gravity sewer pipe currently sized 10" and larger. It is anticipated that approximately 650 gravity sewer pipe segments and 21 existing pump stations / force mains will be included.
- b. Task Assumptions
 1. As-built and/or record drawing data will be available for existing manholes included in the model pipeline network will be available within 4 weeks of Notice to Proceed.
 2. Limited manhole surveys as described in Task 8 (Subconsultant Services) may be used to verify vertical datums or limited manhole inverts in critical areas.
- c. Task Deliverables
 1. Sewer Model Data Log, including data requested, data obtained via inventory, data requested, data received, and date of receipt - Microsoft Excel.
 2. Updated system map showing physical elements of the wastewater system, in GIS

3. Model Pipeline Network, constructed in InfoWorks ICM.
 4. Other data gaps presentation (.PPT)
2. Field Data Collection
- a. Field data is required for the collection system model calibration. This includes flow data collection at select locations in the wastewater collection systems for the desired flow monitoring period.
 - b. Field Data Collection Plan
 1. Consultant shall develop a field data collection plan in coordination with the Town to identify locations for rain gauges and flow monitoring of the collection system required for model calibration.
 - c. Collection System Flow Monitoring
 1. This field work shall include flow monitoring at up to 21 locations and rain gauges at up to 2 locations for a duration of 3 months of continuous data with the option to suspend monitoring after 2 months if sufficient data is captured. Consultant shall contract a sub-contractor for wastewater flow data collection and will be billed under Task 8 (Subconsultant Services). Consultant shall work with the sub-contractor to verify flow data and check that the readings reported are reasonable. This effort should be conducted during the wet season to capture wet weather flow impacts to the system. This is anticipated in the December to March timeframe. Consultant will work with Town to schedule the flow monitoring effort.
3. Collection System Evaluation and Recommendations
- a. Model Updates
 1. Consultant shall utilize the model pipeline network developed in Task 3.A.1. Sub-catchment data for sewer service areas from flow metering effort shall be used as a starting point for delineation of flow inputs in the model network. Pump station operational information shall be defined in the model for explicitly modeled pumps.
 - b. Model Calibration
 1. Dry weather flow (DWF) shall be developed based on a combination of flow metering data, water consumption data, and population data as appropriate. Wet weather flow (WWF) shall be developed using industry standard hydrologic parameters that represent the rainfall derived infiltration and inflow (RDII) response of sewer systems. Wet weather flow development methodology shall be decided upon after reviewing flow meter data. Storm events shall be selected for WWF calibration and Consultant will determine dry weather flow components including base sanitary flow, groundwater infiltration, and diurnal patterns. Depending on the extent and characteristics of the observed RDII, a methodology for properly simulating the RDII responses shall be selected. Calibration criteria shall be developed and presented to the Town as part of this effort.
 - c. Existing System Analysis
 1. Consultant will use the calibrated model to simulate various design storm events and analyze the collection system under baseline conditions including up to three design storm events such as:
 - a. 2-year (24 hour)
 - b. 5-year (24 hour)
 - c. 10-year (24 hour)The model shall be used to simulate existing flow in the system and

hydraulic restrictions shall be identified. In addition to pipe capacities, pump station capacities/pumping capacities shall also be evaluated. Wastewater system performance criteria shall be established with input from the Town and shall be used to analyze the capacity of the sewer system. The results of the analysis shall be used to determine CIP needs based on performance criteria and scenarios reviewed.

d. Future System Analysis

1. Wastewater system modeling scenarios shall be developed to analyze the system with projected future 5-year, 10-year, 15-year, 20-year, and buildout flows. Consultant shall use the results to determine the CIP needs based on performance criteria and scenarios reviewed. In addition to planning years, Consultant will also provide specific flow triggers for recommended CIP projects.

e. Task Assumptions

1. System optimization including modifications to operations strategy and what-if analysis is not included in this task, but may be provided as an additional service if requested.
2. Consultant team shall meet with Town Operations team to establish planning scenarios and again to explain results of the model runs. The Consultant will participate in up to four (4) approximately 1.5 hour long virtual meetings including three (3) Consultant staff members and Town staff.

f. Task Deliverables

1. Calibrated hydraulic model in Infoworks ICM.
2. Consultant shall integrate the pipe data (slope, size, elevation, etc.) contained in the model with the Town's GIS sewer system map.
3. Modeling results .PPT file, including flow triggers for recommended projects.

B. Water Modeling

1. Model Updates

- a. Updates to the model's pipes and elevations will be completed where recent new development or capital projects have occurred since the prior model update. This will be completed by comparing the existing model structure to current GIS files provided by the Town and identifying where modifications or improvements have been made to the water system. This effort does not include services to convert AutoCAD as-built files into GIS files.
- b. Demand and demand distribution will be updated based on billing data provided by the Town for a recent 12-month period. It is assumed that a meter layer exists with an attribute that allows billing data to be joined with the meter location and the Consultant will not be required to geocode the billing data. This scope includes 16 hours to correct/modify meter locations and joined billing data to ensure accuracy. This data will be compared to Harnett County pumping records provided by the Town for the same period. This task also includes updating wholesale customer usage.
- c. The Consultant will review large customer usage data to assign individual demand patterns where appropriate, as identified in Task 3.A.
- d. Operational practices will be reviewed with the Town to ensure model settings are reflective of normal operational conditions. This will include review of Town provided SCADA data of the elevated tanks and the Harnett County Booster Station flow and pressure data.
- e. One virtual (1) meeting to review model updates will be held during the model

update phase. Up to three (3) members of the Consultant team will participate in the meeting with a scheduled duration of up to 1.5 hours.

- f. Storage/Pumping Capacity Evaluation- Includes evaluation of SCADA data (metered flow into the water system and elevated tank levels) to calculate the diurnal curve (demand curve) for four (4) separate 24-hour periods during peak usage seasons. One curve will be selected to use in the model.
- g. The Consultant will calibrate the existing conditions Extended Period Simulation (EPS) model using SCADA records by comparing recorded tank water levels to predicted tank water levels to ensure the model reasonably simulates tank performance and pump station operations.

2. Field Investigations

a. Field Tests

- 1. Hydraulic Grade Line (HGL) Testing – Complete three (3) HGL's, which assumes 1.5 days of testing, to measure the hydraulic performance of larger trunk mains where water is conveyed through the system. The Consultant anticipates 2 HGL's following separate flow paths to the Northwest Area and 1 HGL starting at the Avent Ferry Tank to the south along Avent Ferry Road ending at Rex Road.
- 2. Fire Flow Testing- Complete five (5) fire flow tests in targeted areas to identify the fire flow performance. It is assumed 1 day of testing is required to complete the fire flow tests.
- 3. HGL's and fire flow tests will be compared to predictions simulated in the updated model. The comparison between model results and field tests will be generated to document model calibration. Reasonable adjustments to the model may be needed to improve model calibration. Testing showing discrepancies that indicate closed valves or other discrepancies will be identified for subsequent investigations by Holly Springs staff.
- 4. One in person (1) meeting to review field investigations and calibration will be held during the model update phase. Up to three (3) members of the Consultant team will participate in the meeting with a scheduled duration of up to 1.5 hours.

3. Existing System Analysis

- a. Fire flow analysis will be performed by calculating the flow available at 25 psi residual pressure at each hydrant connection to identify areas with deficient flows. The Consultant will identify any general areas with low fire flows, and these areas will be taken into consideration when subsequently testing improvements.
- b. The Consultant will use the model to map water age for existing operation of the system. The model will predict water age based on a 30-day simulation of existing average daily demand using current pump controls and operating procedures. The map will highlight areas where water age is excessive. Additional modeling will test operational changes.
- c. The Consultant will complete a storage analysis, which includes evaluation of required equalization storage, fire flow storage, and emergency storage. Results from the analysis will be compared to the existing storage available to the Town of Holly Springs.
- d. The Consultant will complete a valve criticality assessment using the model to assess vulnerabilities. InfoWater Pro software includes a vulnerability assessment module that considers the criticality of pipes and isolation valves. The software determines which valves and how many valves must be closed to isolate each pipe segment and calculates the amount of demand that cannot be supplied at adequate pressure. The results will be used to rank pipe segments by relative risk, considering the consequences of failure. If this analysis identifies major

vulnerabilities, the Consultant will test improvements that reduce risk and the vulnerability of the system to failure of key components.

The Consultant will prepare a technical memo summarizing the vulnerability assessment and related recommendations to improve redundancy and resilience.

- e. Consultant will use the hydraulic model to develop recommendations for eliminating existing deficiencies and conduct one virtual (1) workshop with Town staff to review the existing system analysis. Up to three (3) members of the Consultant team will participate in the meeting with a scheduled duration of up to 1.5 hours.
- f. PDF maps will be provided to visualize modeling results for steady state and EPS simulations.

4. Future System Analysis

- a. The Consultant will distribute future demands in the model according to the base demand projections developed in Task 4.A.
- b. The Consultant will identify future deficiencies by simulating future supply and demand conditions and compare predicted performance with design criteria agreed upon with the Town. The Consultant will incorporate planned improvements from prior studies in coordination with Town staff prior to identifying future improvements.

The Consultant will evaluate pump and storage capacity for equalizing diurnal demand, sustaining fire flows and meeting state regulations for emergencies. The Consultant will compare needed storage with existing storage capacities and provide recommendations to include changes in tank operations, transmission improvements and storage volume and location.

The model will be used to test improvements that eliminate deficiencies. Viable alternatives will be compared to identify cost-effective methods of supplying future demands while meeting hydraulic design criteria and maintaining water quality. The Consultant will conduct a workshop to review the improvements, and final recommendations will be based on review comments from Town staff.

Recommended improvements will be captured in Task 5.D CIP Development.
- c. The Consultant will evaluate alternatives and provide recommendations for future operations of the Town's water supplies to include operations of the Wake County Booster Pump Station and the Sanford Conveyance Booster Pump Station. The evaluation will consider operational costs and water supply costs as provided by the Town while ensuring sufficient tank performance.
- d. One (1) in person meeting to review existing and future system analysis will be held during the system analysis phase. Up to three (3) members of the Consultant team will participate in the meeting with a scheduled duration of up to 1.5 hours.

5. Water Meter Infrastructure Analysis

- a. Consultant will conduct an in person workshop with Town staff (to include Infrastructure & Utilities, Development Services, and Finance) to provide the Consultant with a review of the existing infrastructure, goals for the future system, ability for departments to access meter data, and current uses of the available data. Up to three (3) members of the Consultant team will participate in the in person meeting with a scheduled duration of up to 1.5 hours.
- b. Consultant will collect necessary data to provide recommendations for timing and infrastructure needs for expansion of the metering system.

6. Task Deliverables

- a. Calibrated water model.
- b. Technical memorandum summarizing the waterline vulnerability assessment

- and related recommendations to improve redundancy and resilience.
- c. PDF maps depicting modeling results for steady state and EPS simulations
- d. Technical memorandum summarizing recommendations for future operations of the Town's water supplies to include operations of the Wake County Booster Pump Station and the Sanford Conveyance Booster Pump Station.
- e. Technical memorandum summarizing recommendations for expansion of the Town's water metering system.

Task 4 – Section 5: Infrastructure & Utilities Comprehensive Plan

A. Demand and Flow Projections

Demand and flow projections developed in this task will serve as a consistent base to be used for the duration of the project.

1. Consultant shall complete water and wastewater projections in accordance with the current future land use map (FLUM). It is assumed that the projections from the following studies will supersede the FLUM as the most recent study to be utilized in the projections:
 - Northwest Area Master Plan
 - Northeast Gateway Master Plan
 - Planned Development Map
 - Downtown Area Plan
 - System Development Fee Report
2. The Consultant will conduct one (1) virtual workshop with the Town to coordinate near-term and future industrial demands and flows. The level of uncertainty in magnitude of future industrial demands will be quantified and included in the forecast to provide a range of projections.

Up to three (3) members of the Consultant team will participate in up to four (4) meetings with industrial stakeholders to assist the Town in gathering demand and flow projections for large customers. It is assumed that two (2) meetings will be in person, and two (2) meetings will be virtual. Meetings may include discussion of facility demand patterns/operations, return to sewer ratios, and timing and magnitude of future needs. Each meeting will be scheduled for a duration of up to 1.5 hours.
3. Projections will be developed for 5-year, 10-year, 15-year, 20-year, and buildout planning horizons. Planned development will be included in the 5-year horizon. The timing of the 10-year, 15-year, and 20-year planning horizons will be developed in coordination with the Town. Timing from the Utley Creek WRF Preliminary Engineering Report will be used as a baseline. The Consultant will provide a map of preliminary timing to be reviewed with the Town and modified accordingly.

The projections will include parameters to identify residential, commercial, and industrial demands/flows. Water demands will be provided for average day and maximum day based on historical trends. Diurnal patterns are not included in this task. Sewer flows will be provided for average day, maximum month, and peak hour based on historical trends. The Consultant will provide a comparison of the updated projections to available historical projections for water and wastewater flows.
4. Task Deliverables
 - PDF maps showing the proposed developments included in the 5-year, 10-year, 15-year, 20-year, and buildout planning horizons.

B. Sanitary Sewer Comprehensive Plan

The Comprehensive Planning document will include the following items regarding sewer infrastructure. These items will be defined by the work completed during the Sanitary Sewer

Hydraulic Model effort presented in Task 3.A:

1. Review of the Utley Creek Water Reclamation Facility (UCWRF) and the plans for phased expansion of the facility.
2. Review the potential need of a future effluent force main from UCWRF to a new discharge location to accommodate future expansion of facilities.
3. Review of existing sanitary sewer infrastructure to include quantities of gravity sewer, pump stations, and force mains.
4. Basin planning to include existing pump station basins and proposed future pump station basins. The Consultant will evaluate the need for and location of future regional pump stations and opportunities to consolidate existing pump stations.
5. Identify drivers for development of the CIP to be used by the Town.
6. The Consultant will coordinate with the Town to identify and develop a map of priority investment areas and general areas of future infrastructure needs in the Town's service area. This task will inform the overall priority investment map developed in Section G Policy. PDFs and GIS data will be provided for the Town's use meeting the Town's GIS data standards.
7. Incorporate the Town's ongoing sustainability initiatives into Comprehensive Plan sanitary sewer goals and statements. Identify additional initiatives for inclusion in the Comprehensive Plan that will align the Comprehensive Plan with sustainability initiatives.
8. Task Deliverables
 - PDFs and GIS data depicting the sanitary sewer infrastructure priority investment areas and general areas of future infrastructure needs in the Town's service area.

C. **Water Comprehensive Plan**

The Comprehensive Planning document will include the following items regarding water infrastructure. These items will be defined by the work completed during the Water Modeling effort presented in Task 3.B:

1. Review of existing water infrastructure to include quantities of pipe, elevated storage tank, pump stations, water supplies, and emergency interconnections.
2. Identify critical corridors for future transmission mains, approximate locations of future storage and future supply from the City of Sanford.
3. Identify drivers for development of the CIP to be used by the Town.
4. The Consultant will coordinate with the Town to identify and develop a map of priority investment areas and general areas of future infrastructure needs in the Town's service area. This task will inform the overall priority investment map developed in Section G Policy. PDFs and GIS data meeting the Town's GIS data standards will be provided for the Town's use.
5. Incorporate the Town's ongoing sustainability initiatives into Comprehensive Plan water goals and statements. Identify additional initiatives for inclusion in the Comprehensive Plan that will align the Comprehensive Plan with sustainability initiatives.
6. Task Deliverables
 - PDFs and GIS data depicting the water infrastructure priority investment areas and general areas of future infrastructure needs in the Town's service area.

D. **Reclaimed Water Comprehensive Plan**

1. The Consultant will coordinate with Town's ongoing Reclaimed Water Master Plan (RWMP) to identify future infrastructure and utility needs (such as demand, location and sizing) for

reclaimed water infrastructure in alignment with the Town's strategic goals and objectives; particularly related to economic development impacts.

2. The Consultant will identify interdependencies between utility systems such as wastewater treatment needs to support reuse demand and the potential offset of water demands due to reuse.
3. Identify drivers for development of the CIP to be used by the Town.
4. The Consultant will coordinate with the Town to identify and develop a map of priority investment areas and general areas of future infrastructure needs in the Town's service area. This task will inform the overall priority investment map developed in Section G Policy. PDFs and GIS data meeting the Town's GIS data standards will be provided for the Town's use.
5. Incorporate the Town's ongoing sustainability initiatives into Comprehensive Plan Reclaimed Water goals and statements. Identify additional initiatives for inclusion in the Comprehensive Plan that will align the Comprehensive Plan with sustainability initiatives.
6. Task Deliverables
 - PDFs and GIS data depicting the reclaimed water infrastructure priority investment areas and general areas of future infrastructure needs in the Town's service area.

E. Stormwater Comprehensive Plan

1. Data Gathering - Consultant will request previously prepared Town documents relating to the stormwater program and will review them for high-level statements and goals which can be extracted and incorporated into the Comprehensive Plan.

Consultant will also review previous and upcoming stormwater studies to determine if initiatives identified therein warrant inclusion in the Comprehensive Plan.
2. Up to two (2) members of the Consultant team will conduct one (1) in person workshop for a scheduled duration of up to 3 hours with Town staff to discuss existing and proposed stormwater planning objectives.
 - a. Identify desired areas of focus related to the Town's stormwater infrastructure, programs, and regulations.
 - b. Identify policies to address stormwater impacts related to new development, redevelopment, stream quality improvements, and existing stormwater problems.
 - c. Identify opportunities for regional approaches to stormwater management.
3. Identify potential future program goals or studies that may be necessary based on the development programmed in the Future Land Use Map and in alignment with the Town's strategic goals and objectives; particularly related to Economic development impacts.
4. Implementation Plan
 - a. Based on stormwater program documents provided by the Town, develop a 5-year, 10-year, and 20-year Capital Improvements schedule considering community priorities, capital improvement construction costs, timing/phasing of improvements, and Federal and State funding options.
5. Incorporate the Town's ongoing sustainability initiatives into Comprehensive Plan stormwater goals and statements. Identify additional initiatives for inclusion in the Comprehensive Plan that will align the Comprehensive Plan with sustainability initiatives.

F. Fiber Optic Comprehensive Plan

1. Review existing fiber related infrastructure including:
 - a. Signals

- b. Cameras throughout Town and owned signals
 - c. Town owned facilities
 - d. Pump station connections
- 2. Determine future infrastructure priorities and/or needs including:
 - a. Connecting all signals
 - b. Connecting all cameras including signal cameras
 - c. Connecting all Town owned and future Town facilities
 - d. Connecting all pump stations (plans to get out of neighborhoods to main road and back to Town Hall)
 - e. Fiber connection to the State Traffic Operations Center
- 3. Implementation Plan
 - a. Develop a 5-year, 10-year, and 20-year Capital Improvements schedule considering community priorities, capital improvement construction costs, timing/phasing of improvements, and Federal and State funding options.
 - b. Consider Developer Installation requirements and possible updates to the UDO.
 - c. Identify possible route partners for potential cost savings.
- 4. Incorporate the Town's ongoing sustainability initiatives into Comprehensive Plan fiber optic goals and statements. Identify additional initiatives for inclusion in the Comprehensive Plan that will align the Comprehensive Plan with sustainability initiatives.

G. Policy

- 1. Water Resources Management Policy (WRMP) Evaluation
 - a. In 2023, the Town adopted a Water Resource Management Policy that lays out the criteria for allocating the Town's sanitary sewer and water utilities. The Consultant will evaluate and make recommendations for modifications to the policy based on the final recommendations of Section 5: Infrastructure & Utilities.
 - b. The Consultant will evaluate the need for development of additional policies related to management of growth.
 - c. Consultant will use results from the Sewer, Water, and Reclaimed water studies to inform the development of an overall priority investment map. PDFs and GIS data meeting the Town's GIS data standards will be provided for the Town's use.
- 2. The Consultant will conduct one (1) workshop to discuss the inter-dependencies between industrial growth and pretreatment requirements to remain in compliance with existing and future permit requirements. Up to four (4) members of the Consultant Team will attend the in-person workshop scheduled for a duration of up to 2 hours.
- 3. Consultant will provide an overview of recommendations for policies related to Infrastructure and Utilities that may need to be modified. This scope does not include development of draft policy changes.
- 4. Incorporate the Town's ongoing sustainability initiatives into Comprehensive Plan policy goals and statements. Identify additional initiatives for inclusion in the Comprehensive Plan that will align the Comprehensive Plan with sustainability initiatives.
- 5. Task Deliverables
 - PDFs and GIS data depicting an overall infrastructure priority investment map (including sewer, water, and reclaimed water studies) and general areas of future infrastructure needs in the Town's service area.

Task 5 – Infrastructure & Utilities Comprehensive Plan Final Deliverables

Documentation for the plan will occur throughout the study process as established in previous tasks. In addition, the Consultant will provide a concise and graphically-oriented set of summary documentation.

A. Comprehensive Plan Document and Presentation

1. Consultant will prepare an illustrative document and presentation for use in promoting the project and conveying the vision, implementation / action items, phasing, and costs. The document will include images, plans, diagrams, narratives, and info graphics. Prior to preparing the document, consultant will provide concepts for how it is to be formatted and they type of document that would be the most user friendly and inspiring. It is anticipated that the Town's desired format will follow the same standards / format as previously updated chapters.
2. The document will be formatted to be read hard copy and, on the web, with a focus on graphics and providing relevant information. It will have clear objectives, policies, and recommended implementation strategies to reach the Town's desired outcomes.
3. The final document shall be able to be edited and modified by the Town after the Plan is adopted. The format of the Plan will be of style, font, and layout that allows for both online and print viewing. Text files and reports shall be in MS Word and PDF formats, or as otherwise agreed upon by the Town staff working group. The final document must be able to be edited and modified by the Town after the Plan is adopted.

B. Summary Report

1. Consultant will prepare a summary report that concisely describes the study process, participants, findings, and recommendations.
2. When possible, the plan will rely on charts, graphs, tables, maps, and graphic exhibits to communicate ideas and information. The Consultant will coordinate with the Town to ensure the deliverable is in line the with colors and format needed for use in the comprehensive plan.
3. The final Summary Report will be formatted for print as well as electronic distribution.

C. Technical Documentation

1. The Summary Report will be accompanied by a Technical Appendix. This appendix may be a compilation of technical analysis and outreach summaries and will serve as a repository for supporting information generated during the planning process.
2. The Consultant will prepare a preliminary draft of the Summary Report and Technical Documentation for review and comment by Town Staff. The Town's project manager will prepare a single round of consolidated comments and resubmit to the Consultant. The Consultant will address the comments and submit a revised draft for public comment. Following this public input period, Town staff will consolidate the comments received and submit them to the Consultant. The Consultant will revise the public comment report and resubmit to Town Staff to begin the public hearing process. Town Staff will consolidate comments from the Planning Board and Town Council and submit to the Consultant. Upon addressing these final comments, the Consultant will provide the final Summary Report and Technical Appendix to the Town.
3. Task Deliverables:
 - a. Summary Report; Technical Documentation; Final Data Delivery (all final data including geodatabase of project files)
4. Town Responsibilities
 - a. Provision of consolidated report comments; Advertisement for public/council review; Meeting Coordination

D. Water and Sewer CIP Development

1. Water and Sewer CIP Projects and Phasing

- a. Based on results of hydraulic modeling scenarios and other analyses conducted in previous tasks, Consultant shall develop recommendations for improvement projects (capital and non-capital). The Consultant shall provide the phasing of these recommended projects. Project specific triggers shall be included along with phasing recommendations.

2. Cost Estimates

- a. Cost estimates shall be provided in a format provided by Town. AACE Class 5 cost estimates shall be provided, which are common for this level of planning. In providing opinions of cost and schedules for each project, Consultant has no control over cost or price of labor and materials; unknown or latent conditions of existing equipment or structures that may affect operation or maintenance costs; competitive bidding procedures and market conditions; time or quality of performance by operating personnel or third parties; and other economic and operational factors that may materially affect the ultimate project cost or schedule. Therefore, Consultant makes no warranty that the Town's actual project costs, financial aspects, economic feasibility, or schedules shall not vary from the Consultant's opinions, analyses, projections, or estimates.

3. Project Sheets

- a. The Consultant shall develop and provide an information sheet in a format agreed upon with the Town for each proposed project. Each sheet shall include a project map, brief discussion of background and purpose of the project, project description, and cost estimate summary, including project triggers where applicable.

4. Task Assumptions

- a. Up to three (3) members of the Consultant team shall conduct one (1) 1.5-hour virtual workshop to review results and finalize the CIP.
- b. Cost estimates' accuracy shall comply with Level 5 standards as defined by the Association for Advancement of Cost Estimating International (AACEi), which are appropriate for preliminary-level planning work.

5. Task Deliverables

- a. CIP project list with individual project sheets

E. Water and Sewer Digital Tools

1. Water and Sewer Model Results Dashboard

The Model Results Dashboard will provide an easily accessible platform for Town staff to visualize the results of the existing and future system modeling for water and sewer. Layers including assumed model demands/flows, planned development, future land use, etc. will be included for Town staff to efficiently compare proposed development with assumed model demands and predicted system performance.

- a. It is assumed Town staff will provide the necessary credentials for ESRI dashboards to be developed in the Town's ArcGIS Online environment.
- b. Up to two (2) members of the Consultant team will conduct one (1) in-person workshop to present the draft dashboard and address Town comments prior to delivering the final tool. The workshop will be scheduled for a duration of up to 2 hours.
- c. The dashboard will utilize model results from Task 3. The desired frequency of future modeling updates that may be used to update the Dashboard background data will be discussed as part of this task. Additional model updates may be provided as an Additional Service.

2. Water and Sewer Digital CIP Dashboard

The CIP dashboard will be developed to include all recommended improvements to enhance visualization of the CIP. The goal of this tool is to provide enhanced visualization and access to the CIP to facilitate CIP planning and visibility.

- a. Data System Development – The Consultant will work with Town staff to develop an ESRI based dashboard to include mapping, prioritization, budgeting, and scheduling of projects allowing the user to evaluate the CIP in groups as well as individual projects.
- b. Up to two (2) members of the Consultant team will conduct one (1) in-person workshop to present the draft dashboard and address Town comments prior to delivering the final tool. The workshop will be scheduled for a duration of up to 2 hours.
- c. The CIP will be stored in a GIS format meeting the Town's GIS data standards for the Town and will utilize in app widgets to allow for editing from a single platform. In addition to the above workshop, the Consultant will provide up to 16 hours of additional training for Holly Springs staff to manage the tool.
- d. It is assumed Town staff will provide the necessary credentials for ESRI dashboards to be developed in the Town's ArcGIS Online environment.

Task 6 – Section 4: Community Facilities

- A. Data Gathering - The Consultant will prepare a holistic assessment of existing community facilities and services provided by the Town of Holly Springs and County partners, as appropriate. At a minimum, these services and facilities will include public safety facilities (fire and police), solid waste, and operations/administration facilities.
 1. The Consultant will request the following information, at a minimum, from Town staff for review of information related to existing and proposed Community Facilities:
 - a. Town of Holly Springs Space Needs Study
 - b. Town of Holly Springs Strategic Plan
 - c. Vision Holly Springs: Comprehensive Plan
 - d. Fiscal Year 2024-2025 Annual Operating Budget & Community Investment Plan
 - e. Any previous facility planning from Police and Fire departments
 2. This assessment will document existing facilities and services, capacities, and any plans for enhancing or increasing levels of service. This task will also include a review of the Future Land Use Map and projected growth models to identify the need for and location of future community facilities to meet the Town's goals.
 3. While the Town doesn't oversee schools or health-related facilities, these important community facilities need to be addressed in the Comprehensive Plan update. The Consultant team will interview Wake County representatives to determine whether existing/planned facilities are expected to adequately support projected future growth.
- B. Identify goals, policies, objectives, key drivers, and actionable implementation measures for community facilities within the Town's Long Range Planning Area.
- C. Incorporate the Town's ongoing sustainability initiatives into Comprehensive Plan goals and statements. Identify additional initiatives for inclusion in the Comprehensive Plan that will align the Comprehensive Plan with the Town's growth and ongoing sustainability initiatives.
- D. Up to two (2) members of the Consultant Team will conduct up to three (3) in-person interviews (for a scheduled duration of 2 hours each) with Town Public Safety, Solid Waste, and Operations/Administration staff to discuss existing and proposed Community Facilities planning

objectives.

- E. Up to two (2) members of the Consultant Team will conduct one (1) in-person interview (for a scheduled duration of 2 hours) with representatives of Wake County Public Schools to discuss existing and proposed school projects within the Town's Long Range Planning Area.
- F. Public Engagement – The Consultant will incorporate Community Facilities elements into the Public Engagement activities described in Task 2. All materials shall be used for meetings / events / activities described in Task 2.
 - 1. Public Involvement Plan - The Consultant will incorporate Community Facilities elements into the Public Involvement Plan (PIP).
 - 2. Public Outreach Materials / Online Presence - The Consultant will incorporate Community Facilities elements into Public Outreach Materials / Online Presence materials.
 - a. The Consultant will assist the Town in creating Community Facilities content for newsletters, press-releases, and social media. Up to five (5) rounds of content are assumed as part of this scope and are anticipated to align with major milestones or public meetings.
 - b. The Consultant will assist the Town in creating content for outreach surveys / activities.
 - 3. Meetings / Outreach Activities - The Consultant will incorporate Community Facilities elements into Meetings / Outreach Activities.
 - a. Prepare materials related to Community Facilities for Public Meetings, Pop-up events, and Planning Board / Town Council meetings.
- G. Task Deliverables:
 - 1. Community Facilities Foundation Report/Mapping – summary of past, current and proposed community facilities.
 - 2. FLUM and Growth Model Review – Identification of potential locations for new facilities.
 - 3. Meeting and Public Engagement Summaries
 - 4. Update to Holly Springs Comprehensive Plan Section 4 including implementation and funding strategies, as appropriate. Document to be prepared in as described in Task 5 – Infrastructure & Utilities Comprehensive Plan Final Deliverables.

Task 7 – Section 6: Natural Areas/Resource Protection

- A. Data Gathering - The Consultant will prepare a holistic assessment of existing Natural Resources documents and plans to serve as the baseline for the identification of future preservation and conservation efforts.
 - 1. The Consultant will request the following information, at a minimum, from Town staff for review of information related to Natural Areas/Resource Protection:
 - a. Town of Holly Springs Strategic Plan
 - b. Vision Holly Springs: Comprehensive Plan
 - c. Fiscal Year 2024-2025 Annual Operating Budget & Community Investment Plan
 - d. Wake County Land Cover Analysis and Tree Canopy Assessment (2023)
 - e. Town of Holly Springs Street Tree Inventory and GIS dataset
- B. The Consultant will review the items listed above to identify goals, policies, objectives, key drivers, and actionable implementation measures to provide a preservation and conservation framework within the Town's Long-Range Planning Area.

Natural Areas/Resource Protection topics to be considered include:

1. Appropriate locations for Land Conservation/Land Preservation
 2. Priority Wildlife Corridors
 3. Stream restoration and preservation of aquatic species/habitats
 4. Wetlands and Stream Corridors
 5. Identification of important natural features such as steep slopes and areas of Triassic rock
 6. Forestlands and Tree Canopy
 7. Street tree and urban forest management
- C. Up to two (2) members of the Consultant Team will conduct two separate 2-hour workshops with Town staff to discuss existing and proposed Natural Areas/Resource Protection planning objectives. One workshop will be in person, and one will be virtual.
1. Identify desired areas of focus related to the Town's existing / proposed Natural Areas.
 2. Identify current UDO standards related to Natural Areas/Resource Protection planning.
- D. Identify goals, policies, objectives, key drivers, and feasible implementation measures for protection and conservation of Natural Areas/Resource Protection within the Town's Long Range Planning Area.
- E. Incorporate the Town's ongoing sustainability initiatives into Comprehensive Plan goals and statements. Identify additional initiatives for inclusion in the Comprehensive Plan that will align the Comprehensive Plan with the Town's growth and ongoing sustainability initiatives.
- F. Public Engagement – The Consultant will incorporate Natural Areas/Resource Protection elements into the Public Engagement activities described in Task 2. All materials shall be used for meetings / events / activities described in Task 2.
1. Public Involvement Plan - The Consultant will incorporate Natural Areas/Resource Protection elements into the Public Involvement Plan (PIP).
 2. Public Outreach Materials / Online Presence - The Consultant will incorporate Natural Areas/Resource Protection elements into Public Outreach Materials / Online Presence materials.
 - b. The Consultant will assist the Town in creating Natural Areas/Resource Protection content for newsletters, press-releases, and social media. Up to five (5) rounds of content are assumed as part of this scope and are anticipated to align with major milestones or public meetings.
 - c. The Consultant will assist the Town in creating content for outreach surveys / activities.
 3. Meetings / Outreach Activities - The Consultant will incorporate Natural Areas/Resource Protection elements into Meetings / Outreach Activities.
 - d. Prepare materials related to Natural Areas/Resource Protection for Public Meetings, Pop-up events, and Planning Board / Town Council meetings.
- G. Task Deliverables:
1. Natural Areas/Resource Protection Report – holistic assessment of existing Natural resources documents and plans to serve as the baseline for the identification of future preservation and conservation efforts.
 2. FLUM and Growth Model Review – Identification of conservation areas.
 3. Meeting and Public Engagement Summaries.
 4. Update to the Holly Springs Comprehensive Plan Section 6 including implementation and UDO update language. Document to be prepared in as described in Task 5 – Infrastructure & Utilities Comprehensive Plan Final Deliverables.

Task 8 – Subconsultant Services

- A. Survey (Cooper and Associates, Surveyors)
 - 1. Manhole Rim and Invert Survey (Cooper and Associates, Surveyors, P.A.)
 - a. For this scope, it is assumed that up to 10 existing sanitary sewer manholes will be surveyed to verify vertical datum or determine rim / inverts.
 - b. Manhole rim and invert survey for a limited number of sanitary sewer manholes will be collected. The information will be used in the development of the model pipeline network.
- B. Flow Monitoring (Vision NC)
 - 1. Collection System Flow Monitoring will be provided under this task. Flow monitoring locations and duration will be provided as described in Section 3.A.2.

Additional Services

Any services not specifically provided for in the above scope may be performed by the Consultant upon the Town's request and execution of an Amendment to the Contract. Detailed scope and fee for additional services will be prepared based on the Town's specific request. Additional services we can provide include, but are not limited to, the following:

- A. Additional Planning Board and Town Council Presentations / Work Sessions. The Consultant will attend additional meetings with the Planning Board or Town Council as requested by the Town. The Consultant will coordinate with Town staff to identify the preferred timing for these briefings. Town staff will be responsible for coordinating meeting logistics. Up to three (3) members of the Consultant team will attend each of these presentations.
- B. Additional public outreach services required beyond those described in the above scope of services.
- C. Additional meetings / outreach activities requested by the Town beyond those described in the above scope of services. Such activities could include additional Public Meetings, community workshops, or pop-up events.
- D. Paid media, targeted social media advertisements, or mailed post cards can be provided as an additional cost
- E. Alternate Fire Flow Testing – Complete up to fifteen (15) fire flow tests in targeted areas to identify the fire flow performance. It is assumed two days of testing is required to complete the fire flow tests. Coordinate with Fire Department to support the Insurance Service Office (ISO) scoring process and the State of North Carolina Office of State Fire Marshall (OSFM) rating. This effort is intended to replace the need for the fire department to test every hydrant each year for ISO requirements.
- F. Pump station hydraulic evaluations, including evaluation of pump and motor efficiencies, system performance (flow and pressure), and system curves.
- G. If requested by the Town, a full-pipe hydraulic model for critical basins of the collection system may be developed if identified as having operability or capacity concerns. This effort may include up to 4 additional flow monitors and required calibration.
- H. If requested by the Town, sanitary sewer system optimization reviews including modifications to operations strategy and what- if analysis may be provided as an additional service.
- I. Miscellaneous engineering services beyond those described in the above scope of services.
- J. Drafting / preparing text for proposed policy changes beyond those described above.
- K. Surveying services beyond those described in scope.
- L. Environmental field investigations / delineations and/or environmental permitting.
- M. Cultural resources surveys (historical/archaeological).
- N. Attendance at additional public meetings such as public workshops and public hearings not

specifically outlined.

- O. Attendance at or preparation for additional public presentations to select board or Town officials not already included herein.
- P. Additional services not included in the above.

Responsibilities of Town

In addition to other responsibilities set out in this Agreement, the Town shall:

1. Provide branding materials for planned outreach activities.
2. Provide existing GIS data and records for existing Town infrastructure.
3. Provide existing Comprehensive Plan, Area Plans, and other similar documents for review.
4. Provide available meter / billing data to support development of flow projections and models.
5. Provide available records / data for existing pump stations including record drawings, total capacity, number of pumps, pump curves, etc.
6. Provide available maintenance records for collection and distribution systems relevant to evaluations, including SSO records, repairs, etc.
7. Make available appropriate staff with background information on the project area.
8. Conduct timely reviews of milestone submittals.
9. Attend meetings and provide reviews and comments for submittals.

Schedule

The anticipated schedule is shown below. The Consultant will begin services promptly after receipt of a fully executed agreement(s) for work associated with the project, to the extent that the Consultant has been authorized to proceed by the Town. Below is a time schedule for services associated with this project:

<u>Task</u>	<u>Time to Completion</u>	<u>Task Start Action</u>
Task 1 – Project Management	Duration of Project	Notice to Proceed
Task 2 – Public Engagement	Duration of Project	Notice to Proceed
Task 3 – Water and Sewer Modeling	2 months following Flow Monitoring	Notice to Proceed
Task 4 – Section 5: Infrastructure & Utilities	6 Months	Notice to Proceed
Task 5 – Infrastructure & Utilities Final Deliverables	2 Months	Completion of Tasks 4, 7, and 8
Task 6 – Section 4: Community Facilities	4 months	Notice to Proceed
Task 7 – Section 6: Natural Areas	4 months	Notice to Proceed
Task 8 – Subconsultant Services	3 months	Nov / Dec 2024
Additional Services	Duration of Project	As directed

Adjustments to the timeframes may be necessary should the scope of the project be significantly altered.

Fee and Expenses

Tasks are provided as listed in the above scope. Subtasks are grouped by project component or service and correspond to the subtasks listed in the scope.

Engineer's Consultants' Fees and other Fees and Charges

Task 8 – Subconsultant Services will be billed to the Town at 1.05 times cost. Direct reimbursable expenses such as express delivery services, fees, and other direct expenses will be billed at 1.05 times cost and are included in the fees above. A percentage of labor fee will be added to each invoice to cover certain other expenses as to these tasks such as telecommunications, in-house reproduction, postage, supplies, project related computer time, and local mileage. Administrative time related to the project may be billed hourly. All permitting, application, and similar project fees (if applicable) will be paid directly by the Town.

Task	Total Hrs	Total Labor	Total Expenses	Total Fee
Task 1 - Project Management (Cost Ceiling)	484	\$ 122,450.00	\$ 3,545.00	\$ 125,995.00
Task 2 - Public Engagement (Cost Ceiling)	229	\$ 48,425.00	\$ 3,500.00	\$ 51,925.00
Task 3 - Water and Sewer Modeling (Cost Ceiling)	2153.5	\$ 404,015.00	\$ 4,938.00	\$ 408,953.00
Task 4 - Section 5 - Infrastructure & Utilities (Cost Ceiling)	979.5	\$ 208,345.00	\$ 6,208.00	\$ 214,553.00
Task 5 - Infrastructure & Utilities Final Deliverables (Cost Ceiling)	650.5	\$ 132,495.00	\$ 2,926.00	\$ 135,421.00
Task 6 - Section 4 - Community Facilities (Cost Ceiling)	162	\$ 35,020.00	\$ 1,611.00	\$ 36,631.00
Task 7 – Section 6 - Natural Areas (Cost Ceiling)	137	\$ 29,410.00	\$ 1,353.00	\$ 30,763.00
Task 8 – Subconsultant Services (Cost Ceiling)	0	\$ -	\$ 195,668.00	\$ 195,668.00
Total (Cost Ceiling)	4795.5	\$ 980,160.00	\$ 219,749.00	\$ 1,199,909.00

EXHIBIT B

_____ **Insurance requirement waived**

_____ **Lower Insurance Limit Approved**

Approved by: _____

Printed Name: _____

_____ **X** _____ **Certificate of Insurance attached**

COI Expires: 4/1/2025



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

11/5/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Edgewood Partners Insurance Agency 3780 Mansell Rd. Suite 370 Alpharetta GA 30022	CONTACT NAME: Jerry Noyola PHONE (A/C, No, Ext): 7702207699 FAX (A/C, No): E-MAIL ADDRESS: greylingcerts@greyling.com
INSURED Kimley-Horn and Associates, Inc. 421 Fayetteville Street, Suite 600 Raleigh, NC 27601	INSURER(S) AFFORDING COVERAGE INSURER A: National Union Fire Ins Co of Pittsburg INSURER B: Allied World Assurance Co (U.S.) Inc. INSURER C: New Hampshire Insurance Company INSURER D: Lloyd's of London INSURER E: INSURER F:

COVERAGES**CERTIFICATE NUMBER:** 1593427908**REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS-MADE ☒ OCCUR ☒ Contractual Liab GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☒ PROJECT ☒ LOC ☐ OTHER:			GL5268169	4/1/2024	4/1/2025	EACH OCCURRENCE \$ 2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 25,000 PERSONAL & ADV INJURY \$ 2,000,000 GENERAL AGGREGATE \$ 4,000,000 PRODUCTS - COMP/OP AGG \$ 4,000,000 \$
A	☒ AUTOMOBILE LIABILITY ☒ ANY AUTO ☐ OWNED AUTOS ONLY ☐ SCHEDULED AUTOS ☒ HIRED AUTOS ONLY ☒ NON-OWNED AUTOS ONLY			CA4489663 (AOS) CA2970071 (MA)	4/1/2024 4/1/2024	4/1/2025 4/1/2025	COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
B	☒ UMBRELLA LIAB ☒ OCCUR ☒ EXCESS LIAB ☐ CLAIMS-MADE ☐ DED ☒ RETENTION \$ 10,000			03127930	4/1/2024	4/1/2025	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y / N ☒ N	N / A	WC015893685 (AOS) WC015893686 (CA)	4/1/2024 4/1/2024	4/1/2025 4/1/2025	☒ PER STATUTE ☐ OTH-ER E.L. EACH ACCIDENT \$ 2,000,000 E.L. DISEASE - EA EMPLOYEE \$ 2,000,000 E.L. DISEASE - POLICY LIMIT \$ 2,000,000
D	Professional Liability			B0146LDUSA2404949	4/1/2024	4/1/2025	Per Claim Aggregate \$2,000,000 \$2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Re: Professional Engineering Services; Nolan Raney. The Town of Holly Springs, NC is named as an Additional Insured with respects to General Liability where required by written contract.

CERTIFICATE HOLDER**CANCELLATION**

Town of Holly Springs, NC
128 South Main Street
Holly Springs NC 27540

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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ACORD 25 (2016/03)

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THIS CERTIFICATE SUPERSEDES PREVIOUSLY ISSUED CERTIFICATE

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EXHIBIT C

[illegible]

AFFIDAVIT OF CONTRACTOR'S COMPLIANCE WITH E-VERIFY

I, _____(the individual attesting below), being duly authorized by and on behalf of **Kimley-Horn & Associates, Inc.** (the "Contractor") after first being duly sworn hereby swears or affirms as follows:

1. Contractor understands that E-Verify is the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law in accordance with NCGS §64-25(5).
2. Contractor understands that Contractors Must Use E-Verify. Each Contractor, after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with NCGS §64-26(a).
3. Contractor is a person, business entity, or other organization that transacts business in this State and that employs 25 or more employees in this State. (mark Yes or No)
 - a. YES _____
 - b. NO _____

Dated: _____

Signature of Affiant: _____

Print or Type Name: _____

Town of Holly Springs Comprehensive Plan

REQUEST FOR QUALIFICATIONS

Consulting Services for Vision Holly Springs
Comprehensive Plan Update

RFQ # 2024-0304

Responses Due: 4 p.m. on Monday, April 15, 2024



An aerial photograph of a town at sunset. The sky is filled with vibrant orange, red, and purple clouds. In the foreground, a large, two-story house with a dark roof and light-colored walls is visible, surrounded by lush green trees. The town below is illuminated by streetlights and building lights, with a road winding through the landscape.

Purpose

The Town of Holly Springs is updating portions of its Comprehensive Plan (Plan)– “Vision Holly Springs” and invites qualified consulting firms to respond to this Request for Qualifications (RFQ). Originally adopted in 2007, the Plan contains sections on Land Use & Character (updated in 2019), Transportation (updated in 2022), Parks, Recreation & Greenways (updated in 2021), Community Facilities, Infrastructure & Utilities, and Natural Resources.

The purpose of this Project is to update the Section on Infrastructure & Utilities, which was last updated in 2009, to align with the previous section updates that have occurred over the last five years. There is a possibility that the Town will be able to update the Section(s) on Community Facilities and Natural Resources under the same contract. The Town is seeking the services of a team with considerable experience in community engagement and participation, visioning, planning, design, and marketing to develop the updated Plan Section(s). The resulting Plan Section(s) will be incorporated into the Town’s Comprehensive Plan, which is intended to guide growth and development in the future.

The selected consultant team (“Consultant”) will be responsible for managing this project. Typical duties include implementing an innovative community engagement program, communicating with staff liaisons, and producing the required Plan documents. The project is discussed in further detail in the Scope of Work and Deliverables sections of this request.



Community Context

The Town of Holly Springs is a growing community with a population of approximately 50,000 residents located near North Carolina's Research Triangle in southwestern Wake County. The Town's corporate limits cover over 20 square miles with an additional 13 square miles in the Town's Extraterritorial Jurisdiction (ETJ), where the Town has zoning and permitting control. The total long-range planning area for Holly Springs encompasses 58 square miles and stretches south and west towards Harnett and Chatham Counties.

Less than a 30-minute drive to Research Triangle Park, the cities of Raleigh and Durham, and the Raleigh-Durham International Airport, Holly Springs offers convenient access to the region's job centers and amenities while priding itself on providing a high quality of life with small-town character.

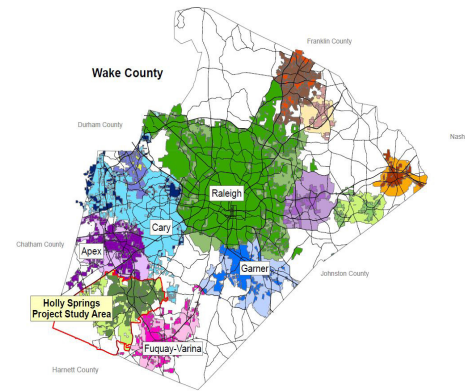
Holly Springs has roots dating to the early 1800's and was incorporated in 1877. The Town has experienced strong population growth over the past 30 years, transforming from a rural settlement of around 900 residents in 1990, to the flourishing modern community that it is today with expected growth of more than 500 dwelling units per year for the next several years.

In addition to its reputation for safe, family-friendly neighborhoods, Holly Springs boasts a burgeoning life sciences industry. Seqirus, the nation's largest flu vaccine manufacturer, operates a biomanufacturing facility with more than 550 full time staff in Town. Likewise, Fujifilm Diosynth Biotechnologies and Amgen are nearing completion of large manufacturing facilities that will employ several thousand full-time staff and are among the largest economic development projects in the state over the past decade.

With these assets in our community, it is imperative the Town maintains high-quality public services which can be relied upon to maintain operations.

Challenges & Opportunities

The growth that has occurred in Holly Springs in recent decades has brought substantial benefits in the form of desirable residential neighborhoods, convenient access to a wide range of retail, restaurants, and service businesses, and a strong tax base to support the construction and expansion of public services and recreational facilities. However, this growth has not occurred without its own set of challenges. The following section explains some of the challenges and opportunities in greater detail, as they relate to the scope of



58
square mile
planning area

78%
population growth
in the last 10 years

ACCOLADES

#1 Safest Town in NC with population over 25K (2016),
ValuePenguin

#7 Best Small Cities in America (2016), *WalletHub*

#6 Home Affordability in NC (2015), *SmartAsset*

#3 Best City for Young Families in NC (2015), *NerdWallet*

#1 Among Best Places in NC for Home Ownership (2014),
NerdWallet

#15 out of 500 for Top Cities for Millennials (2017),
Millennial Personal Finance



this Project.

Infrastructure & Utilities

Holly Springs has historically been able to grant water and sewer capacity on a first-come-first-served basis through initiatives like the water capacity expansion agreement with Harnett County and the new Water Reclamation Facility, which increased capacity to 6 million gallons per day. As the Town has grown, so has the need for proactive utility management. In 2023, the Town finalized a Water Resource Management Policy that lays out the criteria for prioritizing the Town's water and sanitary sewer availability. Coinciding with this policy, the Town is also working to expand the treatment and provision capacity by working with other municipalities in the region, including Sanford, Fuquay-Varina, and Harnett County. Through this Plan update, the Town hopes to identify long term key public infrastructure like wastewater pump station locations and force main routes, location for a new elevated potable water storage tank, expansion of the Town's reclaimed water network, and expansion of stormwater facilities, some of which are town-maintained.

New technologies have expanded the concept of town-maintained infrastructure and utilities. Since the adoption of Plan Section 5 in 2009, the Town has established a fiber optic utility network to support several town initiatives such as traffic management and utility meter reading.

Holly Springs hopes to generate concrete plans for fiber optic network build-out, including a goal of having fiber for all new traffic signals. The Town is also working toward an automated meter reading system for utilities that will reduce the need to rely on repeaters.

Public Facilities

The Town's growing population has necessitated an expansion of town services, including Police, Fire, and Public Works. Due to increased staff capacity needs at Town Hall, the Town has been leasing space at the Village Office Condominiums for overflow workspace. To alleviate spacing needs, the Town is currently working on a new operations center with a tentative opening target of 2026 that will add office space for town staff. Phase 2 of the Operations Center will include a fueling site for the Town's vehicle fleet and



other spaces, such as a service pit for technicians to work on town vehicles, have also been considered.

The Town anticipates the opening of Fire Station #3 in the northwest area of Holly Springs in late 2024. As the Town has grown in recent years, it became apparent that a new station was needed to ensure the Town could maintain its standard of cover targets. The new station will be located off Woods Creek Road and will contain three service bays that will accommodate up to eight full-time firefighters. The Fire Department is also monitoring facility needs that may result in future locations for additional fire stations.

Fire Station #3 will also include a new police sub-station to aid the Police Department in maintaining a presence in this growing area of town. Police service calls increased 6% between 2021 and 2023, which keeps pace with the Town's population growth over that same period. Police has also added new officers, telecommunications, and school resource officers in recent years due to this growth.

Through this Project, the Town is hoping to assess future public facility needs and is seeking strategies for how to meet those needs. These strategies may include a tool that identifies when a new facility will be needed and where it should be located.

Natural Resources

Holly Springs residents enjoy many premier parks and recreation amenities, including Bass Lake Park, Sugg Farm, Eagles Landing Park, and Mims Park in the Downtown. Despite this, the demand for new development of residential subdivisions has raised concerns regarding protection of natural landscapes and rural vistas. One challenge the Town is facing is how to determine how and where to preserve land for both conservation purposes and active recreation. Currently, the Town accepts land through open space requirements on new development projects primarily focused on active recreation rather than conservation. The Town hopes to identify key locations where conservation efforts should be focused, such as riparian buffers and stream banks owned by Homeowners Associations that could accommodate both low-impact recreational uses and restoration efforts.

Finally, development of mapping tools that could identify wildlife corridors and strategies for tree preservation and urban forestry management are another desire. Wake County completed a Land Cover Analysis and Tree Canopy Assessment in 2023 that offered a wealth of useful information about changes to the Town's tree canopy over the past decade, and the Town would like to explore creation of a tool to guide the Town's tree canopy preservation policies, urban forestry management programs, and restoration efforts.

All of these concerns bring with them the inherent potential for positive future outcomes. By planning today to meet the needs of residents, businesses, and visitors well into the future, Holly Springs intends to chart a course to maintain its small-town character and its recognition as a place where people and businesses can thrive.



Previous Comprehensive Plan Updates

Vision Holly Springs: Comprehensive Plan

Section 1: Land Use & Character Plan

The Land Use & Character Plan, updated and adopted in 2019, is the guiding document for the Town's future development. The Plan contains two major elements: the Future Land Use Map with designated Character Areas, as well as specific recommendations for making the Plan a reality. A goal of the Plan is to protect the character and authenticity of the Town by identifying, preserving, and perpetuating desirable development patterns and avoiding excessive sprawl. Investments in public spaces and transportation corridors to create walkable, multi-use environments are a critical tool to achieving these goals.

The Plan contains several “Important Themes for Transforming Holly Springs” and additional Land Use & Character recommendations that may impact development in the project area, such as:

- Establish mixed-use activity centers throughout Holly Springs
- Provide context-sensitive infill development choices
- Focus on appropriate transitions
- Increase home & neighborhood choices in Holly Springs
- Increase diversity & affordability of housing in Holly Springs
- Provide more transportation-land use coordination in the community

Downtown Area Plan (2023)

The Downtown Area Plan, Appendix E to Vision Holly Springs Section 1: Land Use & Character Plan, describes the community's vision for the Downtown Village District Character Area, with a specific focus on the Downtown core. The Plan aspires to create a downtown where people can live, work and be entertained. The Plan takes into consideration the realities of the study area, both exciting opportunities and limiting factors, and defines the steps toward achieving that vision.

Northeast Gateway Master Plan (2022)

The Northeast Gateway Master Plan, Appendix F to Vision Holly Springs Section 1: Land Use & Character Plan, lays out a vision for the northeast section of Town centered on the future interchange of Holly Springs Road and NC 540. With the imminent completion of NC 540 in Holly Springs, staff and Council members identified the need to complete a robust and detailed planning process before the new highway brings thousands of additional motorists through the town. The Plan splits the planning area into seven functional subareas and establishes a conceptual vision for each, complete with roads, buildings, recreational amenities, and natural areas.

As part of the project's scope of work, the Town obtained a utility planning tool to help gauge capacity demands for the planning area based on land use projections. The Town anticipates challenges for providing sanitary sewer to the planning area based on this tool and the existing infrastructure. Through this Project, the Town seeks concrete strategies for meeting the unique utility needs of this planning area. The Northeast Gateway Master Plan was adopted in December 2022.

Section 2: Comprehensive Transportation Plan

The Holly Springs Comprehensive Transportation Plan (CTP) outlines the vision and goals, existing conditions, policy directives, and transportation issues facing the Town of Holly



Springs. The CTP proposes a multimodal transportation network to foster growth while preserving the environmental, cultural, and social character of the area. The Town completed an update to the current CTP in 2022 to bring it in line with the 2019 Land Use Plan and 2021 Parks, Recreation, and Greenway Master Plan updates.

Section 3: Parks, Recreation and Greenway Master Plan

Adopted in March 2021, the Parks, Recreation and Greenway Master Plan establishes a vision for the Parks and Recreation System. It creates a work plan to bring that vision to fruition including the development of new parks, facilities, and programs; enhancing community connectivity via greenway trails; developing strategies and policies for protection of natural resources; and ensuring a stable and financially successful system. The Plan highlights the need for parks and open spaces which may include a variety of shared public open spaces including formal and informal open spaces such as greens, squares, plazas, and community gardens.



Project Scope

The Consultant will produce an updated Comprehensive Plan Section 5 for Infrastructure & Utilities (Base Project). The Town seeks to have Section 4 Community Facilities (Optional Project 1) and Section 6 Natural Resources (Optional Project 2) completed concurrently but may seek to have them completed individually depending on costs and available funding.

The primary purpose of the updated Section(s) will be to synchronize the goals and objectives of the previously updated Sections of the Comprehensive Plan. The final scope of services will be negotiated with the selected consultant.

Base Project: Section 5 Infrastructure & Utilities

Section 1 of Vision Holly Springs Comprehensive Plan: Land Use & Character Plan established the land uses for the full build-out of the community, including general estimates of future population, levels of employment, and utility capacity. A CommunityViz model was created to forecast these data points and should be used to determine future utility and public facility needs.

The selected Consultant will need to determine, in coordination with town staff, necessary modifications to the CommunityViz model and complete an update based on the most recent Future Land Use Map. It is anticipated that background data, such as assumed utility generation rates, will need to be updated to ensure accurate base data is used to determine recommendations.

Using the Future Land Use Map and growth models, update the Infrastructure & Utilities Section to include goals, policies, objectives, and feasible implementation measures for infrastructure & utilities such as:

1. A review of the existing infrastructure and utility systems including sanitary sewer, water, re-claimed water, stormwater, fiber optic, and water meter reading technology systems to determine available capacity and potential service to unserved areas.
2. Determine future infrastructure and utility needs (such as demand, location and sizing) for sanitary sewer, water, re-claimed water, stormwater, fiber optic, and water meter reading technology expansion that may be necessary based on the development capacity of the Future Land Use Map and in alignment with the Town's strategic goals and objectives; particularly related to Economic development impacts.
3. A review of the existing infrastructure and utility systems including sanitary sewer, water, re-claimed water, stormwater, fiber optic, and water meter reading technology systems to determine available capacity and potential service to unserved areas.
4. Determine future infrastructure and utility needs (such as demand, location and sizing) for sanitary sewer (including pump stations/utility basins), water, re-claimed water, stormwater, fiber optic, and water meter reading technology expansion that may be necessary based on the development capacity of the Future Land Use Map and in alignment with the Town's strategic goals and objectives; particularly related to Economic development impacts.
5. Identify existing systems that are undersized and indicate improvements that would be necessary.



6. Develop a 5-, 10-, and 20-year Capital Improvements schedule considering community priorities, capital improvement construction costs, timing/phasing of improvements, and Federal and State funding options.
7. Examine performance and efficiency of the systems.
8. Determine future treatment and storage systems (sanitary sewer, water, and re-claimed water conveyance systems).
9. Evaluate how the Town can achieve its infrastructure and utility goals in a manner that is consistent with the Town's ongoing sustainability initiatives.

In 2023, the Town adopted a Water Resource Management Policy that lays out the criteria for allocating the Town's sanitary sewer and water utilities. The consultant will:

1. Evaluate and make recommendations for modifications to the policy based on the final recommendations of Section 5 Infrastructure & Utilities.
2. Establish a priority investment map to implement the tiered allocation system geographically based on the final recommendations of Section 5 Infrastructure & Utilities.

Optional Project 1: Section 4 Community Facilities

Using the Future Land Use Map and growth models, update the Community Facilities Section to include goals, policies, objectives, and feasible implementation measures for community facilities such as:

- Public safety facilities, including future Fire & Police stations or substations
- Solid waste facilities
- Town operations or administration facilities

Optional Project 2: Section 6 Natural Areas

Using the Future Land Use Map and growth models, update the Natural Areas Section to include goals, policies, objectives, and feasible implementation measures for natural areas. This Section could be renamed to reflect additional priorities beyond "Natural Areas." Topic areas that may be included in this Section include:

- Appropriate locations for land conservation
- Priority wildlife corridors
- Stream restoration
- Identification of important natural features
- Tree canopy restoration
- Street tree or urban forest management



Project Management and Coordination

The Consultant will manage the project and coordination of any sub-consultants and all project activities including meetings with staff and stakeholder groups. The Consultant will identify a project lead from their team to act as the direct point of contact for town staff. At a minimum coordination will include the following:

- Biweekly updates with staff (may occur through video conferencing)
- Monthly meetings with the town staff advisory/working group (may occur through video conferencing)

Project Structure/Work Plan

The Consultant will prepare a detailed work plan and achievable timeline for the project. The work plan will outline the overall approach, as well as specific actions and activities that will occur during the project and how these will result in a successful conclusion to the project.

Background Research

The Consultant will conduct a review and analysis of existing relevant plans, including but not limited to the following base documents:

- [Vision Holly Springs: Comprehensive Plan](#)
 - Section 1: Land Use & Character Plan (2019)
 - Appendix E: Downtown Area Plan (2023)
 - Appendix F: Northeast Gateway Master Plan (2022)
 - Section 2: Comprehensive Transportation Plan (2022)
 - Section 3: Parks, Recreation and Greenways Master Plan (2021)
 - Section 4: Community Facilities (2009)
 - Section 5: Utilities & Infrastructure (2009)
 - Section 6: Natural Areas (2009)
- Town of Holly Springs Sustainability Action Plan
- [Unified Development Ordinance](#)
- [Engineering Design and Construction Standards](#)
- [Strategic Plan](#)
- Infrastructure & Utility Planning documents (for example, Local Water Supply Plan, Utleigh Creek Master Plan, East Regional Pump Station Study, Re-claimed water Master Plan, etc. to be provided to the Consultant)

In addition, the Consultant will document the existing conditions, including opportunities and constraints. The Consultant will provide the results of this research in an initial existing conditions report for use during community engagement activities.

Innovative Community Engagement

The Consultant will develop and implement an extensive and innovative community engagement program that seeks to gain meaningful input from community members of all ages and backgrounds. Broad-based community engagement is considered critical to the success of this Project. It is anticipated that this would include an advisory/working



group of town staff, an advisory group of community leaders or technical experts, and a variety of workshops and participatory events with the public. In addition, online community engagement software/tools will need to be utilized in order to provide a robust and well-rounded community engagement program. The Consultant will facilitate all community engagement activities and provide sufficient personnel to run these events. It is expected that at least two (2) large community workshops will be conducted, as well as a variety of smaller outreach events (i.e. pop-up events) unless the Consultant's program details an acceptable alternative engagement program. At a minimum, the community engagement program should address the following:

- Identification of stakeholders.
- Engagement strategies and activities, tied back to reaching all identified stakeholder groups.
- Elected official engagement.
- Timeline for community engagement activities and desired type of community feedback at project checkpoints or milestones (visioning, validating, etc.).
- Communication methods for sharing information.
- Strategy for effective and consistent messaging across platforms and messengers.
- Meaningful involvement of low income and underrepresented populations.

If the selected Consultant will also be completing either one or both Optional Project(s) together with the Base Project, then it is expected that at least one (1) additional large community workshop and at least one (1) smaller outreach event (i.e. pop-up events) may be conducted for each Optional Project being completed.

Additional Work Products

The Consultant will be responsible for the following:

- Draft agendas and summaries with action items for all meetings.
- Project newsletters.
- Creation of maps necessary for the project, including visioning, as well as maps of potential and final preferred land use plans in ArcGIS format.
- Existing Town data layers will be provided to the Consultant as needed.
- Electronic copies of all flyers, hand-outs, and other collateral materials, used to announce events and/or gather input from the community.
- Materials needed for community engagement activities.
- Town staff will provide reasonable accommodations for presentation technology and meeting spaces based on existing resources and facilities.
- Creation of, and content for, any on-line engagement tools utilized as part of this project.

Plan Document

The final document(s) must be visually appealing, easy for the public to understand, and clearly communicate the desired development outcome of the project area. The document(s) should be able to be used both digitally and in paper form. Specifically, the Town is seeking Plan Sections that:

- Are clearly organized and communicates a clear message both graphically and with accompanying text.



- Have clear objectives, policies, and recommended implementation strategies.
- Include forward-thinking, “out of the box” practices to reach the Town’s desired outcomes.
- Are adaptable and easy to modify as the Town evolves after Plan adoption.
- Recognize the Town’s current, design-based approach to creating a visually appealing community and public spaces.

The format of the documents(s) should be of style, font, and layout that allows for both online and print viewing. Text files and reports shall be in MS Word and PDF formats, or as otherwise agreed upon by the town staff working group. The final document must be able to be edited and modified by the Town after the Plan is adopted. The Town has a standard template for the Comprehensive Plan using Adobe InDesign. Maps will be created in ArcGIS to Town map-making standards and format.

Proposed Project Timeline

It is expected that the project duration be up to 8-12 months from the time a contract is awarded to the Consultant to the presentation of a draft Plan for adoption by Town Council. Responses should include any recommended deviations from this approximate timeline. Proposed timelines should include expected stakeholder/community engagement as well as consideration of time for Board and Council informational presentations or work sessions, whether throughout the project or upon completion of a full draft Plan.

Issue RFQ	March 18, 2024
Questions Due	March 29, 2024 by 5:00 PM (EST)
Answers Issued	April 5, 2024 by 5:00 PM (EST)
Responses Due	April 15, 2024 by 5:00 PM (EST)
Evaluation of Responses	April 2024
Interviews	May 2024
Selection Committee recommendation to Town Council	June 2024
Project Kick-Off	July 2024



Submittal Information

Responses to this RFQ shall include the information listed below and should be limited to a maximum of 10 single-sided pages. Responses exceeding 10 pages may be removed from consideration.

Transmittal/Cover Letter

- Provide the legal name, address, and telephone number of the firm along with the designated contact's name, title, email address, and telephone number.
- Include a statement attesting to the submittal's accuracy and signed by an individual authorized to execute binding legal documents for the firm.
- Communicate understanding of the scope and a brief description of your approach to perform the requested services.

Qualifications:

- A description of the firm(s) with emphasis on work related to Comprehensive Plans, Downtown Plans, Corridor Plans, Small Area Plans, or Utility Plans and associated public engagement programs in communities similar to Holly Springs in size, type, land uses, and key issues.
- The Firm's three (3) most recent projects, as related to the scope in this RFQ, on which principal staff that would be assigned to this project has worked. Describe the experience of the key staff members and the anticipated role they will have on this project. Examples of the three (3) most recent projects may be provided via web links.
- Project references with names and phone numbers of contact persons.

Statement of Project Approach - the approach to be used on this project, including the following information:

- Overall approach to the project.
- Scope of work.
- Project schedule.
- Project management.
- Innovative community engagement and public participation.

Management and Staffing

- Detailed outline of Consultant's management plan, including proposed staff, availability, roles/responsibilities.
- If sub-consultants will be utilized, a detailed explanation of the responsibilities of each firm.
- Identify key individuals to be assigned to this project and include the qualifications and intended responsibility of each of the identified individuals. Provide experience summaries, placing emphasis on previous experience with similar projects in similar roles. Provide resumes of key individuals, including licensure information if applicable. This will not be counted towards the response page limitation.

Additional appendices are not allowed. No work product, design, or costs/fees specific to



this project, may be submitted.

RFQ Questions

Respondents shall submit all questions, in writing, to Aaron Prichard, Senior Planner, at the e-mail address listed below. When submitting questions, please reference the solicitation name and number, as well as the page and section, if applicable. Question submissions are due by March 29, 2024. Questions submitted after the deadline do not require a response, though the Town will make reasonable efforts to provide clarification before the response deadline, if able.

Apart from questions submissions, respondents should refrain from contacting Town staff prior to the response deadline. The Town will post an addendum featuring answers to all questions received from interested parties on the Town's website at the link below no later than April 5, 2024. Link to Questions & Answers Addendum: www.hollyspringsnc.gov/327/Comprehensive-Plan

Submittal Instructions

Responses should be submitted electronically via Email to the contacts listed below by the response due date. Responses received after this deadline will not be considered.

All responses must be received by 4:00 PM (EST) on Monday, April 15, 2024.

Brettany DeVold Purchasing Manager brettany.devold@hollyspringsnc.gov	Aaron Prichard Senior Planner aaron.prichard@hollyspringsnc.gov
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Evaluation Criteria

Firms will be selected based on the provision of a full and complete submittal that demonstrates a track record of successful completion of comparable projects and that illustrates a commitment to a high-quality process and product. Inclusion of a dynamic and robust community and stakeholder engagement program is critical, as is a realistic and detailed project approach that clearly outlines a path for achieving the project goals within the proposed timeline. Consideration will also be given for innovative or otherwise exceptional concepts and approaches. The following factors will be used in evaluating Consultant responses and awarding of the contract:

Experience: 30%

- Experience and skills in preparation of basic elements of similar projects as found in accepted professional practice and based upon a list of related projects and submitted work samples.
- Specialized topic experience (e.g. land use, land planning/urban design, utility planning, etc.).
- Public participation: Demonstrated experience and skills in meaningful public participation to ensure that the community's vision is included within the plan.
- Key personnel: Relevant past work experience and years with the firm. Does the proposed team have all the necessary experience?
- Understanding of Local Conditions: Demonstrated understanding of State legal constraints and local conditions.

Overall Response and Approach: 30%

- What distinguishes this response and team from the others? Has the response demonstrated exceptional creativity and willingness to innovate (the "wow" factor). Does the approach present a well thought out strategy that is likely to achieve the desired end product and completion of all specified tasks? Are there innovative approaches to the project?

Related Projects: 15%

- Similarity to Holly Springs in size, type, land uses, and key issues.

Availability and Capacity of the Consulting Team: 15%

- Percentage of time devoted to this project by each key member of the project team. Does the makeup of the team and time devoted indicate a sufficient allocation of all required resources to complete the assignment? Are there minimum task/payment agreements with subcontractors? Evidence provided of availability, noting conflicting commitments.

Responsiveness: 10%

- Does the response respond to all of the requirements included in the RFQ?

The Town may, at its discretion, require respondents to furnish presentations or appear before the Town and/or its representatives for an interview or additional meetings. Respondents will be notified in advance of the time and format of such meetings, if applicable.



Selection

Firms will be selected on the basis of demonstrated competence and qualification for the services required.

The Town encourages minority firm participation.

A resident firm, defined as a firm that has paid unemployment taxes or income taxes and whose principal place of business is located in the state of North Carolina, shall be granted a preference over a nonresident firm.

No project specific work product, design or costs/fees, with the exception of unit price information, will be considered as part of the selection process.

Contract Award

Upon completion of response reviews and evaluations, if the Town has determined a suitable response, a contract will then be negotiated at a fair and reasonable fee with the best qualified firm. If a contract cannot be negotiated with the best qualified firm, negotiations with that firm shall be terminated and initiated with the next best qualified firm. All respondents will be notified of the contract award decision via email. The Town reserves the right to award all, none, or part of the services, which may be done with or without re-solicitation.

Additional Information

Town's Rights and Options:

The Town reserves the right, at the Town's sole discretion, to take any action affecting this solicitation, this solicitation process, or the services or facilities subject to this solicitation, that would be in the best interests of the Town, including:

- To supplement, amend, substitute, or otherwise modify this solicitation, including the schedule, or to cancel this RFQ, at any time;
- To require any respondent to supplement or clarify its submission or provide additional information relating to its response;
- To investigate the qualifications, experience, capabilities, and financial standing of each respondent submitting a response;
- To waive any defect or irregularity in any response received;
- To reject any or all responses;
- To share the responses with Town employees, as deemed necessary by the Town;
- To award all, none, or any part of the services and enter into contracts with one or more of the respondents deemed by the Town to be in the best interest of the Town, which may be done with or without re-solicitation;
- To discuss and negotiate with any respondents their response terms and conditions, including but not limited to financial terms; and



- To terminate discussions and negotiations with any respondent at any time and for any reason.

Accuracy of Solicitation and Related Documents:

Each respondent must independently evaluate all information provided by the Town. The Town makes no representations or warranties regarding any information presented in, or otherwise made available during this procurement process, and assumes no responsibility for conclusions or interpretations derived from such information. Additionally, the Town will not be bound by or responsible for any explanations or conclusions regarding this or any related documents other than those provided by an addendum issued by the Town. Respondents may not rely on any oral statement by the Town or its agents, advisors, or consultants.

If a respondent identifies potential errors or omissions in this or any other related documents, the respondent should immediately notify the contact listed in the Submittal Instructions section of such potential discrepancy, in writing. The Town may issue a written addendum if it determines correction is necessary.

Expense of Solicitation Process:

The Town accepts no liability and respondents will have no actionable claims for reimbursement of any costs or expenses incurred while participating in this solicitation process. This includes expenses and costs related to response submission, submission of written questions, interview attendance, contract negotiations, or activities required for contract execution.

Disclosures:

Confidentiality

Responses to the RFQ will become public records and, therefore, will be subject to public disclosure. However, North Carolina General Statutes Section 132-1.2 provides a method for protecting some documents from public disclosure. If the Consulting firm follows the procedures prescribed by those statutes and designates a document confidential or trade secret, the Town will withhold the document from public disclosure to the extent that is entitled or required to do so by applicable law, and will return the document after selection.

Equal Employment Opportunity

The Town of Holly Springs does not discriminate in administering any of its programs and activities. The consultant awarded the contract for work will be required to ensure that no person shall be denied employment, fair treatment or be discriminated against on the basis of race, sex, religion, age, national origin, or disability.

Contracting

Any contract developed for work shall be construed and enforced in accordance with the laws of the State of North Carolina. Any controversy or claim arising as a result of contracting shall be settled by an action initiated in the appropriate division of the General Court of Justice in Wake County, North Carolina.

Conditions and Limitations

The Town expects to select a consulting firm from the responses submitted, but reserves the right to reject any or all responses to the RFQ, to advertise for new responses, or to accept any response deemed to be in the best interest of the Town. A response to this RFQ should not be construed as a contract nor an indication of a commitment of any kind on the part of



the Town nor does it commit either to pay for costs incurred in the submission of a response to this request or for any cost incurred prior to the execution of a final contract. The Town will reserve the right to dismiss any part or all of the contracted team when, in the Town's opinion, the project is not moving as scheduled or is hindered in any way by the actions or personalities of team members.

Minority/Women/Small Business Enterprise

It shall be the practice of the Town of Holly Springs to provide minority-owned, women owned, and small business enterprises (collectively "M/W/SBE") as well as other responsible vendors with fair and reasonable opportunity to participate in the Town's business opportunities including but no limited to employment, construction development projects, and material/services consistent with the laws of the State of North Carolina. The policy of the Town prohibits discrimination against any person or business in pursuit of these opportunities on the basis of race, color, national origin, religion, sex, age, disability, or veteran's status. It is further the policy of the Town to conduct its contracting and procurement programs so as to prevent such discrimination and to resolve all claims of such discrimination.



Transmittal/Cover Letter

April 15, 2024

Ms. Brettany DeVold and Mr. Aaron Prichard
Town of Holly Springs
128 South Main Street
Holly Springs, NC 27540

Kimley-Horn and Associates, Inc.

300 Morris Street, Suite 200
Durham, NC 27701
TEL 919 682 3583

RE: Request for Qualifications (RFQ), Consulting Services for Vision Holly Springs Comprehensive Plan Update, RFQ #2024-0304

Dear Ms. DeVold, Mr. Prichard, and Members of the Selection Committee:

Kimley-Horn's work on the Holly Springs Comprehensive Transportation Plan gave us firsthand knowledge of the Town's growing pressures. On the heels of those efforts and faced with continued, unprecedented growth, it's a compelling time to update the Town's Comprehensive Plan sections detailing infrastructure and utilities, public facilities, and natural areas. This plan can shed light on the implications of growth while making growth more predictable, functional, and intentional. It also can help maintain the Town's focus on the things that matter and educate residents and stakeholders on the worth of proactive planning. For these reasons and more, **Kimley-Horn and Hazen and Sawyer (Hazen)** are eager to continue to serve the Town by collaboratively developing these Comprehensive Plan updates.

We take great pride in helping municipalities purposefully grow based on a shared vision. Our commitment to you is to help the Town of Holly Springs maintain a focus on the things that matter to the community while creating a credible and useful plan for staff, elected officials, boards, committees, stakeholders, residents, and potential investors. As you review our qualifications, please consider the following benefits the Kimley-Horn and Hazen team offers you:

- ✓ **Local Utility Experience.** The Kimley-Horn and Hazen team have served as trusted partners for the Town on many planning, study, and design projects. From treatment expansion, to area master plans, to development coordination—our team provides an unparalleled understanding of the Town's existing utility systems and future needs to align with the Town's vision. We have partnered with a trusted consultant, **Hazen**, who provides extensive experience and knowledge working with the Town.
- ✓ **Fostering Collaboration.** We take pride in building public awareness of the planning process. By bringing multiple voices to the table, we generate meaningful input and show residents and stakeholders the influence of their participation. When engaging with your community, we have direct experience about what works and what doesn't, helping result in successful project outcomes.
- ✓ **Full-Service Team.** In addition to our experienced utilities teams, **Kimley-Horn** offers additional in-house resources in planning, stormwater, transportation, parks and recreation, and environmental scientists, which allows you to get people with the right skill sets where and when you need them.
- ✓ **Applying Lessons Learned.** Our recent comprehensive planning efforts with growing municipalities and our firsthand knowledge working in the Town of Holly Springs have prepared us for this moment. You get a team that understands the special dynamics of the Town and can respond accordingly.

The Kimley-Horn team is excited about the opportunity to continue serving the Town on this important project. We are passionate about client service and helping meet our clients' needs. You have come to know that from us! Thank you for your consideration of our qualifications.

Sincerely,

KIMLEY-HORN



👤 Nolan Raney, P.E., Project Manager/Designated Contact

📞 919 653 6625 ✉️ nolan.raney@kimley-horn.com



👤 Chad Beck, P.E., Principal-in-Charge, Authorized Signer

📞 919 677 2196 ✉️ chad.beck@kimley-horn.com

Kimley-Horn attests the submittal is accurate and signed by an individual authorized to execute binding legal documents for the firm.

Qualifications

KIMLEY-HORN

Kimley-Horn is a national planning and design consulting firm specializing in community and transportation planning. Founded 56 years ago in 1967, we have a staff of **more than 7,400** that serves numerous clients across many disciplines from **125+ offices** nationwide. Our multidisciplinary experience covers various services within transportation planning and engineering, landscape architecture and urban design, environmental planning and design, and public policy. Our planning team sits in Charlotte and Raleigh, our headquarters, to best serve growing communities across the Carolinas. Additionally, our utilities team based in Durham has worked closely with public and private clients across the Triangle to study, plan, and implement improvements that meet the Triangle's growing needs.

Kimley-Horn's planners, urban designers, and engineers have a history of partnering with communities to develop progressive and context-sensitive plans. We strive to understand the values of each community we serve and transform them into a vision that guides the planning process. Understanding the importance of diverse experiences, we intentionally partner with professionals of various backgrounds to create the opportunity for visionary thinking with a focus on implementation.

We continually seek ways to integrate planning recommendations with other community initiatives and mandates. Our skill for understanding context enables us to craft specific solutions based on local character. Understanding how infrastructure interfaces with the environment and community needs is a cornerstone of our approach.

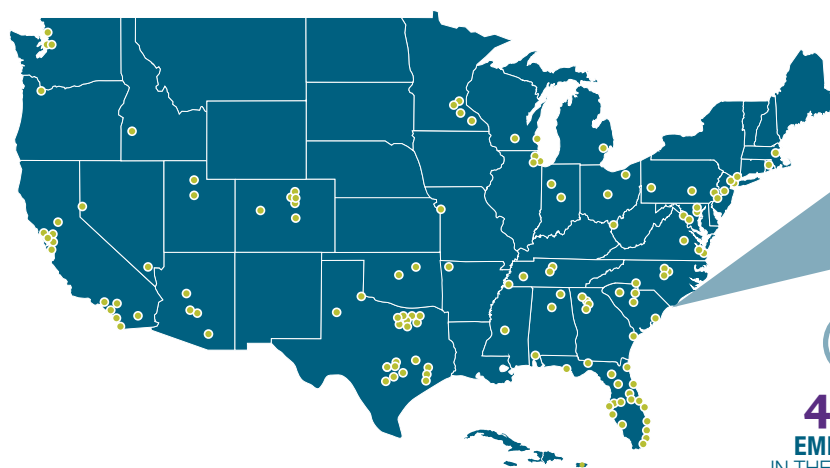
At Kimley-Horn, we do things differently. Clients are at the forefront of our business and they know we are laser-focused on their success. With Kimley-Horn, they can expect more and experience better.

The firm's holistic approach to the planning process emphasizes:

- True engagement of the public and stakeholders
- Integration of land use and infrastructure
- Collaboration among people from different backgrounds
- An analytic foundation for decision making
- Consensus-building
- Identification of realistic and implementable solutions
- Equity and fairness
- Environmental stewardship
- Guide growth and development for the future


125+
OFFICES
NATIONWIDE


7,400+
EMPLOYEES
NATIONWIDE




450+
EMPLOYEES
IN THE CAROLINAS


8
OFFICES
IN THE CAROLINAS

HAZEN

Hazen is a nationally recognized consulting firm focused on providing safe drinking water and water pollution control services—water is all they do. The firm has completed several thousand water, wastewater, and stormwater assignments in the United States and abroad for government agencies, utilities, and industrial organizations. These have ranged in scope from simple analyses for small communities to multi-municipal, multi-million-dollar projects. Hazen has grown steadily over the years, from the original six-person office established in 1951 by Richard Hazen and Alfred W. Sawyer to their present staff of over 1,800 employees.

Hazen is committed to working with our clients to provide cost-effective, optimal solutions to their engineering needs. They are dedicated to excellent communication and exceptional service for each client. Their success is confirmed by their high rate of client satisfaction.

RECENT PROJECT EXPERIENCE



- 1 Street Trees
- 2 Landscaping Beds
- 3 Travel Lanes
- 4 Lighting
- 5 Walkway
- 6 Dining Zone
- 7 Furnishings
- 8 On-Street Parking/Loading Zone
- 9 Street Presence from Buildings
- 10 Materials and Finishes
- 11 Wayfinding

Team Members and Roles

Kristina Whitfield, P.E., AICP—Project Manager

Allison Fluitt, P.E., AICP—Project Engineer

Jonathan Whitehurst, AICP—Project Planner

HOLLY SPRINGS COMPREHENSIVE TRANSPORTATION PLAN (CTP)

HOLLY SPRINGS, NC

Kimley-Horn recently completed the CTP for the Town of Holly Springs. As an area in the path of growth, the Town is continually trying to adapt to rapidly changing conditions. The CTP included a series of hot spot corridors and safety locations to prepare for near-term funding and implementation, pedestrian walkshed analyses, exploring transit service options, traffic impact analysis (TIA) development guidance, and streetscape design guidelines. A robust public engagement effort yielded unprecedented participation levels in the community. **The Holly Springs CTP won a first-place award from the American Planning Association's North Carolina Chapter.**

Sean Ryan 919 557 2903 sean.ryan@hollyspringsnc.gov



Team Members and Roles

Nolan Raney, P.E.—Project Engineer

Nate Harvey, P.E.—Project Engineer

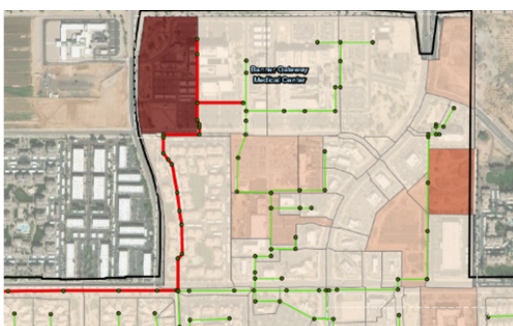
James Hennessy, P.E.—Project Engineer

EAST DURHAM WATER AND SEWER REHABILITATION PROJECT AND BELT STREET STORMWATER

DURHAM, NC

Hazen and Kimley-Horn partnered to evaluate approximately 68,500 linear feet (LF) of waterlines, 56,000 LF of sanitary sewer lines, and 9,000 LF of stormwater pipes in the project area. Utilities were evaluated for condition and capacity based on projected growth in this urban area of Durham. Additionally, the relocation of an existing water transmission main that overlaps with the proposed Greater Triangle Commuter Rail alignment was studied. The results included phased construction of recommended water, sanitary sewer, and stormwater improvements.

Harmon Henderson 919 560 4381 ex35285 harmon.henderson@durhamnc.gov



Team Members and Roles

James Hennessy, P.E.—Digital Solutions Lead

John Sorrell, P.E.—Sewer Modeling Lead

Rebecca Cramer, P.E.—Water Modeling Lead

INTEGRATED WATER RESOURCES MASTER PLAN

GILBERT, AZ

Hazen performed a critical update to the Town's Integrated Water Resources Master Plan (IWRMP) covering potable water, wastewater, and reclaimed water distribution systems. This project enhanced dynamic hydrologic and hydraulic models of the water, wastewater and reclaimed water systems; trigger based 5-, 10-, 15-year and buildout capital improvements programming; fully digital master plan for internal and external consumption; and dynamic dashboard tools for management and operations. This plan received the **2023 Arizona Water System Project of the Year Award.**

Jason Montgomery, P.E. 480 503 6862 jason.montgomery@gilbertaz.gov

Statement of Project Approach

INNOVATIVE APPROACH TO THE PROJECT

Project Understanding

It has been nearly 15 years since the last Town of Holly Springs' last update to the Comprehensive Plan Section on Infrastructure and Utilities. During that timeframe, much has changed—the Town and greater Triangle region have experienced significant growth, NC 540 continues to provide improved access across all of the Triangle, and the Town's vision for growth has continued to evolve.

In recent years, the Town has updated multiple sections of its comprehensive plan, **"Vision Holly Springs,"** and now desires updates to incorporate infrastructure and utilities sections into the Comprehensive Plan. Sections focused on community facilities and natural areas also may be included in the requested update.

Through involvement on previous plans, including the **Northwest Area Master Plan, Comprehensive Transportation Plan,** and numerous other **utility planning and design** tasks, the Kimley-Horn and Hazen team has been a trusted partner for the Town for many years and is best positioned to assist the Town with these updates.

Project Approach

Project Work Plan

Our team will prepare a detailed project work plan that charts the path forward to meet the goals of each plan section to be updated. Project contacts, communication protocols, and schedules/timelines will be discussed as part of this task.

Kickoff Meeting

A project kickoff meeting with key Town and consultant team members will be held to review the project's goals, schedule, and path forward. The current **CommunityViz** model will be reviewed, and any necessary updates will be coordinated.

Project Management and Team Coordination

Biweekly coordination calls and/or conference calls will be held throughout this project for key Town/consultant staff members, in addition to monthly meetings with a broader advisory/working group. Agendas for these meetings will include relevant topics, including project milestone updates, upcoming outreach activities, and specific project tasks.



Our project management approach consists of the following proven fundamentals:

- Develop a clear understanding of what the project is to accomplish (what products and services we will deliver)
- Develop a comprehensive work plan and schedule to accomplish the project goals (when we will deliver)
- Set weekly milestones (more manageable) that support the larger milestones
- Review milestones with the project team on a weekly basis
- Involve stakeholders as integral members of the team
- Coordinate with other consultants
- Create an atmosphere that encourages clear communications and teamwork

Throughout this project, we will provide you:



Effective and Regular Communication: You will not need to ask the status of a task or project, as you will be provided with regular status updates.



Responsiveness with Town Requests: Whether to respond to a project issue or question, or to follow up on a scope and fee proposal, we will provide the Town with quick response times.



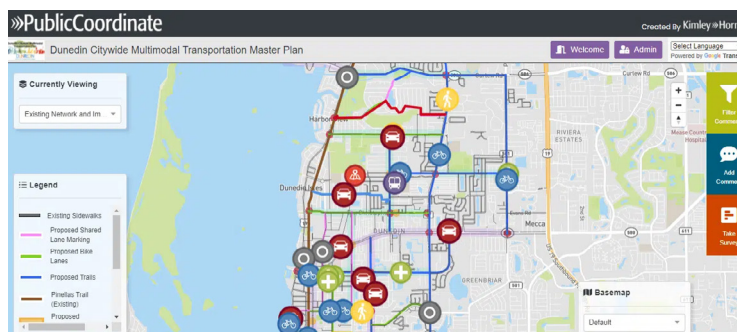
Meeting the Project Schedule: This is taken seriously by our project managers and we have a successful track record for meeting project schedules.

Community Engagement

Our team understands that broad-based community engagement is critical for development of the Vision Holly Springs Comprehensive Plan. The **Kimley-Horn** and **Hazen** team will draw on recent Town outreach/public engagement experiences to develop a community engagement plan that focuses on clear and effective communication with project stakeholders and the public.

Below are key considerations for community engagement:

- ✦ A project advisory group consisting of consultant technical experts, Town staff, and key community stakeholders will be developed to guide the outreach efforts.
- ✦ **PublicCoordinate**, a proprietary Kimley-Horn tool that is being used on other Town projects to help streamline communication and data collection, will be used to enhance community engagement. This customizable interactive map can be used to inform, consult, or collaborate with the public.
- ✦ Online surveys, polling, websites, and social media can be used to further enhance comment volume and diversity of data.
- ✦ Meetings, work sessions, or other targeted outreach with elected officials or key stakeholders will be scheduled at key milestones throughout the visioning process.
- ✦ A mix of pop-ups at community events, townwide public meetings, and other community workshops will be planned. The Holly Springs Farmers Market, a table at Bass Lake Park, or a Salamanders game could all be ideal locations for public outreach.
- ✦ Consistent branding on all materials—from fact sheets, to web pages, to social media posts—is important for developing universal recognition and cohesion.



Work Products

The team will create a variety of work products to be used during meetings, as part of public outreach, for staff review, and as otherwise requested. An educational aspect to outreach could be incorporated into the outreach efforts. For example, a brief overview of how water systems operate could help the public better understand why the location (and elevation) of elevated water storage tanks is critical!

Plan Documents

Our team understands that updated sections to the comprehensive plan should be:

- ✦ Developed with a clear vision.
- ✦ Easy to access via the Town website.
- ✦ Easy to read/understandable to the general public.
- ✦ Of a reasonable page length.
- ✦ Free of excess information.
- ✦ Inclusive of graphical methods for presenting content.
- ✦ Plan documents will be developed understanding these concepts, while also meeting Town standards and requirements.

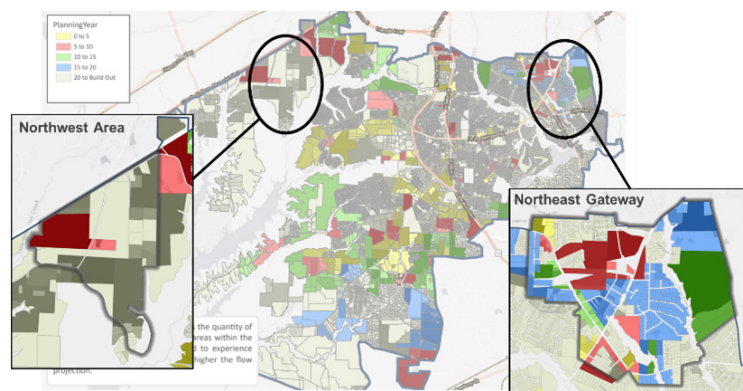
SECTION 5: INFRASTRUCTURE AND UTILITIES

Below is a summary of key aspects and the approach for primary Section 5 components, including CommunityViz updates, sanitary sewer, water, reclaimed water, stormwater, fiber optic, and water meter reading technology expansion. For each system, the team will:

- ✚ Review existing systems to evaluate capacity and service areas.
- ✚ Develop 5-, 10-, and 20-year capital improvement plans (CIP), schedules, and funding options.
- ✚ Determine future system needs based on projected growth in alignment with the Town's strategic goals and objectives.
- ✚ Review system efficiencies, treatment/storage facilities, and consistency with sustainability initiatives.
- ✚ Identify undersized system components that require improvements.

Population, Water Demand, and Wastewater Flow Forecast

The Central Pines Regional Council (CPRC), in partnership with the North Carolina Capital Area Metropolitan Planning Organization (CAMPO), developed several iterations of population and employee projections for the Town and its surrounding areas. Population projections from the Office of State Budget and Management (OSBM), local jurisdiction future land use planning, and regional coordination efforts were incorporated into the CAMPO analysis. Hazen has used this most recent effort by CPRC as a baseline for population and employment, which was then converted to water and sewer demands as a baseline for the Uteley Creek Wastewater Reclamation Facility (UCWRF) expansion preliminary engineering report (PER) and the draft Regional Water Supply Requirements Forecast submitted in February 2024 for the Triangle Regional Water Supply Plan. Hazen modified the original projections from 2021 to include the latest projections for known industrial facilities, the Northeast Gateway Master Plan, and updated according to the Town's development mapping for proposed, approved, and planned developments. In coordination with the Town, the project team will make necessary revisions to the existing projections to help ensure the most recent data is accounted for. If found to be necessary to re-run the CommunityViz model, the project team will coordinate with the Town to make sure the model output appropriately captures the Town's vision in Section 1: Land Use & Character Plan of the Comprehensive Plan.



Areas of special interest during the UCWRF 2023 PER flow projections update.

Sanitary Sewer

The Town has been proactively planning phased expansions at the UCWRF to increase sanitary sewer treatment capacity. In addition to the expansion from 6 million gallons per day (MGD) to 8 MGD, the project team also has assisted the Town by developing an alternatives analysis for the plant, including future expansion to 15 MGD and discharge alternatives for UCWRF, including a new discharge south of Buckhorn Dam.

In addition to treatment, planning for providing the wastewater infrastructure network of gravity sewer, pump stations, and force mains to serve local sub-basins has been a focus as the Town continues to experience significant growth. In the summer of 2023, the **Water Resource Management Policy** was implemented as a tool used to allocate capacity when key requirements are met. **John Sorrell, P.E.** and the team are well suited to discuss any recommendations for modifications to this policy.

As part of the previous Comprehensive Plan adopted in 2009, numerous regional pump station sites and upgrades to existing pump stations were proposed based on projected growth at that time. Through direct experience with the Town and ongoing coordination since the original plan's development, the Kimley-Horn and Hazen team is suited to provide guidance and recommendations based on current and projected development. Our team will partner with Town staff to adjust existing/proposed pump station improvement recommendations based on recent and currently projected growth, while reviewing opportunities for pump station consolidation and abandonment. Through development reviews and the work on the **Northwest Area Master Plan**, Hazen has coordinated with **Friendship Development** to look at regional pump station and force main alternatives to eliminate the need for multiple small pump stations in the basin. This analysis of consolidating pump stations should be applied systemwide.

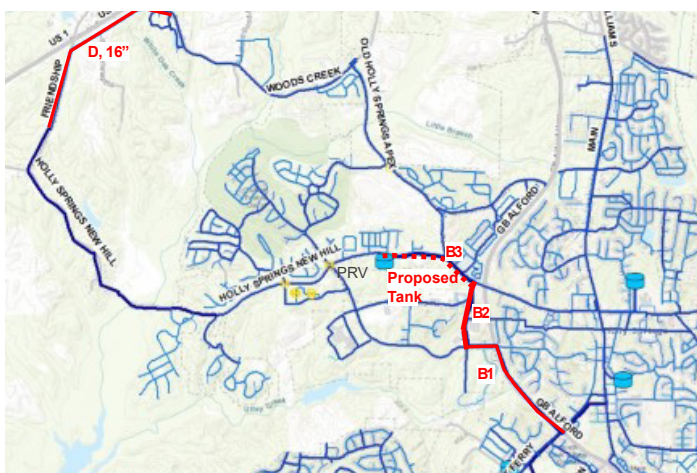


Water Distribution

Hazen has served as an extension of the Town's staff since the inception of the hydraulic model in 2012. Since then, Hazen has completed two model updates and reviewed over 160 development submittals for fire flow analyses—giving Hazen unparalleled institutional knowledge of the hydraulic performance of the water system. Historic knowledge of the Town's system combined with Hazen's efforts for future planning, provide the basis necessary to support the Town in visioning a holistic and clear path forward within the Comprehensive Plan.

Hazen brings insights collected from prior planning efforts, including the Northwest Area Master Plan, planning and design of the future transmission main from the City of Sanford, improvements to increase capacity from Harnett Regional Water, and interconnection studies through the Triangle Water Partnership.

While much of the system has been evaluated in local areas, a holistic approach to evaluating future conditions will provide a comprehensive outlook for the system. Areas of growth, such as the Rex Road area to the south and the Northeast Gateway, will be closely evaluated to make sure adequate infrastructure sizing and redundancy are thoughtfully planned. Clear documentation of future conditions will provide the Town a tool to communicate what is necessary to maintain a high level of reliable service in the future.



Hazen provided comprehensive recommendations to adequately convey water to serve the existing and future large industrial demands in the Northwest Area and Carolina Springs development.

Reclaimed Water

The Town is currently conducting a Reclaimed Water Master Plan (RWMP) to understand the existing conditions and future expansion of the system. In parallel, Hazen is designing the expansion of the

UCWRF and is in close coordination with the consultant completing the RWMP to help ensure the WRF can accommodate needed ground storage. We will coordinate with the RWMP consultant to help ensure the Comprehensive Plan evaluates necessary improvements at the WRF and allows for future conditions of the reclaimed system.

Stormwater

The Kimley-Horn team is well equipped to address any aspect of the modeling and planning of these projects. Our team is well versed in a variety of software packages such as HECRAS 1D and 2D, SWMM, StormCAD, and GEOPAK drainage. Our team specializes in modeling and design for flood reductions in complicated systems with multiple storm inputs, road crossings, and riverine areas. Our team has worked on various surface water projects for public and private clients involving roadway, site development, greenway, stream restoration, regional detention, and other projects that give our team a special perspective to develop projects that consider all the aspects of flooding and creative ways for solving the issues. The proposed stormwater lead, **Travis Crissman, P.E.**, has the technical and planning experience for a wide range of surface water projects. Travis specializes in providing a specialized approach to solving flooding issues bringing a natural systems background to the team.

Fiber Optic

Fiber optic design is among Kimley-Horn's key strengths in technology and transportation systems. Using a pool of highly talented systems, software, and electrical engineers, these projects require a broad-scale vision and a depth of experience in assisting local, regional, and state agencies in identifying and prioritizing their transportation deficiencies and in finding solutions to those transportation problems from a systems analysis perspective. Our engineers have designed thousands of miles of fiber optic networks, prepared design plans for thousands of new traffic signal installations and performed hundreds of technology assessments for clients to capture specific user needs and present them with sound and available technologies. Our proposed fiber optic lead, **Todd Ireland, CET** has led and been part of the team for many of these projects—locally and throughout the nation.

Meter Infrastructure

We understand the Town's existing metering system uses master meters on a fixed network and uses Harmony Encore MDM Software with three base stations on the tanks and 14 repeaters in the system, currently set to read twice a day. Through the Town's WaterSmart interface, customers can observe real-time leak/burst detection. This technology is currently managed through the finance department. **Jayson Page, P.E.**, an expert in evaluating and deploying similar systems, will lead the effort to provide

recommendations for improvements to the existing system and leverage the data collected across departments. For example, the technology implemented allows for hourly meter reading. This data can be leveraged during model calibration to help ensure the diurnal patterns of the Town's large industrial users are properly accounted for.

SECTION 4: COMMUNITY FACILITIES

Kimley-Horn's approach for updating **Section 4: Community Facilities** to meet the Town's current and future needs follows the same approach previously described. This approach will help the Town of Holly Springs make informed choices regarding the location and scale of future community facilities, making sure they adequately serve the needs of a growing population. Key aspects regarding the Community Facilities approach include:

- ✦ **Goal Setting**—Establishing clear and measurable goals for public safety facilities, solid waste facilities, and town operations/administration facilities based on input from stakeholders and an analysis of existing conditions. Goals may include enhancing emergency response times, improving waste management efficiency, and optimizing town operations for better service delivery.
- ✦ **Policy Development**—Formulating policies that align with the identified goals and address the specific needs of Holly Springs. Policies may focus on criteria for the location and design of future fire and police stations, strategies for waste reduction and recycling, and guidelines for efficient town operations.
- ✦ **Objective Setting**—Defining specific objectives and strategies to achieve the established goals and implement the identified policies. Objectives may include identifying suitable sites for future public safety facilities, establishing protocols for emergency preparedness and response, and implementing sustainable waste management practices.
- ✦ **Implementation Measures**—Developing feasible implementation measures and action plans to guide the execution of the objectives. Implementation measures may include conducting site assessments for potential facility locations, securing funding sources for construction and operation, and establishing partnerships with neighboring jurisdictions for shared services.
- ✦ **Monitoring and Evaluation**—Establishing mechanisms for ongoing monitoring and evaluation to track progress towards achieving the goals and objectives outlined in the updated Comprehensive Plan. Regular reviews and updates ensure that the plan remains responsive to evolving community needs and priorities.

SECTION 6: NATURAL AREAS

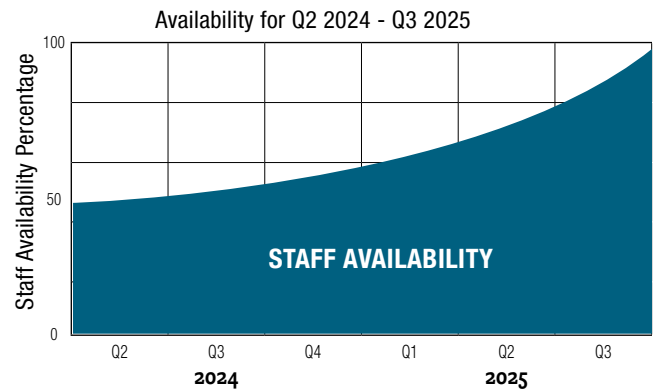
Kimley-Horn's approach for updating **Section 6: Natural Areas** will inform decision-making and help ensure alignment with anticipated development patterns while identifying opportunities to integrate natural areas into the Town's growth and development strategies. Key aspects regarding the Natural Areas approach include:

- ✦ **Goal Setting**—Establishing clear and measurable goals for the preservation, restoration, and enhancement of natural areas and additional priorities based on input from stakeholders and analysis of future land use maps and growth models. Goals may include expanding land conservation areas, creating wildlife corridors, restoring degraded streams, identifying and protecting important natural features, enhancing tree canopy coverage, and implementing sustainable urban forest management practices.
- ✦ **Policy Development**—Formulating policies that align with the identified goals and address the specific needs of Town's natural areas. Policies may focus on land use zoning regulations to protect critical habitats, incentives for private landowners to participate in conservation programs, guidelines for stream restoration projects, and requirements for tree preservation and replanting in development projects.
- ✦ **Objective Setting**—Defining specific objectives and strategies to achieve the established goals and implement the identified policies. Objectives may include conducting biodiversity assessments to identify priority conservation areas, establishing conservation easements or greenway corridors to connect fragmented habitats, implementing stormwater management practices to improve water quality and habitat conditions, and promoting community engagement and education on the importance of natural resource conservation.
- ✦ **Implementation Measures**—Developing feasible implementation measures and action plans to guide the execution of the objectives. Implementation measures may include acquiring and protecting priority conservation lands, partnering with land trusts and conservation organizations to implement habitat restoration projects, enacting regulations to mitigate the impacts of development on natural areas, and establishing monitoring programs to track progress towards achieving conservation goals.
- ✦ **Monitoring and Evaluation**—Establishing mechanisms for ongoing monitoring and evaluation to track progress towards achieving the goals and objectives outlined in the updated Comprehensive Plan. Regular reviews and updates help make sure the plan remains responsive to evolving community needs and priorities and that natural areas and additional priorities continue to be effectively managed and protected.

AVAILABILITY AND ALLOCATION OF REQUIRED RESOURCES

Our team has analyzed our current workload and determined that the proposed staff will be readily available for this project. Kimley-Horn uses a workload forecasting technique called “cast-aheads” to determine staff availability before proposing on a particular contract. It involves meeting with relevant department managers and staff to examine the backlog, upcoming deadlines, production schedule, and several other factors.

Many years of successfully completed projects prove that this system works. Our project management team will be readily available throughout the entirety of this project and our proposed team is supported by more than 630+ team members in our North Carolina offices and more than 7,600 people firmwide. We are committed to meeting or exceeding your project goals.



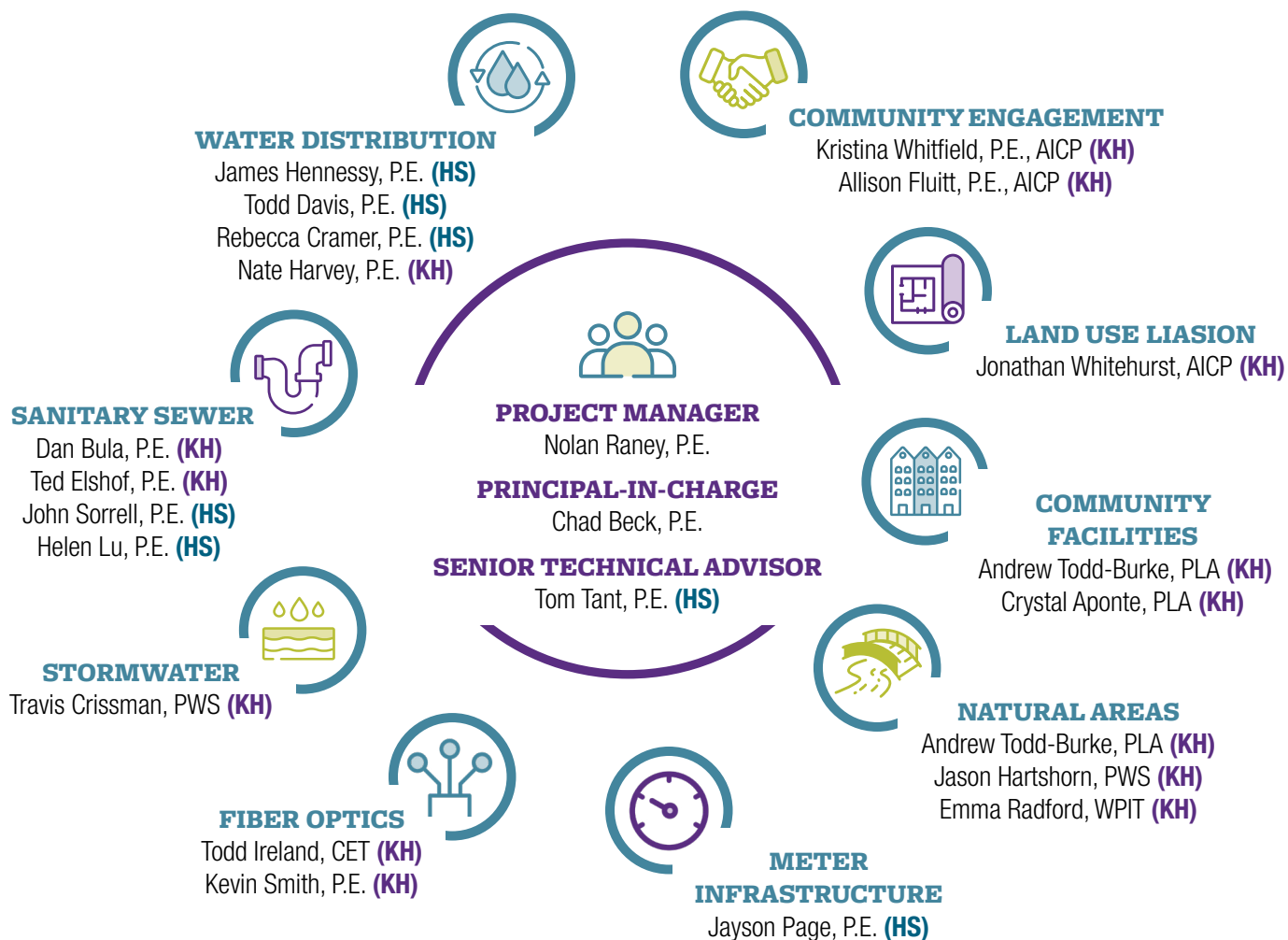
PROJECT SCHEDULE

Task	2024										2025							
	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
RFQ Deadline	★																	
Anticipated Town Selection		★																
Contract Negotiating and Approval																		
Anticipated NTP					★													
Project Administration																		
Project Work Plan																		
Kickoff Meeting					★													
CommunityViz Reviews																		
Branding/Communication Material Prep																		
Project Management/Coordination																		
Section 5: Infrastructure and Utilities																		
Review Existing Systems																		
Identify Future System Needs/Improvements																		
CIP Plan Development																		
Advisory Group/Public Outreach																		
Section 4: Community Facilities and Section 6: Natural Areas																		
Review Future Land Use Map/Growth Models																		
Document Town Goals/Priorities																		
Identify Future Needs/Improvements																		
Advisory Group/Public Outreach																		
Documentation																		
Draft Plan Updates																		
Finalize Plan Updates																		
Adoption																	★	

Management and Staffing MANAGEMENT PLAN

Our key staff members' primary focus is the successful execution of your project. The Town can be assured all primary, backup, and support staff identified in this proposal are the individuals who will work on the project, day-in and day-out. If any unforeseen circumstance should arise that would prohibit a team member from carrying out their duties, we will promptly notify the Town and present alternate resources of a similar experience level from our deep bench of qualified professionals. **The availability, roles, and responsibilities for each team member can be found in the Resumes section beginning on page R-1.**

ORGANIZATIONAL CHART



Responsibilities of Subconsultant

Hazen will provide water distribution and sanitary sewer engineering/planning services. Hazen helps clients address water supply and water quality challenges with solutions tailored to deliver lasting benefits to the communities they serve. **Kimley-Horn does not have a minimum task/payment agreement with Subcontractors, but are committed to assigning staffing resources to each task that are in the best interest of the Town.**

KEY TEAM MEMBER RESUMES



PROFESSIONAL CREDENTIALS

B.S., Civil Engineering, Iowa State University

Professional Engineer in NC

OFFICE LOCATION

Durham, NC

NOLAN RANEY, P.E.

Project Manager

Nolan offers 18 years of experience and serves as a project manager and engineer on diverse water resources projects, assisting with all aspects of engineering and management. With a focus on utility relocation projects ranging from 4" to 48" pipes, he specializes in routing studies, design, and construction administration for municipal utility projects. Nolan's experience across the state encompasses the preparation of preliminary engineering reports, collection and distribution system design/rehabilitation, and complex regulatory permitting.

Relevant Experience

- East Durham Water and Sewer Rehabilitation Project and Belt Street Stormwater, Durham, NC
- AC Waterline Replacement, Durham, NC
- Orange Water And Sewer Authority (OWASA), Sanitary Sewer Aerial Stream Crossings Rehabilitation/Replacement, Chapel Hill, NC
- Downtown Loop Water Line Replacement and Water Meter Upgrades, Durham, NC
- Hillandale Road Dual Waterline Replacement, Durham, NC



PROFESSIONAL CREDENTIALS

B.S., Civil Engineering, North Carolina State University

Professional Engineer in NC

OFFICE LOCATION

Raleigh, NC

CHAD BECK, P.E.

Principal-in-Charge

Chad has 22 years of experience in roadway design and construction oversight, working on projects for the Federal Highway Administration (FHWA) Eastern Federal Lands Highway Division, North Carolina Department of Transportation (NCDOT), the National Park Service (NPS), and numerous municipal agencies, including several with the City of Durham and Town of Chapel Hill. He has served as project manager for roadway projects with construction budgets in excess of \$5 million.

Relevant Experience

- Comprehensive Transportation Plan, Holly Springs, NC
- Holly Springs Road Widening, Holly Springs, NC
- NC 55/Avent Ferry Road Superstreet, Holly Springs, NC
- Main Street Sidewalk, Holly Springs, NC
- Bass Lake Outfall Greenway, Holly Springs, NC
- Friendship Site Selection and Friendship Road/US 1 Interchange Environmental Screening and Conceptual Roadway Design, Holly Springs, NC
- Lakewood Avenue Sewer and NC-54 Waterline Replacements, Durham, NC
- American Tobacco Phases 1-2 Waterline Replacements, Durham, NC
- Buchanan Boulevard Waterline Replacements, Durham, NC
- Downtown Loop Waterline Replacement and Water Meter Upgrades, Durham, NC



PROFESSIONAL CREDENTIALS

M.S.; B.S., Civil Engineering,
North Carolina State University

Professional Engineer in NC,
District of Columbia, MD, NY, TX,
and VA

OFFICE LOCATION

Raleigh, NC

TOM TANT, P.E. (HAZEN)

Senior Technical Advisor

Tom is the mid-Atlantic conveyance group lead for Hazen and an expert in the planning, routing, design, rehabilitation, replacement, and construction of water and wastewater conveyance systems. His experience ranges from planning and designing pipes and mains, storage facilities and pump stations. Tom's projects have included rehabilitation; trenchless crossings, including directional drills; siphons; and subaqueous terminations. He has extensive experience in water and wastewater pumping, and has designed everything from small booster pumps to large raw, finished, and wastewater pumping stations, as well as elevated storage.

Relevant Experience

- Inspection and Evaluation of Sanitary Sewer Pump Stations, Holly Springs, NC
- Water Distribution System Model Update 2016 and 2020, Holly Springs, NC
- UCWRF Expansion, Holly Springs, NC
- Water System Master Plan, Holly Springs, NC
- Fire Flow Assessment Review, Holly Springs, NC
- Water Conveyance System for City of Sanford WTP, Fuquay-Varina, NC
- Regional Water and Wastewater Infrastructure Master Plan—US 421 Corridor, DEQ, NC



PROFESSIONAL CREDENTIALS

B.S., Civil Engineering, North
Carolina State University

Professional Engineer in NC

OFFICE LOCATION

Raleigh, NC

JAMES HENNESSY, P.E. (HAZEN)

Water Distribution Lead

James brings 11 years of experience in the conveyance practice group and over 6 years developing, managing, and delivering digital solutions for master planning, water demand and sewer flow forecasting, distribution sampling and flushing, capital planning, and condition assessments. His recent work includes distribution and collection system master planning, regional infrastructure projects, including multiple utility stakeholders, and preliminary engineering and design of conveyance projects.

Relevant Experience

- Asset Inventory and Assessment, Holly Springs, NC
- Water Distribution System Model Update 2016 and 2020, Holly Springs, NC
- Northwest Area Master Plan, Holly Springs, NC
- Integrated Water Resources Master Plan, Gilbert, AZ
- Fire Flow Assessment Review, Holly Springs, NC
- Engineering Special Studies—Sewer Study Review, Holly Springs, NC
- Inspection and Evaluation of Sanitary Sewer Pump Stations, Holly Springs, NC
- UCWRF Expansion, Holly Springs, NC
- Regional Water and Wastewater Infrastructure Master Plan—US 421 Corridor, DEQ, NC

James' many projects with the Town has given him exceptional familiarity with your water and wastewater infrastructure."



PROFESSIONAL CREDENTIALS

B.S., Mechanical Engineering,
University of South Carolina

Professional Engineer in NC

OFFICE LOCATION

 Apex, NC

Todd has worked with the Town for many years. He knows your staff, is familiar with your infrastructure, and understands your policies and preferences.”



PROFESSIONAL CREDENTIALS

M.S., Engineering, North Carolina
Agricultural and Technical
State University

B.S., Chemistry, University of
Michigan-Flint

Professional Engineer in NC, IL,
MI, and WI

OFFICE LOCATION

 South Holland, IL

TODD DAVIS, P.E. (HAZEN)

Water Distribution

Todd is an expert modeler with significant water and wastewater conveyance assessment and design experience. His field experience includes hydraulic grade line, C-factor, fire flow, and pump testing for model calibration and confirmation.

Relevant Experience

- Water Distribution System Master Plan 2012, Holly Springs, NC
- Fire Flow Assessment Review, Holly Springs, NC
- Water Distribution System Master Plan, Raleigh, NC
- Water Distribution System Master Plan Study, Havelock, NC
- Engineering Special Studies—Sewer Study Review, Holly Springs, NC
- Regional Interconnection Model Update, Triangle Water Partnership, NC
- Water Distribution System Master Plan Study, Pamlico County, NC
- Water Distribution System Master Plan Study, First Craven Sanitary District, New Bern, NC
- Water Distribution System-Master Study, Rockville, MD

REBECCA CRAMER, P.E. (HAZEN)

Water Distribution

Rebecca has served as the lead hydraulic modeler for the Town since 2019, providing extensive knowledge of the Town's distribution system. Her experience includes model development and calibration, demand projections, collection system analysis, and CIP development.

Relevant Experience

- Water Distribution System Model Update 2020, Holly Springs, NC
- Integrated Water Resources Master Plan, Gilbert, AZ
- Review of Development Submittals for Fire Flow Capacity, Holly Springs, NC
- Fire Flow Assessment Review, Holly Springs, NC
- Water Conveyance System from City of Sanford WTP, Fuquay-Varina, NC
- Water Master Plan, Cape Fear Public Utility Authority, NC
- Water Distribution Master Plan Update, Hendersonville, NC
- 600 Zone Capacity Analysis, Loudoun Water, VA
- On-Call Modeling, Hendersonville, NC
- ISO Modeling, New Hanover County Fire and Rescue, Wilmington NC



PROFESSIONAL CREDENTIALS

M.S., Civil Engineering, North Carolina State University

B.S., Civil Engineering, North Carolina State University

Professional Engineer in NC

OFFICE LOCATION

Durham, NC

NATE HARVEY, P.E.

Water Distribution

Nate's 15 years of experience in water and sewer study design and construction provides him with a valuable perspective throughout all project phases. He brings a high level of detail and an eye for quality without losing focus on bigger picture concerns, such as maintaining system viability and mitigating the effects of design choices. Nate is skilled in working with clients to navigate difficult situations and find solutions that meet the client's overall goals.

Relevant Experience

- East Durham Water and Sewer Rehabilitation Project and Belt Street Stormwater, Durham, NC
- Kildaire Farm Road Design-Build Watermain Reinforcement, Cary, NC
- Upper Walnut Creek Interceptor, Raleigh, NC
- NCDOT-Raleigh Water, Utilities Relocation Project Management, Raleigh, NC
- Water/Sewer Relocation for Blue Ridge Road Improvements, Raleigh, NC
- NCDOT Utilities Design Engineering Limited Service Contract (LSC), Statewide, NC
- Water/Sewer Replacements for Triangle Lake Road Improvements, High Point, NC
- Western Regional Sewer System, Jacksonville, NC
- Water Relocation for Black Creek Pedestrian Bridge, Cary, NC



PROFESSIONAL CREDENTIALS

B.S., Civil Engineering, University South Carolina

Professional Engineer in NC and SC

OFFICE LOCATION

Durham, NC

DAN BULA, P.E.

Sanitary Sewer Lead

Dan offers a high degree of organization, articulate communication, consensus building, and an understanding of clients' objectives. His ability to coordinate resources, facilitate discussions, and ultimately reach a consensus is what turns his challenging projects into success stories. Dan's 11 years of experience with water resources projects have developed him into a successful project manager at Kimley-Horn. He plays an integral role in preliminary engineering reports, design of distribution and collection systems, regulatory permitting, and construction administration.

Relevant Experience

- FY21 Lift Station Improvements Project, Durham, NC
- Walnut Creek Pump Station Expansion, Cary, NC
- Western Regional Pump Station, Jacksonville, NC
- Farmville Road Booster Pump Station, Shelby, NC
- Upper Walnut Creek Interceptor, Raleigh, NC
- Downtown Loop Water Line Replacement and Water Meter Upgrades, Durham, NC



PROFESSIONAL CREDENTIALS

B.S., Civil Engineering, North Carolina State University

Professional Engineer in NC, GA, and VA

OFFICE LOCATION

Durham, NC

TED ELSHOF, P.E.

Sanitary Sewer

Ted's experience includes supporting clients as they plan, design, and construct projects for water and wastewater utility systems. He has 8 years of experience executing projects for capacity studies/reviews, pipeline condition assessment, routing, design, and rehabilitation of water distribution and sanitary collection infrastructure.

Relevant Experience

- East Durham Water and Sewer Rehabilitation Project and Belt Street Stormwater, Durham, NC
- Lakewood Avenue Sewer and NC-54 Waterline Replacements, Durham, NC
- West End Water and Sewer Rehabilitation Project, Durham, NC
- Higgins Greenway Phase 4 Waterline Extension, Cary, NC
- Howland Avenue Water Main Replacement, Cary, NC
- State Street Water and Sewer, Phase 3A, Raleigh, NC
- Wildcat Branch Sanitary Sewer Improvements, Raleigh, NC
- Upper Walnut Creek Sanitary Sewer Improvements, Raleigh, NC
- Karlin Real Estate Parmer Edge Sanitary Sewer, Durham, NC
- Scannell Junction I-85/Farrell and Triangle NC-55, Durham, NC



PROFESSIONAL CREDENTIALS

B.S., Civil Engineering, North Carolina State University

Professional Engineer in NC

OFFICE LOCATION

Raleigh, NC

JOHN SORRELL, P.E. (HAZEN)

Sanitary Sewer

John joined Hazen after 10 years with the City of Raleigh, first serving as Development Services Manager and then as Asset Manager. He is an expert in asset management and has led efforts to both establish and improve asset management programs. John brings strong regulatory knowledge, extensive experience in utility master planning, asset management, and CIP development.

Relevant Experience

- Asset Inventory and Assessment, Holly Springs, NC
- Integrated Water Resources Master Plan, Guilbert, AZ
- Integrated Master Plan, Raleigh, NC
- Asset Inventory and Assessment, Apex, NC
- Collection and Distribution Asset Evaluation, Norfolk, VA
- Tempe Water Utilities Integrated Master Plan, Tempe, AZ
- Asset Inventory and Assessment, Davie County, NC
- Pinellas County Utilities Wastewater Collection Program, Pinellas County, FL



HELEN LU, P.E. (HAZEN)

Sanitary Sewer

Helen is an expert in hydraulic modeling for wastewater collection systems. She has developed hydraulic models for systems under Consent Decree, for CSO and I/I reduction studies, RD II studies for separated sewer systems, and pump station studies for pressured sewer systems. Helen is also a major resource on modeling technical support and training.

Relevant Experience

- Collection System Modeling and Master Planning, Dorchester County, SC
- Sewer Model Development and Master Plan Update, North Charleston Sewer District, SC
- On-Call Hydraulic Modeling, North Charleston Sewer District, SC
- System Wet Weather Program Management, Athens-Clarke County PUD, GA
- Wastewater Collection System Program, Pinellas County, FL
- On-Call Engineering Service, Forsyth County, GA
- James Creek/Windemere Basin Preliminary Engineering, Forsyth County, GA
- Fowler Basin Preliminary Engineering, Forsyth County, GA
- Shakerag Basin Preliminary Engineering, Forsyth County, GA
- Sewer Master Plan, Loudoun Water, Ashburn, VA

PROFESSIONAL CREDENTIALS

M.S., New Jersey Institute of Technology, Environmental Engineering; Computer Science

B.S., Taiyuan University of Technology, China, Environmental Engineering

B.A., Taiyuan University of Technology, China, Social Science and Foreign Languages

Professional Engineer in NC

OFFICE LOCATION

Atlanta, GA



TRAVIS CRISSMAN, PWS

Stormwater

Travis's career spans 23 years and has focused primarily on infrastructure planning and implementation. He analyzes and designs thousands of feet of public and private stormwater conveyance. Travis has worked with many regional municipal governments to install new and improved existing drainage infrastructure, replace and upgrade roadway culvert systems, and provide emergency repairs following weather disasters. He also has managed several multi-square mile watershed master planning projects in the past five years. Travis is skilled at hydrologic and 1D/2D hydraulic modeling in software programs such as HEC-RAS, HEC-Hydrologic Modeling System (HMS), HydroCAD, StormCAD, PondPak, HY-8, EPA-SWMM, PCSWMM, and Stormwater Studio.

Relevant Experience

- Horsepen Creek Watershed Master Plan and Program Management, Greensboro, NC
- Swannanoa River Road Flood Study, Asheville, NC
- Little Cross Creek Watershed Study, Fayetteville, NC
- West Street Extension Hydrologic and 2D Hydraulic Design, Raleigh, NC
- Stormwater Pipe Rehabilitation, Raleigh, NC

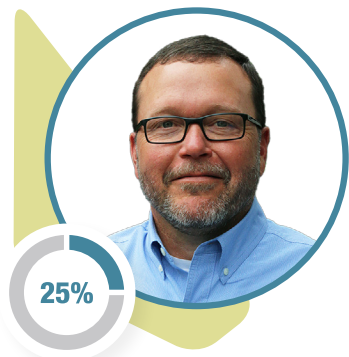
PROFESSIONAL CREDENTIALS

B.S., Civil Engineering, North Carolina State University

Professional Engineer in NC, PA, SC, and VA

OFFICE LOCATION

Raleigh, NC



PROFESSIONAL CREDENTIALS

A.A., Architectural and Building Construction, Tampa Technical Institute

Certified Engineering Technician

OFFICE LOCATION

Holly Springs, NC

TODD IRELAND, CET

Fiber Optics

As a senior roadway designer and construction manager, Todd offers more than 34 years of experience providing design support and construction phase services on a wide variety of civil engineering projects. He is a Certified Engineering Technician (CET), an ATSSA-certified Traffic Control Technician, and an NCDOT-certified Quality Management System Roadway Technician. Todd has served in key roles providing agency coordination for a variety of projects, including bridge, road widening, park, and streetscape assignments. With 20 years working with the City, he has developed strong relationships with City of Durham staff—helping facilitate seamless coordination.

Relevant Experience

- Lakewood Avenue Sewer and NC-54 Waterline Replacements, Durham, NC
- American Tobacco Phases 1-2 Waterline Replacements, Durham, NC
- Buchanan Boulevard Waterline Replacements, Durham, NC
- Downtown Loop Waterline Replacement and Water Meter Upgrades, Durham, NC
- Installation of Citywide Fiber Optic Cable, Durham, NC
- North Duke Street Sidewalk Project, Durham, NC
- Parks and Recreation Trails Condition Assessment, Durham, NC
- Duke University, Triangle Fiber, Durham, NC
- Kildaire Farm Road Design-Build Water Main Reinforcement, Cary, NC



PROFESSIONAL CREDENTIALS

M.S., Civil Engineering, University of Virginia

B.S., Civil Engineering, University of Virginia

Professional Engineer in NC and VA

OFFICE LOCATION

Raleigh, NC

KEVIN SMITH, P.E.

Fiber Optics

Kevin is a system design professional who has been involved in a majority of the signal system designs by NCDOT since 2001. He has been the lead design engineer for traffic signal system installations and upgrades in Durham, Fayetteville, Salisbury, Jacksonville, and Goldsboro. Kevin is thoroughly familiar with NCDOT's standard practices in the preparation of plans and specifications for fiber-optic system design through numerous projects that installed communications, CCTV cameras, DMS units, and other devices.

Relevant Experience

- US-70/US-74 Broadband Fiber, Statewide, NC
- NC 540/Old Holly Springs Road (Veridea Parkway) Interchange (Access 540), Apex, NC
- North Carolina A&T University, Fiber Optic Loop for UNCG/NCA&T/Gateway University Research Park, Greensboro, NC
- Traffic Signal System Upgrade, Gastonia, NC
- Signal System Upgrade, Durham, NC
- Closed Loop System, Wake Forest, NC
- Traffic Signal System, Morrisville, NC
- US-17 Bypass ITS Design, Wilmington, NC



PROFESSIONAL CREDENTIALS

B.S., Civil Engineering, University of Tennessee, Knoxville

Professional Engineer in NC

American Institute of Planners

OFFICE LOCATION

Raleigh, NC

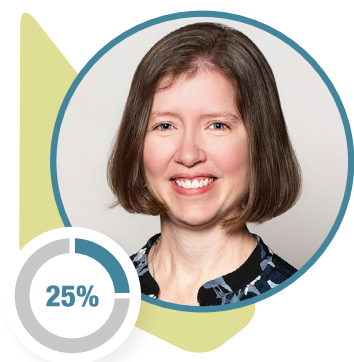
KRISTINA WHITFIELD, P.E., AICP

Community Engagement

Kristina is a transportation engineer with multimodal transportation planning experience at the local and national level. She has facilitated and participated in numerous public outreach efforts, including charrettes, workshops, stakeholder groups, committee meetings, and local community events. Kristina is passionate about developing actionable public outreach strategies that generate meaningful input and useable data. She strives to work with local communities to best understand who they are trying to reach and the most effective way to engage these audiences. Kristina is passionate about helping communities of all sizes find creative solutions to challenging transportation issues.

Relevant Experience

- Comprehensive Transportation Plan, Holly Springs, NC
- Comprehensive Transportation Plan Update, Morrisville, NC
- Community Transportation Plan Update, Fuquay-Varina, NC
- Comprehensive Transportation Plan, Apex, NC
- Downtown Raleigh Transportation Plan, NC
- Capital Area Metropolitan Planning Organization (MPO), Southeast Area Study, Wake and Johnston Counties, NC
- Fuquay-Varina Critical Corridors, NC



PROFESSIONAL CREDENTIALS

M.S., Civil Engineering, University of Texas, Austin

B.S., Civil Engineering, University of Tennessee

Professional Engineer in NC

American Institute of Planners

OFFICE LOCATION

Raleigh, NC

ALLISON FLUITT, P.E., AICP

Community Engagement

Allison, in her 20 years with the firm, has been recognized as a national specialist in transportation planning, including financial planning, performance-based planning measures, bicycle/pedestrian planning, and public outreach. She has led and participated in numerous public outreach efforts, including charrettes, workshops, stakeholder groups, and committee meetings. Allison is passionate about developing and applying a performance-based planning approach. She emphasizes integrating data and analysis tools—such as travel demand modeling, geographic information systems (GIS), and air quality modeling software—into the transportation planning process. Allison serves as Kimley-Horn's national MPO planning leader.

Relevant Experience

- Comprehensive Transportation Plan, Holly Springs, NC
- Comprehensive Transportation Plan Update, Morrisville, NC
- Community Transportation Plan Update, Fuquay-Varina, NC
- Comprehensive Transportation Plan, Apex, NC
- Comprehensive Transportation Plan, Smithfield, NC
- Capital Area MPO, Southeast Area Study, Wake and Johnston Counties, NC
- Durham County Transit Master Plan, NC
- Asheville Mobility Plan, NC



PROFESSIONAL CREDENTIALS

M.S., Urban and Environmental Planning, University of Virginia

B.A., Journalism and Mass Communications, University of North Carolina, Chapel Hill

American Institute of Certified Planners

OFFICE LOCATION

Charlotte, NC

JONATHAN WHITEHURST, AICP

Land Use Liaison

With 18 years of professional experience, Jonathan balances data, analytics, and community input to address challenging issues related to land use, mobility, and community assets. He partners with communities throughout the Southeast and beyond to reinforce livability and access to opportunity through thoughtful decisions based on local context. Jonathan also routinely plans and facilitates innovative community engagement processes that build awareness, bring diverse voices to the conversation, generate meaningful input, and show people the influence of their participation. He manages Kimley-Horn's firmwide accounts with MetroQuest and Social Pinpoint and has helped develop proprietary digital engagement solutions.

Relevant Experience

- Comprehensive Transportation Plan, Holly Springs, NC
- Military Growth Task Force (MGTF), Transportation Demand Management (TDM) Plans, Jacksonville and Havelock, NC
- Chapel Hill Transit Strategic and Financial Plan, Chapel Hill, NC
- City of Jacksonville, Transit System Development Plan, Jacksonville, NC
- Greenville MPO, Bicycle and Pedestrian Master Plan, Greenville, NC
- City of Hendersonville Pedestrian Plan, Hendersonville, NC



PROFESSIONAL CREDENTIALS

B.S., Landscape Architecture, Temple University

Professional Landscape Architect in SC

EcoDistricts Accredited Professional

OFFICE LOCATION

Charleston, SC

ANDREW TODD-BURKE, PLA

Community Facilities; Natural Areas

Andrew brings more than 16 years of experience in landscape architecture and urban design. His passion lies in creating successful developments that are focused on integrating the natural and built environment, resulting in development patterns for a sustainable future. Andrew's specialties include development entitlements, planned development formation, nature-based stormwater solutions, planned developments, land use planning, and low-impact developments. Working in communities throughout the Charleston area, Andrew understands the critical need to incorporate sustainable solutions into his projects.

Relevant Experience

- Green Infrastructure Parks, Charleston, SC
- Howle Avenue Stormwater Park, Charleston, SC
- Pitt Street Micromobility, Mount Pleasant, SC
- Ingleside Land Use Study, North Charleston, SC*
- Noisette Creek Trail Study, North Charleston, SC*
- Rhett's Cove Planned Unit Development, Charleston, SC*
- Oakfield Planned Unit Development Master Plan, Charleston, SC*
- South Station Planned Unit Development Master Plan, Charleston, SC*

**Completed prior to joining Kimley-Horn*



PROFESSIONAL CREDENTIALS

B.S., Landscape Architecture,
Rutgers University

Professional Landscape Architect
in SC

OFFICE LOCATION

Charleston, SC

CRYSTAL APONTE, PLA

Community Facilities

Crystal has 9 years of experience as a landscape designer. She initially started out in high end residential out of college then moved into working for the NYC Parks Department working on parks of varying size in the borough of Queens. This took a lot of community meetings in order to understand how the reworking of the park in question would best suit the current communities needs and wants. After the parks department, Crystal worked mainly in interdisciplinary firms, taking on various types of projects including by now limited to parks and recreation/park master planning, multi-family/single family developments, commercial, institutional, industrial, corridor design/planning, and solar.

Relevant Experience

- Master Plan, Hilton Head Island, SC
- Pitt Street Bridge, Mount Pleasant, SC
- College of Charleston Master Plan, Charleston, SC
- Stith Park University, Sullivan's Island, SC
- West Liberty Street Feasibility Study, Sumter, SC
- Green Infrastructure Parks, Charleston, SC
- Architectural and Engineering Planning for Pineview Preserve and Bailey Memorial Park, Beaufort, SC



PROFESSIONAL CREDENTIALS

B.S., Environmental Technology,
North Carolina State University

Professional Wetland Scientist

OFFICE LOCATION

Raleigh, NC

JASON HARTSHORN, PWS

Natural Areas

Jason is an environmental scientist specializing in environmental investigations; due diligence assessments and Phase I environmental site assessments (ESAs); environmental audits; stream, wetland, and riparian buffer delineation; wetland mitigation development; and protected species surveys. He has over 13 years of experience in the environmental regulatory arena, specializing in complex Section 404/401 permitting and riparian buffer authorizations, isolated wetland permitting, Section 9 and 10 permitting, enforcement actions, and developing environmental assessment documentation. Jason works extensively with public and private sector clients throughout North Carolina, South Carolina, and Georgia.

Relevant Experience

- Central College Trail, Wilmington, NC
- Ailey Young Park Improvements, Dam Removal, and Stream Restoration, Wake Forest, NC
- Smith and Sanford Creek Greenway, Wake Forest, NC
- Dunn Creek Greenway, Wake Forest, NC
- Middle Sound Greenway, New Hanover County, NC
- Green Mill Run Greenway/Bikeway, Phase 2, Greenville, NC
- Bearskin Creek Greenway, Monroe, NC



EMMA RADFORD, WPIT

Natural Areas

Emma is an environmental scientist and certified arborist who specializes in stream, wetland, and riparian buffer delineation; vegetative communities assessment; rare, threatened, and endangered species habitat assessment and surveys; GIS technologies; geospatial data collection and management; and environmental documentation and permitting. She has experience working with public sector clients, such as state DOTs and various local municipalities, and numerous private sector clients primarily throughout North Carolina, South Carolina, Virginia, and West Virginia.

Relevant Experience

- Alston Ridge and Hidden Valley Greenways, Fuquay-Varina, NC
- Greenway Master Plan, Winterville, NC
- Water Street Transformation Project, Elizabeth City, NC
- HTS Consolidated Rental Car Service and Storage Area, Huntington, WV
- Huntington Tri-State Airport (HTS), Runway Safety Area Runway 12/30, Huntington, WV

PROFESSIONAL CREDENTIALS

B.S., Natural Resources—
Ecosystem Assessment

Wetland Professional in Training

ISA Certified Arborist

OFFICE LOCATION

Raleigh, NC



JAYSON PAGE, P.E.

Meter Infrastructure

Jason provides water, wastewater, and reuse treatment plant design services and master planning for public and private clients. His extensive experience includes pilot testing, conceptual design, and technical review of the detailed design for many of the projects of which he is involved.

Relevant Experience

- Water and Sewer Department (WASD) Advanced Meter Infrastructure (AMI) Program Deployment, Miami-Dade County, FL
- Anne Arundel Automated Metering Infrastructure (AMI) Water Meter Program, Anne Arundel County, MD
- Advanced Meter Infrastructure Procurement, Miami Beach, FL
- WASD, Water System Operation and Maintenance Services for Water Project, Miami-Dade County, FL
- 165-MGD John E. Preston Water Treatment Plant, WASD, Miami-Dade County, FL
- Ocean Outfall Legislation (OOL) Program, WASD, Miami-Dade County, FL

PROFESSIONAL CREDENTIALS

M.S., Environmental Engineering,
Manhattan College

B.S., Environmental Science,
State University of New York,
Purchase College

Professional Engineer in FL, ID,
NY, and TX

OFFICE LOCATION

Miami, FL