



Agenda

1. Call to Order
2. Pledge of Allegiance
3. Invocation
4. Adjustment and approval of March 15, 2022 meeting agenda

PUBLIC COMMENT PERIOD

Notes on the Public Comment Period - Each speaker may speak up to 3 minutes, and the total comment period will be 15 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.

RECOGNITIONS

5. Arbor Day Proclamation

CONSENT AGENDA

6. Approve the minutes of the February 15, 2022 and March 1, 2022 business meetings.
7. Wake County Registrar of Deeds Plat Review Officer Appointment Recommendations
8. Resolution for road name changes and assignments near the NC540 interchange at Holly Springs Rd. and Kildaire Farm Rd.

PUBLIC HEARINGS

9. 117 E Maple Special Exception Use & Variances - Quasi-Judicial Hearing
10. Thales Expansion Development Plan & Special Exception Use - Quasi-Judicial Hearing
11. 301 Earp Street Special Exception Use & Variance 21-SEU-05/ 21-VARTC-02 - Quasi-Judicial Hearing

NEW BUSINESS

12. Green Oaks Tech Center Detailed Master Plan 21-MAS-05

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: Arbor Day Proclamation

Strategic Priority Area: Engaged, Healthy, & Active Community
Responsible & Balanced Growth

Staff Resource: Cheryl Caines, Development Services

Action(s):

Proclaim March 19th Arbor Day in Holly Springs

Explanation:

- March 18th (the first Friday following March 15) is Arbor Day in North Carolina.
- 2022 marks the 150th anniversary of Arbor Day.
- The Tree Advisory Committee will hold Arbor Day events on Saturday, March 19th to celebrate Arbor Day, including a tree planting at the Hunt Center and giving away tree seedlings at the farmer's market.

Background:

- In 1872, J. Sterling Morton proposed to the Nebraska Board of Agriculture that Arbor Day be established for the planting of trees, and it was observed with the planting of more than a million trees in Nebraska.
- Holding an annual Arbor Day event is one of the requirements of Tree City USA designation. The Town of Holly Springs was recently awarded this designation for the third year in a row (First Award in 2019).
- The Tree City USA program has been greening up cities and towns across America since 1976 and provides the framework necessary for communities to manage and expand their community tree canopy.
- The Tree Advisory Committee is responsible for assisting with the planning of the annual Arbor Day event.

Funding Source(s):

N/A

Attachment(s):

1. 2022_ArborDay_Proclamation

Town of Holly Springs



A Proclamation By The Mayor

Arbor Day, March 19, 2022

WHEREAS, In 1872, J. Sterling Morton proposed to the Nebraska Board of Agriculture that a special day be set aside for the planting of trees, and

WHEREAS, this holiday, called Arbor Day, was first observed with the planting of more than a million trees in Nebraska, and

WHEREAS, this Arbor Day marks the 150th anniversary,

WHEREAS, Arbor Day is now observed throughout the nation and the world, and

WHEREAS, trees can reduce the erosion of our precious topsoil by wind and water, cut heating and cooling costs, moderate the temperature, clean the air, produce life-giving oxygen, and provide habitat for wildlife, and

WHEREAS, trees are a renewable resource giving us paper, wood for our homes, fuel for our fires and countless other wood products, and

WHEREAS, trees in our town increase property values, enhance the economic vitality of business areas, and beautify our community, and

WHEREAS, trees, wherever they are planted, are a source of joy and spiritual renewal, and

WHEREAS, The Town of Holly Springs has created a Tree Advisory Committee in support of National Arbor Day and Tree City USA to recognize the Town's efforts to enhance and preserve the Town's urban forest.

NOW, THEREFORE, I, MAYOR SEAN MAYEFSKIE, do hereby proclaim March 19, 2022 as

Arbor Day

in the Town of Holly Springs, and urge all citizens to celebrate Arbor Day and to support efforts to protect our trees and woodlands, and

FURTHER, I urge all citizens to plant trees to gladden the heart and promote the well-being of this and future generations.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the Town of Holly Springs, North Carolina to be affixed on this 15th day of March, 2022.





Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 6.

Consent Agenda

Title: Approve the minutes of the February 15, 2022 and March 1, 2022 business meetings.

Strategic Priority Area: Organizational Excellence

Staff Resource: Linda McKinney, Town Clerk

Action(s):

Approve the minutes of the Council's business meetings held February 15, 2022 and March 1, 2022.

Explanation:

- Minutes in draft form are attached for the Council's review.
- If there are any corrections, please call the Town Clerk at 919-557-3900 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. 2.15.22 minutes-DRAFT
2. 3.1.22 minutes_notes



MINUTES

The Holly Springs Town Council met in regular session on Tuesday, February 15, 2022. Mayor Mayefskie presided, calling the meeting to order at 7 p.m. A quorum was established as the Mayor and four Council members were present in the Chamber as the meeting opened.

Council Members Present: Mayor Mayefskie, Mayor Pro Tem Dan Berry, Council members Aaron Wolff, Timothy Forrest and Kristi Bennett.

Council Members Present by Electronic Means: Council member Shaun McGrath.

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*; Mathew Mutter, *IT*; Kendra Parrish, *Executive Director of Utilities & Infrastructure*; Tim Athy, *Utilities and Infrastructure*; Chris Hills, *Director, Development Services*; Cheryl Caines, *Development Services*; Elizabeth Goodson, *Development Services*; Corey Petersohn, *Administration*; Cassie Hack, *Director, Communications*; Irena Krstanovic, *Director, Economic Development*.

2. and 3. The Pledge of Allegiance was recited followed by an invocation by Bishop Mark Savoldi of the Church of Jesus Christ of Latter Day Saints.

4. Agenda Adjustment: The February 15, 2022 meeting agenda was adopted with changes, if any, as listed: table item 9, SCIMMP Update, to the March 1, 2022 meeting

Motion: Berry

Second: Wolff

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 written comments were received: Juhin Patel requested Council reconsider the proposed zoning change for 4821 Optimist Farm Road.

The following comments were received in person: none.

RECOGNITIONS

5. Black History Month Proclamation

Mayor Mayefskie proclaimed February as Black History Month in Holly Springs and presented the proclamation to George Kimble of the M L King Committee.

6. Recognition of Snow Response Team

Paige Scott, Director of Public Works, said that the town had four snow response events in the month of January which involved 34 employees from four different departments, working over 100 hours to keep the streets safe. She wanted to recognize them and their hard work and dedication to the town. The Mayor and Council expressed their appreciation and a representative group of employees came forward for a photo with Council.

REQUESTS AND COMMUNICATIONS

7. Parks and Recreation Advisory Committee Annual Report

Susan Smith, Chair of the Parks and Recreation Advisory Committee (PRAC), gave a report on the 2021 activities of the Parks and Recreation Advisory Committee and their plans for 2022. Highlights included feedback and support through the COVID closures, the update of the Parks and Rec Master Plan, and received many reports from staff throughout the department. They participated in Town park tours, and have a liaison on the Tree Advisory Committee, with whom they participated on Arbor Day celebrations. They participated in the conversations with the mural artist at Womble Park, and went to parks and recreation facilities in other municipalities to prepare for the future in Holly Springs. She said a resident had come to one of their meetings to discuss e-bikes and scooters on greenways. In 2022 they plan to invite Parks & Recreation staff to share program updates, and they plan to proactively engage the public for feedback. They have requested that a few members of the Teen Parks & Recreation Committee serve *ex officio* on the PRAC. They want to engage with members of the community. She said they are an active board who likes to go out on the greenways and to the parks. She thanked the staff for the great ideas they came up with during COVID and the hard work they put in every day.

Council member Wolff asked what feedback the resident gave on e-bikes and scooters. Ms. Smith said that the resident wanted them, but there is going to need to be discussion about that, because opening greenways up for motorized vehicles can be problematic. But the committee is interested in investigating possibilities.

8. Zoning Reassignment Update

Sean Ryan, Development Services, said that the purpose of this item was to update Council on the Zoning Reassignment process and the public engagement that has happened to date. He said the new UDO which was adopted in November 2021 consolidated and renamed zoning districts. Drafts of the UDO outlined how districts would be consolidated and renamed. He showed how current districts were consolidated into newly named districts with substantially similar characteristics.

Mr. Ryan explained that properties were reassigned to comparable districts but current use of the property is allowed as long as the property does not change hands. It was not used to proactively rezone properties for potential development. A rezoning request to Council would be the proper way to achieve that goal. Mr. Ryan explained the methodology used, where properties were converted to new districts, which were then adjusted for existing developments, and efforts were made to minimize nonconforming uses.

Mr. Ryan explained the public engagement efforts which included postcards mailed to approximately 11,500 property owners; information in the town newsletter; open houses, both in person and virtual; the project webpage, interactive map and social media postings; and phone and in-person inquiries. Most inquiries were of a general nature, some had concerns but did not request an alternate zoning district. About seven property owners requested a new zoning district. For those properties staff will verify that the current zoning was reassigned correctly. They will look at the property to verify existing development and identify any nonconformities, and evaluate development potential referencing the Future Land Use map. Most of these were properties in the ETJ reassigned from either R-30 or R-20 to RR. The Future Land Use map does not always line up with the zoning, but the zoning is meant to be sure the current use can continue and be conforming.

Next steps are presenting the map and the seven requests to the Planning Board for recommendation, and then to bring it to Council at the March 1st meeting.

Council member Forrest asked if the emailed public comment regarding the Optimist Farm address was seen by Development Services. And he said that he had concerns about the timeline. He was concerned that there were no exceptions. Mr. Ryan said he was not aware of any pending development requests on the Optimist Farm property, but he will talk to the property owner as part of the process. This property was R30 and is going to Rural Residential. If the owner wants to rezone for future development they can do that through the regular process. The other option would be for Council to consider that request and make that adjustment when adopting the new zoning map. Council member Forrest asked that changing the zoning on this property be listed as an option as part of the motion at the next meeting. Council member Wolff asked if staff thought this was the appropriate zoning. Mr. Ryan said the property did not meet the R-30 requirements. It did not meet the frontage requirement. Staff is still investigating, but it appears to be a nonconforming lot currently and if it goes to RR would continue to be nonconforming.

Consent Agenda

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

10. Minutes – Council approved the minutes of the business meeting held February 1, 2022.

11. Budget Amendment Report – The Council received the budget amendment report. *A copy of the Budget Report is attached to these minutes.*

12. Approval of Sale of Surplus for Town Fleet Combo Truck and Chipper – The Council approved the Sale of Surplus for Town Fleet Assets 168 and 84.

13. Ting Stadium Structural and Drainage Capital Maintenance – The Council awarded a contract to Baker Restoration in the amount of \$115,200 for Ting Stadium structural and drainage capital maintenance.

PUBLIC HEARINGS

14. Norris Crossing Rezoning 20-REZ-04

Cheryl Caines, Development Services, said that this item is a return of a request to rezone a parcel of about 74 acres from R-30 to R-10 CU. The original request was for R-8, but the applicant modified that request. She showed where the site is located off Avent Ferry Road between Stonemont and Mills at Avent Ferry. The Future Land Use plan has the area designated as Residential Neighborhood, and the property is currently zoned R-30 Residential. At the March 16, 2021 public hearing key discussion areas were traffic on Avent Ferry Road, the site surrounding an unannexed parcel, the requested R-8 zoning, which was not consistent with the adjacent parcels which were R-10, and the conservation of the on-site pond.

Ms. Caines said that discussion since then had resulted in a draft Developer Agreement with the following conditions: maximum of 173 dwelling units and 2.33 units per acres; a fee-in-lieu contribution of \$490,000 for the traffic signal at Avent Ferry and Holly Meadow; an on-site amenity in the location of the existing pond; and off-site road improvements per the Traffic Impact Analysis (TIA).

Rachel Jones, Development Services, pointed out the three intersections that were studied and said that the TIA recommended Avent Ferry Road be widened to one-half the ultimate cross section across their frontage, as well as connecting street stubs to adjacent neighborhoods. The site has access to public water and sewer and a downstream sewer and pump station evaluation was completed with the rezoning request.

Cheryl Caines said that Planning Board recommended approval with a vote of 6-2. The dissenting votes were based on traffic concerns and timing development to alleviate the impact.

MPT Berry asked where the sewer discharged to. Rachel Jones said eventually the Avent Ferry pump station, with The Mills as an intermediate station. He asked about off-site road improvements and Ms. Jones said the road widening and the turn lanes on Avent Ferry were the road improvements.

Council member Forrest said there is some flooding adjacent to Stonemont and asked if this development would fix that flooding problem. Ms. Jones said that with this development there will be flood plain studies. If there are known impacts they will be required to mitigate their impact, but not to correct an existing issue.

Mayor Mayefskie opened the public hearing and the following input was received:

Mr. Jason Barron with Morningstar Law Group spoke for the applicant and introduced the team. He said that since this case originally appeared before Council, there have been a lot of changes. They took the feedback from that meeting, held discussions with the community, and with elected officials. He said he would focus his comments on the changes. The request changed to R-8 which reduced the number of lots by 17%. Second, he showed the proposed plan for the development and the amenity that would be developed where the pond currently is. He described the various parts of the area, including walking trails and benches and a pedestrian connection to the future sidewalk on Avent Ferry Road. He said they also were willing to increase the fee-in-lieu in order to support the traffic signal which was important to the Council.

Craig Ashby, 201 Highland Springs Lane, Holly Springs. He said he has lived in Holly Glen for 24 years and witnessed the growth from 5,000 residents to over 40,000. He spoke against the project due to traffic, particularly if the area had to evacuate due to a nuclear accident. He said the average of two vehicles per home would mean an additional 520 vehicles on the road. The presence of five educational facilities, on a 2-lane road, causes gridlock at drop off and pick up time already. The NCDOT has delayed the widening of Avent Ferry to 2029, which means completion will not be until 2030 or 2031. He requested that Council deny this request.

Mr. Brian Oten, 305 Bellamy Mill Drive said he said he was disappointed and confused. He opposed this project last year and is happy to see some of the changes, but he is confused about the term "neighborhood residential." He is disappointed to see the donut hole as part of the project. The donut hole contains an active shooting range and surrounding it with homes and pets is not a good idea. It is not a commercial shooting range, but the owners'. He disputed the neighborhood meetings, plural, mentioned in the application. He said there was one in early 2021, not multiple meetings. Traffic issues have not been addressed, and while development here may eventually happen, now is not the right time. There is not enough change to make this fit the character of the surrounding communities. He voiced his opposition.

Mr. Juan Schaar, said he was a resident of Stonemont. He said he shares everyone's confusion. The developer had a whole year to hear the concerns of the community and all they did was reduce the number of homes and add a pocket park where the drain is currently. He said the developer has been misleading in their statements and have not been transparent with the community. The site plans have not been made public. There is a donut hole that cuts the property in half, and part of the property will be rezoned but not developed. He showed a petition signed by 65 Stonemont residents opposing this development. He said there are traffic issues. He has seen people almost get hit by cars and lots of students walking along Avent Ferry. He asked that more developments not be added until the infrastructure catches up. He said it floods behind his house every time there is a heavy rain and he showed a photo of the flooding. He would like to see developers do the research on flooding and traffic before being rezoned.

There being no further input, Mayor Mayefskie closed the public hearing.

Ms. Caines said that if Council does decide to approve the request, there is one change to the Ordinance, Condition 10 has been amended to reflect the new fee-in-lieu amount.

MPT Berry asked why The Mills doesn't have a sidewalk across its frontage. Ms. Jones said she was not sure but she thinks a fee-in-lieu was paid instead.

Council member Wolff said he spoke with Lindsay Mahaffey with the Wake County School Board and she said there would be capacity for this development. The pond, while a lot of people are fond of it, is not long for this world whether or not this development happens. The donut hole is a problem. Council made it a priority to try to address this issue last year, and creating another donut hole intentionally is a problem. There is a real impact on services when this is allowed to happen. The owner doesn't want to move, and that is understandable, but there has got to be a way to get this property annexed. Lastly, the traffic: community outreach is well heard, and understood. It is a problem and we are going to have to address it. The thought that we cannot build anything along Avent Ferry Road is unrealistic. Housing prices have gone up, and we have 1000 new jobs coming in, so it will have to be done. The main problem is the donut hole, but the traffic concerns are heard. This is not a perfect application. The contribution to the signal is huge, but it is not going to alleviate traffic on Avent Ferry. It will increase safety, and this is a way to get that project done quickly.

Council member Forrest said that in many ways agrees with Council member Wolff. Avent Ferry is a huge problem. We have to find a way to solve it before 2029. Avent Ferry is the most dangerous road that is not on the plan to be fixed. He has heard the public outreach. But development is coming. We can try to manage it, and build appropriately. Regarding the development itself, it is the owner's right not to sell the donut hole land. But when that land is transferred it will come back to the Town to bring it in and develop it at that time. It will be part of the town one day.

Council member Bennet said this is not a decision she takes lightly. Residential growth outpacing infrastructure is one of the main things that we heard on the community survey. She understands the residents' frustration and she feels like that frustration is being aimed at the developer and shouldn't be because it is Council's responsibility to fix the road. It may not be perfect, but she thinks current and previous Councils bear the responsibility. It is not unique to the Avent Ferry area. The entire town is growing, and the problems are not neighborhood specific. We need to prioritize actions based on residents' needs. The traffic light is a good, but there are other factors to this decision.

MPT Berry said that in March 2021 we discussed this and he walked away with a quote that "you'll know long before we come back here for a public hearing what changes we have worked out with staff." That was from the team. Prior to Mr. Baron's involvement, we have gone ten months without contact, at least at the Council level. He thought there was a commitment to work on this and the feedback didn't change. It was the same throughout the process. Largely until now we have been inching away at making it a better proposal. This one presents some meaningful changes. The contribution to the traffic signal cannot be understated. The change to R-8 and the contribution to the traffic signal are meaningful changes. The donut hole is a concern. It's not good planning and it's not a precedent he wants to set. The traffic issues are real, but Avent Ferry is a DOT road and the sole responsibility is theirs. The state has inadequately funded NCDOT for years now, which has caused the road improvement delays. The Town can supplement it and accelerate the process, but it is not our responsibility totally. He appreciates the meaningful changes, but he's not sure they are enough to overcome his concerns about traffic and donut hole.

Council member Wolff said, for the residents who are here, Avent Ferry Rd., as the Mayor Pro Tem said, is a DOT road and it's going to take state partnerships to get it done. We will be pushing hard with our legislative partners to get this accelerated and are looking for solutions on this road.

Mayor Mayefskie reopened the public hearing to ask the applicant questions about the donut hole.

Council member Wolff asked what the specific hold up about this project and annexation. Not selling for development, but annexation. Mr. Barron said he had no contact with the sellers, but he understands that the owner has no desire to sell and no desire to be annexed until he's ready to

sell. Council member Wolff asked if the developers would be willing to pay for the annexation if the resident could be convinced. Mr. Barron said yes. Council member Wolff asked if there would be willingness to add an additional condition to require that property to be annexed. It is a horrible practice and affects the Police and Fire departments negatively. Mr. Barron said that adding a condition to annex would basically be denying the request. The developer has not been able to make any progress with the owner. He would be happy to develop that property too, but the owner is not interested.

Mayor Mayefskie closed the public hearing again.

Action: Motion to adopt Rezoning Ordinance RZ22-01 to adopt statement of compatibility and to approve rezoning with amended conditions as offered by the applicant, to wit: the applicant agrees to provide a Fee in Lieu contribution for the installation by others of the proposed traffic signal at the intersection of Holly Meadow Drive and Avent Ferry Road payable at the issuance of the Land Disturbing Permit for the project. This fee in lieu - \$490,000 – is in excess of any improvements identified within the approved Traffic Impact Analysis Special Study. Further, the dedication and construction of street rights of ways as shown in the approved Comprehensive Transportation Plan shall be required consistent with the requirements of N.C.G.S. Sec. 160D-801, *et. seq.*

Motion by: Bennett

Second by: Forrest

Vote:

Aye: Forrest, Wolff,

Nay: Berry, Bennett

Mayor Mayefskie broke the tie with an Aye vote.

The motion passed.

At the meeting, the Town Attorney determined that a second reading was required pursuant to NCGS 160A-75. However, subsequent to the meeting the attorney determined that the statute requiring a second reading was changed as part of the revisions to 160D. Therefore the Ordinance was adopted as of February 15, 2022.

15. Gallagher Brewery Special Exception use 21-SEU-06

Bronwyn Bishop, Development Services, said the purpose of this item was to consider a Special Exception Use for Artisan Food and Beverage Producer located within The Block on Main. She said this property is an existing tenant space at 300 S. Main in the Downtown district. It is designated Downtown Village District on the Land Use and Character Plan and zoned TV Town Village. She said that a different company was approved for an Artisan Food and Beverage Producer in 2019 in this same place, but ultimately did not proceed.

Van Crandall, Planning Board, said that the Planning Board recommended approval with a vote of 8-0. Questions that came up were the specific location of the site and any gases and odors released in the brewing process. The Planning Board was satisfied with the business' response. They were asked about conversations with residents and were told that there had not been any, but any outdoor seating would come before them separately and be dealt with at that time.

Chris Gallagher, the applicant, said that he is a local resident, he is the owner of Local Time Brewing, and that what was missing from downtown was a place to enjoy craft brewed beer. He said the space they are considering is next to Mamma Mia! on the end of The Block. He showed a potential layout of the property. They would install a 7 barrel brewhouse with indirect fired kettle, five fermentation vessels and two bright tanks for brewing 2-3 times per week onsite. The seating capacity would be approximately 50 in the taproom, with standing areas also. He said it would be a family friendly establishment, which, although they would not serve food beyond snacks, intends to work with nearby restaurants to enhance the customer experience. There would be events such as trivia and live music and the option for private events.

He said an SEU was approved for an Artisan Food & Beverage Producer in this building in the past, although that project did not move to completion. The proposed use will follow all state, local, TTB, and ABC regulations. The proposed use is consistent with the character of the Village District and the Town's comprehensive plan. The tenant space is below an office use, next door to a restaurant, and above a parking garage. He said there was the possibility of a future petition to use outdoor space for an outdoor seating area, and they would provide appropriate screening should that occur.

Mayor Mayefskie opened the public hearing.

There being no input, Mayor Mayefskie closed the public hearing.

Action: Motion to adopt Resolution 22-05 approving Special Exception Use 21-SUE-06 for Gallagher Brewery (aka "Local Time Brewing") with the conditions listed in the agenda packet.

Motion by: Forrest

Second by: Wolff

Vote: unanimous

A copy of Resolution 22-05 is attached to these minutes.

NEW BUSINESS

16. Arbor Creek/Middle Creek Greenway Construction Contract Approval

Matt Beard, Parks and Recreation, said that this item was to request approval of construction contract for the construction of the Arbor Creek/Middle Creek Greenway. This stretch of greenway is 2.9 miles long, connects 5 neighborhoods and two major roadways, and connects to Apex to the north. He showed the location of the trailheads throughout those neighborhoods.

Mr. Beard said that five bids were received, ranging from \$4.9 million to \$7.6 million. This project meets the strategic initiative to complete the Arbor Creek/Middle Creek Greenway and increases the Town's greenway mileage by 20%. It supports the public feedback of priority investments in trails and greenways, provides safe, off-street biking and walking area for both recreational and transportation use, and will be a significant connection point to downtown Holly Springs and Apex.

Mr. Beard said CLOMR (Certified Letter of Map Revision) has been submitted to FEMA and permits and construction drawing approval is expected in June of 2022. Notice to Proceed is estimated for June or July of 2022, with construction completed in fall of 2023. The original 2020 Design and Construction budget was \$4.95 million. With design, construction, easement acquisition, permits, construction administration, and recent bid opening, the updated total project cost is estimated at \$5.85 million, with an added contingency bringing the cost to \$6.48 million. This leaves a budget gap of \$1.51 million. This can be bridged by using \$1,177,668 from the Bond Premium Payout and \$354,097 from Parks and Recreation reserve funds.

Council member Wolff asked where we were on right of way acquisition. John Schifano, Town Attorney, said there are a few condemnations to be filed. Council member Bennet asked about how long greenways last. Mr. Beard said that new construction methods allow greenways to last longer. Across town we are dealing with maintenance on greenways built with different standards, some requiring more frequent maintenance. With new greenways we should get ten years without major maintenance costs. We looked at value engineering, and Tim Athy in Utilities and Infrastructure combed through and of the 5.9 million, 4.4 could not be adjusted without reducing the length. Landscaping was looked at as a way to reduce costs, but they did not reduce the cost significantly and it is not staff's recommendation to remove them.

Action 1: Motion to adopt Parks and Recreation Capital Project Ordinance 22-03 to fully fund the Arbor Creek / Middle creek Greenway project at \$6,484,565 including design, land easements, construction, and contingency.

Motion by: Wolff
Second by: Berry
Vote: unanimous

Action 2: Motion to award the construction contract to Fred Smith Company in the amount of \$4,987,525 for the Arbor Creek/Middle Creek greenway.

Motion by: Wolff
Second by: Berry
Vote: unanimous

17. Condemn portion of right of way at 1000 South Main Street for Road Improvements

John Schifano, Town Attorney, said this item was to consider authorizing the town attorney to initiate an eminent domain action to acquire right of way along Main Street. He said that 153 square feet of right of way is needed, and 4,572 square feet of temporary construction easement. The property is owned by Avani Properties and they have a development petition pending. The adjacent Village Gate property is ahead of them in the development process and the right of way is needed for that development to progress. Avani properties would need to dedicate this right of way when they develop, but the timing means it needs to happen sooner.

Council member Wolff asked if after we pay the current land owner, they would not have to dedicate that land when they develop. Mr. Schifano said this bit will overlay what Avanti will have to dedicate. It was a timing issue, that Avanti didn't want to voluntarily give his neighbor the right to do construction that might interfere with his own. But Avanti is not far enough along in the process for that to actually occur. Neither party has done a lot of work in Holly Springs and they aren't familiar with time frames for development.

Action: Motion to approve Resolution 22-06 initiating eminent domain action for the acquisition of right of way and temporary construction easements at 1000 S. Main Street, as described in the resolution.

Motion by: Berry
Second by: Wolff
Vote: unanimous

18. 2022 Local, State, and Federal Legislative Agenda

MPT Berry said that the Legislative Agenda Committee, consisting of himself, Council member Aaron Wolff with staff support from Randy Harrington, Town Manager, and John Schifano, Town Attorney, drafted a list of advocacy priority areas to address with county, state, and federal counterparts. This list was presented at the February 8th workshop, and is now brought to Council for formal adoption. Key areas to address with Wake County are reducing the landfill malodors and expanding public transit. Key areas to address with the state are preserving local authority; supporting investment in transportation infrastructure, water/wastewater/reuse infrastructure funding partnerships; and economic development. Key areas to address at the federal level include water/wastewater/reuse infrastructure funding partnerships and U.S. Post Office facility investments.

Council member Wolff said that, germane to the conversation we had at the public hearing, we specifically are laying out the Aventura Ferry corridor as an area that needs to be looked at. And supporting the NC League of Municipalities around transportation funding and some creative solutions for closing the gap for transportation funding.

Action: Motion to approve the Town Council's 2022 Legislative Agenda.

Motion by: Forrest

Second by: Bennett

Vote: unanimous

OTHER BUSINESS

Mayor Mayefskie spoke about the retreat and the amount of valuable information brought to them by staff. He said they had a good time and got a lot of work done.

MPT Berry said we spent a lot of money in the last month, but progress comes at a price and he is very excited about the greenway which will bring much benefit to the community. He will follow up with UNC Rex, but wanted to offer a public thank you to them for completing the sidewalk to Maple Street. You can now walk from the hospital all the way to Ting. You may have to cross Main St., but at crosswalks, and you can be on sidewalk the whole way.

Council member Bennett said she is learning that there is a lot that constituents struggle with that we don't have the ability to address. She said COVID has made raising a family more difficult. She has seen a vaccination rate of 78%, even with many of our residents under 18. She would like to read an open letter to the Wake County School Board and invite colleagues to weigh in on it and sign if they feel moved. She read a letter stating opposition to mask mandates for children in Wake County Public Schools.

Council member Wolff said he thinks we should discuss that letter. He thanked her for reaching out beforehand. He pushed for town-wide indoor mask mandates earlier, but now he does not think they have utility that is worth the cost. He thinks the risk is well understood and people can make the decision for themselves. He has some consternation about the way some individual schools handle the mask mandate. However, he doesn't think this letter is the right choice. He has not received any comment from residents who want the mask mandate removed, and he has heard from teachers who are concerned and would like the mandate to remain. The school board has been under an immense amount of pressure, including personal threats to their families and their wellbeing and personal lawsuits. This letter could add smoke to the fire without getting any action. The Legislative Committee could reach out to the school board. He spoke to school board member Lindsey Mahaffey and she understands the concerns and the Board plans to vote on it on March 1st. We can always discuss this after that point and, if need be, have the Legislative Committee reach out to her. If we do not understand where she is we should do that before we send a letter like this.

Council member Forrest said he agrees with Council member Bennett. He thinks the town believes in, and listens to, the science. He would encourage the Wake County Board of Education to address the mask policy and make it optional. Recent reports by the CDC say it is not worth it for children. We didn't have this information two years ago, but now we do. He would be happy to sign on and would say that our town has shown the resolve and proved that we support science by our vaccination rates alone. He said that his family is vaccinated, but that was their choice. Speaking as a father with children in Wake County Schools who wear their masks every day, he sees the detriment over time.

MPT Berry said that anyone who has seen his style over the last four years realizes that he is not a big proponent of handling things that are outside of our jurisdiction. He prefers to advocate and build relationships. This is kind of there. What is different is that a month ago when considering whether or not to reinstate the mask mandate, WCPSS considered asking children 2 to 4 to wear masks. The Board won't listen to parents, and they aren't going to listen to this letter either. He will discuss this with Ms. Mahaffey. But after that particular matter it became personal for him. He said there was a precedent from 2017 when a letter was sent regarding reassignments, so it wouldn't be the first time this Council has weighed in on a School Board issue, but he doesn't discount Council member Wolff's comments. We have a Legislative Action Committee now and we should use it, which may lead to better outcomes. We have the right to our individual opinions. But he would

support the letter, but would like the Town Manager to look at it first and make any suggestions about wording.

Mayor Mayefskie said that he has children in the health care industry, and is well aware of what is happening in the hospitals. He likes the suggestion that the Legislative Committee address this, which could be more effective than a letter. But he does support the letter. And would like the manager to take a look at it.

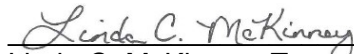
MANAGER'S REPORT

Randy Harrington, Town Manager, said he had two items. He thanked the Council for the amazing work they did at the retreat. The second item, that there is an exciting and free opportunity, to see collegiate baseball: University of Perdue vs. Princeton for four games Feb. 25 – 27, and Perdue v. Longwood University for four games March 4 – 6, all at Ting Stadium. It's a fun, free event.

CLOSED SESSION: None.

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

Respectfully Submitted on Tuesday, March 15, 2022.



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 met in regular session on Tuesday, March 1, 2022. Mayor Mayefskie presided, calling the meeting to order at 7 p.m. A quorum was established as the Mayor and four Council members were present in the Chamber as the meeting opened.

Council Members Present: Mayor Mayefskie, Mayor Pro Tem Dan Berry, Council members Aaron Wolff, Timothy Forrest and Kristi Bennett.

Council Members Present by electronic means: Council member Shaun McGrath.

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); Mathew Mutter, *IT*; Kendra Parrish, *Executive Director of Utilities & Infrastructure*; Daniel Colavito, *Utilities and Infrastructure*; Rachel Ingham, *Utilities and Infrastructure*; Aaron Levitt, *Utilities and Infrastructure*; Seann Byrd, *Water Resources*; Chris Hills, *Director, Development Services*; Sean Ryan, *Development Services*; Elizabeth Goodson, *Development Services*; Antwan Morrison, *Director, Finance*; LeeAnn Plumer, *Director, Parks and Recreation*; Matt Beard, *Parks and Recreation*; Cassie Hack, *Director, Communications*; Irena Krstanovic, *Director, Economic Development*; Anna Murphy, *Economic Development*; LeRoy Smith, *Fire Chief*; Kathy White, *Deputy Clerk*.

2. and 3. The Pledge of Allegiance was recited followed by an invocation by Sandy Byrne of the Oasis Church.

4. Agenda Adjustment: The March 1, 2022 meeting agenda was adopted with changes, if any, as listed: item 11 pulled from Consent.

Motion: Berry

Second: Wolff

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 written comments were received: none

The following comments were received in person: Hank Dickson requested the Town recognize baseball players who have a connection to Holly Springs and have reached the major league level with a plaque inside the Ting Stadium.

RECOGNITIONS

5. Traumatic Brain Injury Awareness Month Proclamation

Mayor Mayefskie proclaimed March as Traumatic Brain Injury Awareness Month in Holly Springs. The proclamation was accepted by Beth Gaul and Erik Auth of Abound Health.

6. Developmental Disabilities Awareness Month Proclamation

Mayor Mayefskie proclaimed March Developmental Disabilities Awareness Month in Holly Springs. The proclamation was accepted by Beth Gaul and Erik Auth of Abound Health.

REQUESTS AND COMMUNICATIONS

7. Holly Springs Chamber of Commerce Update

Daniel Weeks introduced Debra Kuffner, Executive Director of the Holly Springs Chamber of Commerce and Tonya Palumbo, Chair of the Holly Springs Chamber of Commerce. Ms. Kuffner gave her background prior to her arrival in Holly Springs. Ms. Kuffner outlined the vision, mission, and purpose of the Chamber of Commerce. She read the core values of the Chamber.

Ms. Palumbo introduced the Chamber's board. She said that the board has been very lucky to find the right Executive Director. She gave an overview of the board's activities in the last two years. She spoke of the Chamber's efforts to advance diversity, equity, and inclusion.

After explaining the four leadership committees, Ms. Kuffner outlined the infrastructure of the Chamber and its objectives and priority areas. She outlined the calendar of events for 2022. She listed the seven most important "big picture" items to keep on their radar. She listed some qualitative and quantitative data that could be used to indicate the return on investment for the partnership with the Town.

Mr. Weeks gave an overview of which events would be considered in the contract for Fiscal Year 21/22, with amounts to be paid to the Chamber by the Town upon the successful completion of each government support program. He outlined aspects of the contract that the Chamber would be responsible for, and the Town would be responsible for.

Council member Wolff said he didn't see Holly Fest on the list and asked if there was any formalization of that partnership. Mr. Weeks said that the Town partners but does not pay the Chamber for Holly Fest. It is a non-direct partnership.

Council member Bennett said that Chamber business expansion and growth in sports leisure is important to her, and she would like to hear what the Chamber can do in that regard. Ms. Palumbo said the upcoming Women's Empowerment Luncheon and Breakfast Eye Openers would be aligned in that direction. Ms. Kuffner said that early on the Chamber identified sports tourism as a target and they are working closely with partners to increase Holly Springs' share of that market.

Council members expressed their appreciation for the work done by the Chamber to define this partnership.

8. Secondary and Cumulative Impacts Master Mitigation Plan (SCIMMP) Update

Daniel Colavito, Utilities and Infrastructure, introduced Hunter Freeman from McAdams Engineering. Mr. Freeman explained the purpose of SCIMMP in reviewing the environmental impacts associated with planned land use changes and infrastructure projects required to accommodate future population growth. He said that the Town of Holly Springs' SCIMMP was established in 2005 and is valid for thirty years, but requires biennial reports. The last report was in September of 2021 and the next will be September of 2023. A full update is required every ten years, with the next update required in 2025.

Mr. Freeman said that the Town has a Memorandum of Understanding with the NC Department of Environmental Quality (NCDEQ) outlining how the SCIMMP will be used and what it entails. The SCIMMP avoids regulatory inefficiencies, and streamlines permitting processes. He outlined some of what is in the SCIMMP and how it addresses secondary and cumulative impacts through the Comprehensive Plan, the UDO, and other town policies and procedures.

Mr. Freeman said that the biennial update includes updates on the Town's utility values for the previous year; updates to external references such as NPDES and endangered species; and specific project updates on Utey Creek Water Reclamation Facility upgrade, I-540 construction, and the Future Land Use Plan and Comprehensive plan. Mr. Freeman gave the timeline for the most recent biennial update, showing that it was accepted and approved by NCDEQ in November of 2021.

Council member Forrest asked if part of this process was testing aquifers. Mr. Freeman said it was just on how the Town manages stormwater. Council member Forrest asked if the Town ever tested aquifers. Mr. Colavito said that is regulated at the state level, it is not under our authority. The State does test but he does not know their schedule. Council member Forrest asked if the State lets the Town know when they are testing. Mr. Colavito said they do not. Council member Forrest asked if we should be concerned about the lack of testing. Mr. Colavito said that the Town does not draw most of its water from the aquifers in town. Most water in town goes through the water treatment process. There are a few wells, but there is no required testing in perpetuity.

Consent Agenda

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

9. Minutes – Council approved the minutes of the February 8, 2022 workshop meeting and the February 10-12, 2022 Mayor and Council Retreat.

10. Development Procedures Manual 2022 UDO Consolidation Amendments – The Council adopted Resolution 22-03 to adopt the Development Procedures Manual UDO consolidation amendments.

A copy of Resolution 22-03 is attached to these minutes.

12. 2022 Pavement Condition Survey and Lifecycle Modeling Contract – The Council awarded a contract to WithersRavenel in the amount of \$66,200 and authorized the Town Manager to execute the contract and any change orders for additional professional services as may be needed during the project up to the authorized project budget of \$80,000.

Pulled from Consent:

11. Joint Water Treatment Conveyance System from Sanford – Authorizing the Town Manager to allocate \$299,730 per the Memorandum of Understanding with Fuquay-Varina for the Joint Water Treatment Conveyance System from Sanford.

MPT Berry said this item was pulled because Council member Forrest had a question. Council member Forrest said his question was, since Fuquay-Varina is running a 36" line and we are running a 24" line, is there a way it would benefit the town to put in a 36" line now rather than waiting 20-30 years? Kendra Parrish, Executive Director of Utilities and Infrastructure said that the Preliminary Engineering Report looked at various sizing, and 24" was the size that would meet our projected build out. Since we were just looking to get the 6 MGD from Sanford, that size pipe would meet that need. But we could go back to the engineers and see if there was a benefit to using larger pipe. She asked Council if they needed to table tonight's motion until they get that answer. Council member Forrest said no.

Action: Motion to authorize the Town Manager to allocate \$299,730 per the Memorandum of Understanding with Fuquay-Varina for the Joint Water Treatment Conveyance System from Sanford.

Motion by: Forrest

Second by: Berry

Vote: Unanimous

PUBLIC HEARINGS

13. Zoning Reassignment and Zone Map Adoption 22-REZ-01

Sean Ryan, Development Services, said the purpose of this item was to implement the new UDO zoning districts. He introduced Erin Perdue from Stantec, the consultant who assisted in the

creation of the new UDO. Ms. Perdue explained that the Unified Development Ordinance (UDO) establishes regulations for the development or use of property, establishes districts that cover every property and includes allowable uses, where buildings and structures can be located, and design standards. The Zoning Map goes with the UDO and assigns a district to every property in the Town and ETJ. New districts were assigned based on the new district that most closely matches the old one.

Ms. Perdue explained the process by which new zoning districts were assigned to properties to allow continued use of the property as it is currently being used, not to proactively rezone properties for potential development. She explained the changes from the old districts to the new ones, and what is not changing, including current uses, Planned Unit Developments, and general types of uses allowed in residential districts. She showed the differences between the Future Land Use map and the Zoning map. The Zoning map shows regulations that govern how land is used right now. Over time, the Zoning map changes to match the Future Land Use map as development takes place. She said the new Zoning map is not an attempt to change the uses a property is being used for now.

Ms. Perdue outlined the public engagement undertaken by the department to inform property owners and receive feedback on the new zoning designations and she outlined the steps taken in reevaluating properties where the owners requested a new zoning designation. She outlined the rezoning process, which is the typical way property is rezoned for development.

She then showed the location of 10 properties, mostly in the ETJ, whose owners requested adjustments. Mr. Ryan then went through the ten properties requesting adjustments and identified the old zoning designation, the reassigned zoning designation, and the requested zoning designation.

Chris Deshazor, Planning Board representative, said that Planning Board recommended approval with a vote of 8-0-1. There was not a lot of discussion as they had been through the plan multiple times.

Mayor Mayefskie opened the public hearing and the following input was received:

Baxter Walker said he was there representing Mike and Joe Carroll of 975 Avent Ferry Rd. He said the shift from LB to Neighborhood Mixed Use isn't the best in his opinion. The property is in close proximity to commercial, like the Sheetz. It is not at the entrance to a neighborhood. With the majority being CB, he thinks RMX would be a better zoning choice.

Kelly O'Hara, 2624 Avent Ferry, said they have lived here for 27 years. The zoning was R-30 and changing to RR she said makes it "R-80". She said that one house for 2 acres is not reasonable. They have five acres and want to divide it in the future. She asked Council to reconsider because they planned on subdividing and joining the Town some day and if they can only add one house it would not be financially worth it. She asked for their property to be changed.

Bill Daniels, 313 Silver Bluff Street in 12 Oaks, said he was speaking in opposition to the section that changes the zoning district in the ETJ, specifically the creation of the new HI, Heavy Industrial, District. The land adjacent to the east side of 12 Oaks is zoned HI and this is a prime residential area of town. Also for the road on Cass Holt, just south of Rex Road, across the street from Avocet and other residential properties. If it is important to add HI in the ETJ, then it should be done in locations that are not adjacent to or near existing residential developments. He does not see the necessity of adding this designation to the Town.

There being no further input, Mayor Mayefskie closed the public hearing.

MPT Berry said that this is an administrative action. Nothing keeps an owner from going through the rezoning process and he doesn't think it is proper to go through and select districts of higher density than the current use.

Council member McGrath said that he agrees that the majority of the requests were of a rezoning nature. He is glad the Town took the time to address residents' concerns, but this was not trying to rezone, but to match the current zoning. He appreciates the explanation from staff.

Action: Motion to adopt Rezoning Ordinance RZ22-02 to adopt the statement of compatibility and approve rezoning and amend Part 1 of the Ordinance with the stated adjustments:

Motion by: Wolff

Second by: Berry

Vote: unanimous

14. UDO Text Amendment 22-UDO-01 Planning Board and Board of Adjustment

Sean Ryan, Development Services, said that the purpose of this item was to amend the UDO to unmerge the Planning Board and Board of Adjustment. Requested actions are to conduct a legislative hearing, adopt the Ordinance amending the UDO, and to assign appointed members to either Planning Board or Board of Adjustment, and appoint new members to bring the membership up to full numbers. Mr. Ryan said that Council gave direction at the retreat that they wanted to maintain the Planning Board and Board of Adjustment as two separate boards. He said the new UDO decision making matrix had two types of decisions made by the merged Planning Board and Board of Adjustment: Legislative recommendations, and quasi-judicial decisions. The proposed amendment would have the legislative recommendations, such as comprehensive plans, rezoning, and general policy assigned to the Planning Board for recommendation, and quasi-judicial decisions, such as Special Use Permits, Variances, and Administrative Appeals, decided by the Board of Adjustment.

Chris Deshazor, Planning Board, said the Planning Board recommended approval with a vote of 7-1-1. He said there was one person absent, and one vote against from someone who had been a part of both boards. MPT Berry asked why the Planning Board was in support of combining the boards at first, and now are ok with separating them. Mr. Deshazor said that at first the Planning Board was in favor of combining because the Board of Adjustment does not have much work. After attending a Board of Adjustment meeting and seeing the differences in style and content, and investigating the logistics of a combined board, they felt that keeping the two separate was a better idea.

Mayor Mayefskie opened the public hearing.

There being no input, Mayor Mayefskie closed the public hearing.

Linda McKinney, Town Clerk, said that at their January 18, 2022 meeting Council appointed five people to the combined Planning Board / Board of Adjustment. Council also recommended an ETJ appointment to the Planning Board to the Wake County Board of Commissioners, and they made that appointment at their February meeting. With the separation of the boards, those appointees need to be assigned to a specific board. There are also some openings that did not get filled in order to start the process of reducing the number of people on the combined board. Therefore two additional appointments need to be made. To bring the boards up to full membership, the Planning Board needs three in-town members assigned or appointed to three-year terms. The Board of Adjustment needs two in-town regular members for three-year terms, one in-town alternate for a three-year term, and one in-town regular member for a term ending February 28, 2023.

Council member Forrest proposed moving in-town alternate Board of Adjustment member Jason Green to an in-town regular member position. There was consensus to make that motion after the Ordinance was adopted.

Action 1: Motion to adopt Ordinance 22-04 to adopt statement of compatibility and to approve UDO text amendment.

Motion by: Wolff

Second by: Forrest

Vote: unanimous

A copy of Ordinance 22-04 is attached to these minutes.

Council member Forrest said the Town has extended appointment letters to these five people. He would like to keep those appointments as all members of the Planning Board, and appoint new people to fill the openings on the Board of Adjustment. After three years the Planning Board would revert back to nine members.

Council member Wolff said he was concerned that having too large a board can slow down business. MPT Berry agreed that having too many members can make a meeting very large and he would like to keep the Planning Board to nine members. Council member Bennett said enlarging the Planning Board temporarily is an interesting idea, but Council decided that we were going to do this and then we altered the positions and that is on us. She said going from 9 to 11 members was not a big shift in size. She thinks it is an interesting temporary solution.

Council member Wolff said he was out of town and missed those appointments in January. Those appointments were to a board that no longer exists. If we are splitting the board into two separate boards with different functions, his preference would be to reappoint from the list of applicants and appoint three to Planning Board and four to the Board of Adjustment. We can still vote for the former appointees. It is not fair to those who have already received appointment letters, but that is due to Council's action. He would like to leave the board size as is, but reappoint applicants.

Mayor Mayefskie said he agrees with Council member Wolff that we have changed the board to a different board, and as eager as each of the applicants are, they might be willing to serve on either board or neither board.

Council member Bennett said they applied to one or the other board, not to a combined board. MPT Berry said Council appointed them to the combined board to simplify things and now we are undoing that. Council member McGrath pointed out none of these people have served on a board yet, because their terms started today. He said that Planning Board was increased recently from 7 to 9 members. It hasn't been at 9 for very long, but he thinks 9 is a good number.

Council member Wolff said the application had a place for applicants to express a preference so even though it was outdated at the time, thankfully council has that information. He asked what process would be required to undo the appointments from January.

John Schifano, Town Attorney said the way Council member Wolff stated it is probably legally correct. Council appointed them to a board that doesn't exist. He said that Council can disband an entire board but cannot unappoint only a few. Council member Wolff asked if Council would have to reappoint the current members. Mr. Schifano said that to be true to that legal framework, you would need to reappoint everyone.

Action 1: Motion to reappoint the following members to the Planning Board with terms ending Feb 28, 2023: Van Crandall and Chris Deshazor; and with terms ending February 29, 2024, Joanna Holder, Rick Madoni, and Courtney Patterson.

Motion by: Berry

Second by: Wolff

Vote: unanimous

Action 2: Motion to reappoint Duane Hansen as ETJ member to the Planning Board with a term expiring Feb 28, 2023.

Motion by: Berry

Second by: Wolff

Vote: unanimous

Action 3: Motion to reappoint the following members to the Board of Adjustment: Cody Loughridge as In-Town member with term a term ending February 29, 2024; Jeff Jones as ETJ member with a term ending February 29, 2024.

Motion by: Berry
Second by: Wolff
Vote: unanimous

Action 4: Motion to reappoint Elaine Crigger as ETJ alternate member of the Board of Adjustment with a term ending February 28, 2023.

Motion by: Berry
Second by: Forrest
Vote: Unanimous

Action 5: Motion to appoint the following people to the Planning Board with terms ending February 28, 2025: Ernie Carpico, Thomas Urquhart, and Josh Prizer.

Motion by: Berry
Second by: Wolff
Vote: unanimous

Council discussed the role of the Board of Adjustment in the new UDO and what requirements and qualifications would be helpful.

Action 6: Motion to assign the following appointees to three-year in-town regular terms to the Board of Adjustment: Danielle Hewetson and Jason Greene.

Motion by: Wolff
Second by: Berry
Vote: unanimous

Action 7: Motion to appoint Chanel Wilkins to a three-year term as In-town Alternate Member of the Board of Adjustment.

Motion by: Wolff
Second by: Bennett
Vote: unanimous

Action 8: Motion to appoint Ben Copeland to one-year term as In-town Regular Member of the Board of Adjustment for a term ending February 28, 2023.

Motion by: Wolff
Second by: Bennett
Vote: unanimous

Action 9: Motion to appoint Joe Cimino as In-town Alternate member of the Board of Adjustment for a 1-year term ending February 28, 2023.

Motion By: Wolff
Second by: Forrest
Vote: unanimous

NEW BUSINESS

15. Land Use Advisory Committee Town Code Amendment

Sean Ryan, Development Services, said that the purpose of this item was to establish the Land Use Advisory Committee (LUAC). The Technical Review Committee (TRC) provided a forum for input and informal review on development proposals. The TRC was dissolved with the adoption of the new UDO and the Land Use Advisory Committee was created. The committee framework is

similar to that of the TRC with membership composed of representatives from Development Services, Utilities and Infrastructure, Economic Development, Parks and Recreation, the Town Manager and Assistant Managers, and representatives from the Planning Board and Town Council. It is assumed that the current Council representatives to the TRC, MPT Berry and Council member Bennett will transition to the LUAC.

Action: Motion to adopt Ordinance 22-02 to amend the Town Code and to establish the Land Use Advisory Committee and to appoint the current TRC representatives (Dan Berry, primary and Kristi Bennett alternate) to the LUAC.

Motion by: Wolff

Second by: Berry

Vote: unanimous

16. Cass Holt Road Park Master Plan Approval

Matt Beard, Parks and Recreation said the purpose of this item was for staff to receive guidance to proceed with the design of site amenities and a recreation center at the new Cass Holt Road Park. He said that at the Retreat, staff was given direction to pursue partnerships for the aquatic center and a location for that center. He introduced Zach Pierce of CLH.

Mr. Pierce outlined the park master plan process and said we are now at the final concept and master plan stage. He explained how topography and existing conditions at the property were analyzed to determine the development and best placement of uses in the park. He outlined the important considerations gleaned from community input.

Holly Waterman, landscape designer with CLH, then showed a concept plan and explained its amenities. She gave rough estimates of costs for a recreation center, park site and amenities, utilities and road improvements, and other costs of building the park.

Mr. Beard said that next steps will be the creation of a Master Plan Report, and determination of phasing for design/construction drawings. He said that the project will be brought back to Council at their April 12th workshop to review an updated design and construction timeline and cost estimates.

Council member Forrest said at the Retreat there was discussion about having more than three gym courts. Mr. Beard said the original plan showed three gym spaces in the northern part of the Rec Center, but that could be expanded if the aquatic center is moved to another location. Council member Forrest said he would like it sized for at least 4 courts so we could host tournaments. Mayor Mayefskie said we are going to fill those gyms, so the more the better. He would recommend 5 or 6 courts if possible because we will fill it with volleyball and basketball. Council member Bennett asked about the size of the splashpad. She asked if the pickleball/volleyball courts and the restroom pavilion could be switched. Having the restroom pavilion directly across from the splashpad will give parents a sightline to see the splashpad from the restroom pavilion area. Mr. Beard said that with the splash pad so close to the Rec Center, there would be restrooms near the entrance they could use. Council member Bennett said you can't send kids alone into a building but you can send them to a standalone restroom. And wet kids can't go into a building.

Council member Wolff said he was amazed at how much staff was able to fit into the site. There was a question about the number of parking spaces, which was answered by saying that would be determined more accurately at a later phase of the design process. Randy Harrington, Town Manager, said the question about the number of courts could be woven into a plan for future communications. Mayor Mayefskie asked the plan to be sketched to show how many courts are in each space for the next presentation.

Mr. Beard asked if Council wanted to have Council member Bennett's request to flip the location of the restroom pavilion be brought back in design phase or if they wanted this changed in the concept plan. Consensus was this could be done at design phase.

Action: Motion to approve Cass Holt Road Park Master Concept Plan

Motion by: Bennett

Second by: Forrest

Vote: unanimous

A copy of the Master Concept Plan is attached to these minutes.

17. Bid Award for 12 Oaks Pump Station Expansion & Modifications Project

Rachel Ingham, Utilities and Infrastructure, said the purpose of this item was to review plans for upgrading the 12 Oaks Pump Station and approve a sole source exception of purchase of certain materials pursuant to NCGS § 143-129(e)(6), and award the 12 Oaks Pump Station Expansion and Modifications Project to Eberhart Construction. She showed the drainage basins in Holly Springs and explained which were gravity fed and which required pump stations. She said that the 12 Oaks Pump Station served 3,650 single and multi-family homes, two schools, and a commercial area. The pump station construction plans were approved in 2006 and included a future expansion (Phase 2) to serve the expected increased demand. That need has arrived and the pump station needs to be expanded.

Ms. Ingham outlined the timeline on the expansion, from the Request for Qualifications for the design in December of 2020, through the bid advertisement, to the bid closing on February 9, 2022. She explained how identical components to those installed in the repair of Phase 1 be installed for Phase 2. Four bids were received and Eberhart Construction was the lowest responsible responsive bidder at \$1,149,000.

She said that staff has reached out to the HOA and plans to hold an open house to explain the process to residents.

Council member Forrest asked why the word “sole source” was used. Ms. Ingham said there were four allowance options the staff recommended. She explained why the vendors and parts were specifically recommended to make maintenance compatible with current devices. John Schifano, Town Attorney, explained that in order to use the same parts from one pump to another they must be sole sourced. It is not the majority of the contract that is sole sourced, only those parts.

Mayor Mayefskie asked if this would address some of the noise concerns. Ms. Ingham said that ordinarily pumps are underground. When the pumps failed in July of 2021, they had to use bypass pumps, which are above ground. Submersed pumps are automatically quieter, but staff will monitor the noise and make adjustments to mitigate it if necessary.

Action: Motion to approve a sole source exception of purchase of certain materials pursuant to NCGS § 143-129(e)(6) and award the 12 Oaks Pump Station Expansion & Modifications Project contract in the amount of \$1,149,000 to Eberhart Construction, Inc.

Motion by: Berry

Second by: Forrest

Vote: unanimous

OTHER BUSINESS

Council member McGrath said that, to refer back to discussions at the retreat, how do we get infrastructure in line [*connection became unstable and words were garbled*] other than that, nothing specific. Please realize that conflict is present on the other side of the Atlantic and our thoughts and prayers go out to the nation of Ukraine.

MPT Berry thanked Pack 66 for inviting him to speak at their Arrow of Light ceremony. He asked why Planning Board meetings are still being held virtually. Chris Hills, Development Services, said that the chairperson of the Planning Board preferred it to be virtual, but this was her last meeting as chair, and Planning Board will be in-person in March.

Council member Forrest said that Boy Scout Troop 66 has volunteered to present the colors at a future Council meeting. He asked if there was an update on finding funds for widening Avent

Ferry Rd. Randy Harrington, Town Manager, said not at this time. Council member Forrest said he would continue to ask because this is important.

Mayor Mayefskie said he went on a tour of the South Wake Landfill and it was impressive what they have done. They will be opening up for tours to the public soon and it is worthwhile.

MANAGER'S REPORT

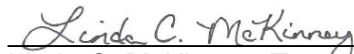
Randy Harrington, Town Manager, said he had no special report.

CLOSED SESSION: None.

Council member Forrest asked if Council member McGrath was still on the line. He asked if there was anything we could do to help out. Council member McGrath said he was fine but people further east were not.

Adjournment: MPT Berry made a motion to adjourn at 9:43 pm. It was seconded by Council member Wolff and passed with a unanimous vote.

Respectfully Submitted on Tuesday, March 15, 2022.



Linda C. McKinney, Town Clerk

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



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 7.

Consent Agenda

Title: Wake County Registrar of Deeds Plat Review Officer Appointment Recommendations

Strategic Priority Area: Responsible & Balanced Growth

Staff Resource: Elizabeth Goodson, Development Services

Action(s):

Adopt Resolution 22-09 recommending appointment of Review Officers for the Town of Holly Springs.

Explanation:

- The Town of Holly Springs Development Services Department is required by Wake County Registrar of Deeds to designate a person or persons as the Review Officer to sign all plats for recording of land subdivision or dedication to verify that the plat meets all statutory requirements for recording by the Wake County Registrar of Deeds.
- With the growing needs of the department and staff members in new roles, this Resolution will add the following staff members and allow for a total of five Review Officers designated for the Town of Holly Springs with Wake County Registrar of Deeds:

Name

Christopher Hills
Elizabeth Goodson
Sean Ryan
Cheryl Caines
Beth Sarkisian

Position/Title

Development Services Director
Land Development Division Manager
Planning Manager
Senior Planner
Customer Service & Compliance Division Manager

Background:

- Per North Carolina General Statute 47-30.2, by resolution, designate by name one or more persons experienced in mapping or land records management as a Review Officer to review each map and plat required to be submitted for review before the map or plat is presented to the register of deeds for recording.
- Holly Springs typically had 2-3 staff designated to serve as a Review Officer.
- With staff changes over the last couple of years, the only staff member on record at this time is Beth (Sarkisian) Trautz.
- This update will allow staff to reassign a primary Review Officer and have adequate back up for signatures of plats in the absence of a primary Review Officer.

Funding Source(s):

N/A

Attachment(s):

1. 22-09 Recommending the Appointment of Review Officers



Resolution No. 22-09

Date Adopted:

Effective Date:

**RESOLUTION RECOMMENDING THE APPOINTMENT
OF REVIEW OFFICERS FOR THE TOWN OF HOLLY SPRINGS**

Whereas, Article 2 of Chapter 47 (§ 47-30.2 Review Officer) of the North Carolina General Statutes requires the Board of Commissioners of each county, by resolution, designate by name one or more persons experienced in mapping or land records management to be appointed as a Review Officer to certify the maps or plats presented to the Register of Deeds as complying with all statutory requirements for recording; and

Whereas, the review of statutory requirements is of a technical nature; and

Whereas, one of the services of the Town of Holly Springs staff provides to the community is a similar technical process for subdivision plat review in order to verify compliance with the Town's development regulations; and

Whereas, it appears most efficient for the Town of Holly Springs to avoid adding another layer of development review by providing for the certification of statutory compliance for all maps or plats to be presented to the register of deeds for recording within the context of subdivision review procedures;

NOW THEREFORE BE IT RESOLVED THE HOLLY SPRINGS TOWN COUNCIL:

The following persons are recommended to be appointed by the Wake County Board of Commissioners to serve as Review Officers for all lands within the municipal and extraterritorial jurisdiction of the Town of Holly Springs in order to certify each map and plat presented to the Wake County Register of Deeds for recording satisfies the statutory requirements for recording:

Name

Christopher Hills
Elizabeth Goodson
Sean Ryan
Cheryl Caines
Beth Sarkisian

Position/Title

Development Services Director
Land Development Division Manager
Planning Manager
Senior Planner
Customer Service & Compliance Division Manager

Adopted this, the 15th day of March, 2022.

Attest:

(SEAL)

Sean Mayefskie, Mayor

Linda McKinney, Town Clerk





Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 8.

Consent Agenda

Title: Resolution for road name changes and assignments near the NC540 interchange at Holly Springs Rd. and Kildaire Farm Rd.

Strategic Priority Area: Responsible & Balanced Growth

Staff Resource: Beth Trautz, Development Services

Action(s):

Adopt Resolution 22-07 to rename portions of Kildaire Farm Rd, Wesley Ct, Fairview St, and Suncliffe Ct and assign road names to two (2) newly created roads in conjunction with the construction of NC 540.

Explanation:

- NCDOT is currently working on the Holly Springs Rd and NC540 interchange, resulting in several secondary road re-alignments and name changes. The Town is partnering with NCDOT and Wake County Addressing to rename and assign new road names where needed.
- The roads are located in Holly Springs Town Limits and the Town's Extraterritorial Jurisdiction (ETJ).
- The Town is responsible for the road name assignments in the town's jurisdiction and requires a resolution by Holly Springs Town Council.
- State roads in the ETJ require a Public Hearing by the Wake County Board of Commissioners; the Public Hearing is scheduled for April 18th.
- Due to the road realignment, there will be three new roads that require a new name, four roads that require renaming, and 11 parcels that will be readdressed.
- The new road names and addresses will be effective as the new road network opens. It will be a phased plan by NCDOT.

Background:

- Construction of the first phase of the Complete 540 project is underway and, when complete, will extend the existing Triangle Expressway (N.C. Toll 540) between N.C. 55 Bypass and I-40.
- Town Staff, Wake County Addressing, and a representative of NCDOT held an open house for affected property owners on March 2nd at Holly Springs Town Hall. Four residents attended.
- The Holly Springs Rd and Kildaire Farm Rd intersection re-aligns north of the NC540 interchange. The remaining portion of Kildaire Farm Rd will no longer intersect with Holly Springs Rd and will be renamed to Midhope Dr. The road Midhope is named after a castle in Scotland, which connects the name to Scot's Laurel subdivision. Two (2) homes require new addresses.

Town Council Business Meeting
March 15, 2022

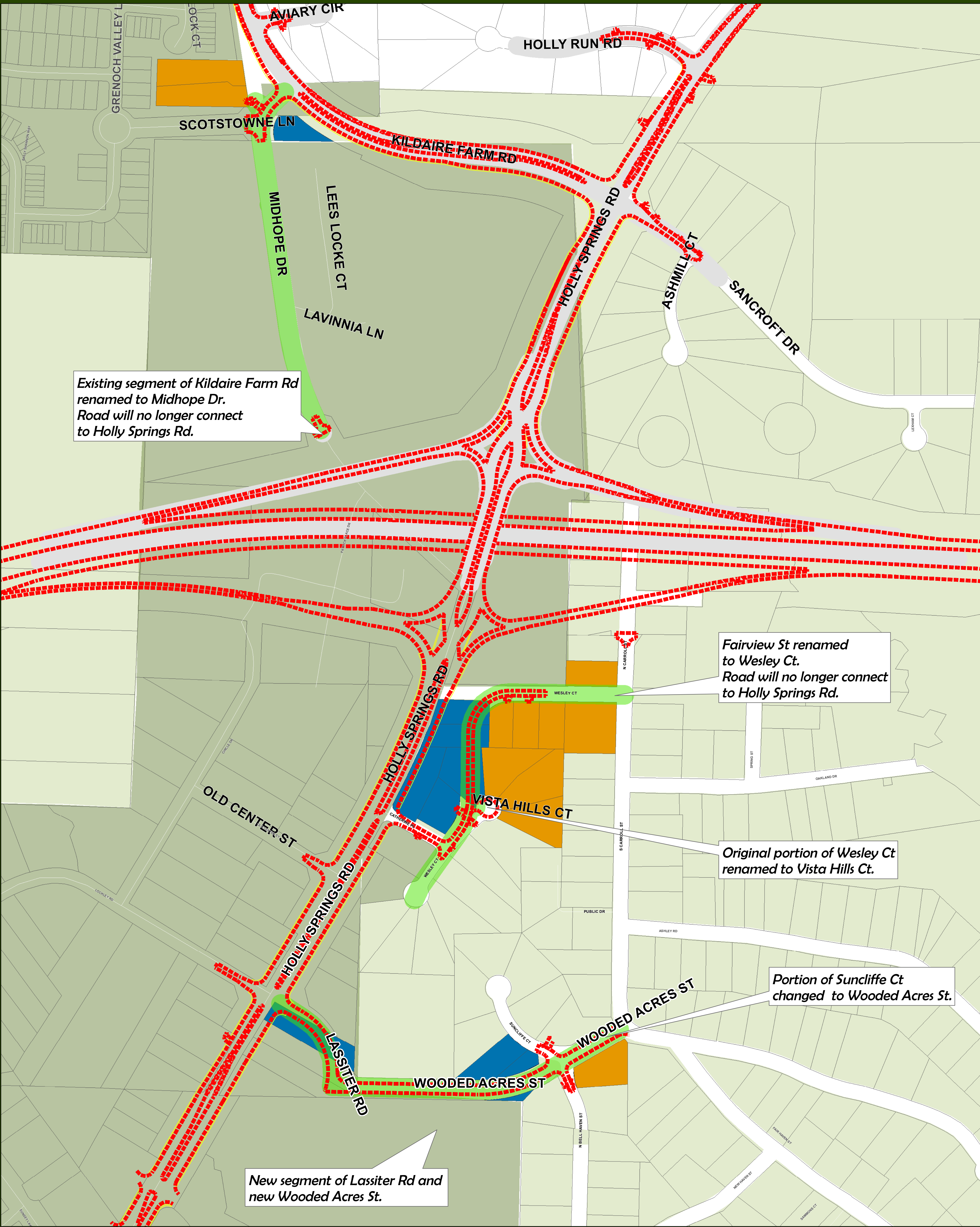
- A new intersection, south of the NC 540 interchange on Holly Springs Rd, will create a connection to S. Carroll St. This is a segment of Lassiter Rd which is shown on the CTP to connect with existing Lassiter Rd. Existing Lassiter Rd currently terminates in Holly Lakes Shopping Center.
- Wooded Acres St is a newly constructed road creating an east-west connection between Holly Springs Rd and S. Carroll St. The road consumes a portion of Suncliffe Ct near S Carroll St and connects with the newly created segment of Lassiter Rd. The road Wooded Acres is named after one of the neighborhoods in the area. One (1) home requires a new address. The remaining addresses on Suncliffe Ct are not affected.
- Fairview St currently connects N. Carroll St to Holly Springs Rd. The connection to Holly Springs Rd will be removed; and, the remaining portion of Fairview St will re-align to merge with Wesley Ct. This area requires a Wake County Board of Commissioners Public Hearing.
- A new road will be constructed to connect the southern cul-de-sac of Wesley Ct to the remaining portion of Fairview St. This newly formed road will be renamed Wesley Ct. The north Wesley Ct cul-de-sac re-aligns and is named Vista Hills Ct. Vista Hills was randomly selected as a road name. Five (5) homes on Fairview St and three (3) homes on Wesley Ct require new addresses. This area requires a Wake County Board of Commissioners Public Hearing.

Funding Source(s):

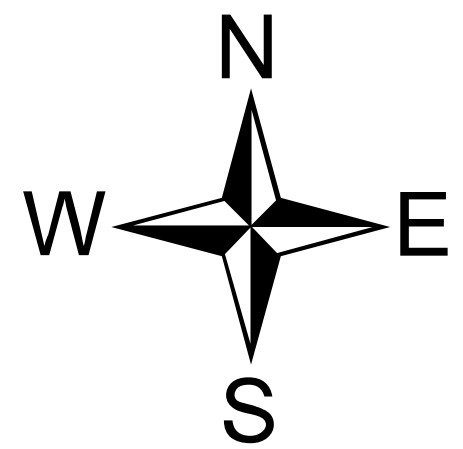
N/A

Attachment(s):

1. NC540_Corridor_Address_Changes
2. 22-07 Road Name changes due to I540



- Legend**
- Future Edge of Pavement
 - Sidewalk
 - New Road Design
 - NC DOT Owned Property
 - Re-addressed Property
 - Town Limits
 - Extraterritorial Jurisdiction (ETJ)



State Plane NAD 1983
Date: 3/2/2022

For More Information contact:
Town of Holly Springs
Utilities & Infrastructure
P.O. Box 8
Holly Springs, NC 27540
919.557.3525
www.hollyspringinc.gov

The Town expressly denies any and all responsibility for errors, if any, in the information/data or for the misuse of the information/data by the user or anyone else. The user understands that he or she should verify the accuracy of the information/data before using it.



Resolution No. 22-07

Date Submitted: March 15, 2022

Date Adopted:

**A RESOLUTION OF THE HOLLY SPRINGS TOWN COUNCIL RENAMING
PORTIONS OF FOUR MUNICIPAL STREETS WITHIN THE CORPORATE
LIMITS OF THE TOWN OF HOLLY SPRINGS: KILDAIRE FARM ROAD,
SUNCLIFF COURT, FAIRVIEW STREET, AND WESLEY COURT.**

WHEREAS, the North Carolina Department of Transportation (NCDOT) is undergoing a project to complete the I-540 loop which requires the realignment of portions of existing Kildaire Farm Road, Suncliff Court, Fairview Street, and Wesley Court and creating new streets; and

WHEREAS, certain plats have already been recorded effectuating some of these changes;

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

1. That portion of Kildaire Farm Road from Scotstowne Lane running 1234 feet towards Holly Springs Road will be renamed "Midhope Drive".
2. The 278-foot portion of Suncliffe Court from the intersection with S. Carroll Street to the intersection with N. Bell Haven will be renamed "Wooded Acres Street".
3. The 515 feet of Fairview Street from the intersection with N. Carrol will be renamed "Wesley Court" and the remaining portion of Fairview St. will be consumed by NC540 right of way.
4. The portion of Wesley Court running 149 feet from the northern cul-de-sac realigns and will be renamed "Vista Hills Court".

Adopted by the Holly Springs Town Council on this, the 15th day of March, 2022.

Town of Holly Springs by

Sean Mayefskie, Mayor

ATTEST:

Linda McKinney, Town Clerk





Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 9.

Public Hearings

Title: 117 E Maple Special Exception Use & Variances - Quasi-Judicial Hearing

Strategic Priority Area: Responsible & Balanced Growth

Staff Resource: Cheryl Caines, Development Services

Action(s):

1. Conduct Quasi-Judicial Public Hearing to consider a Special Exception Use (21-SEU-04) to allow for one (1) single family dwelling within the adopted Village District Area Plan boundary and Variances to reduce the front yard setback from 20 feet to 8 feet along Grigsby Avenue (21-VARTC-01) and reduce the front yard setback from 20 feet to 12 feet along E Maple Avenue (22-VARTC-01).
2. Adopt Resolution 22-10 to make and accept the Findings of Fact for consideration of and to approve the SEU and Variances.
3. Approve/deny/table Development Plan for 117 E Maple Avenue with the conditions stated in the attachment.

Explanation:

- A new Unified Development Ordinance (2022 UDO) was effective March 1, 2022. Over the next 12-24 months, there will be a crossover period where some projects are able to utilize the old UDO (2002 version) due to state statutes. This section of the cover sheet will be utilized to specify the UDO version (2002 or 2022) and the approval type that the Council is considering for each respective case.
 - Applicable Ordinance: 2002 Unified Development Ordinance
 - Process: Quasi-judicial public hearing for Special Exception Use and Variances
- A Special Exception Use (SEU) is a Permitted Use within the specific zoning district that may not necessarily fit in with the surrounding areas and uses and is subject to further review. Applicants requesting an SEU must be able to demonstrate that all required Findings of Fact are being met.
- The Town Council, through a public hearing and sworn testimony, must be able to make findings that the facts for the SEU and Variances are met.
- The applicant is requesting SEU approval for one (1) single family residence at 117 E Maple Ave within the Village District Area Plan boundary in the R-10 Residential district (SR Suburban Residential effective March 1, 2022 with adoption of the new Unified Development Ordinance).
- The applicant is also requesting two variances to reduce the front yard setback from 20 feet to 8 feet along Grigsby Avenue and reduce the front yard setback from 20 feet to 12 feet along E Maple Avenue.

Background:**Background**

- The site was rezoned from R-10 to SR Suburban Residential as part of the 2022 UDO update effective March 1, 2022. Per North Carolina General Statutes, the applicant is proceeding with the application under R-10 zoning and the UDO effective at the time they made the application, which required a Special Exception Use for single family dwellings in residential districts within the Village District Area Plan boundary.
- In December 2015, the Town Council adopted an amendment to the Unified Development Ordinance (UDO) regarding future land uses and appropriate residential densities in the Town's Village District. Many of the residential lots within the Village District were platted in the early 1900s and do not meet the lot standards required by the UDO.
- New single family homes in the R-10 and R-15 residential zoning districts are required to obtain approval through the Special Exception Use (SEU) process so that the development of the parcel can be evaluated through the SEU findings of fact to ensure the development is appropriate for the neighborhood.
- This site is considered non-conforming because it does not meet the minimum dimensional standards.

Planning Board Recommendation

The Planning Board discussed the proposed Special Exception Use on February 22, 2022. No issues or concerns were noted. The Planning Board recommended that the Town Council approve the Special Exception Use 21-SEU-01 (8-0).

Funding Source(s):

N/A

Attachment(s):

1. 21SEU04_117 E Maple_PB Staff Report 022222
2. 21SEU04_117EMaple_Petition_Plans
3. 117EMaple Proposed Motions and Conditions
4. Resolution 22-10 Findings of Fact_117EMapleAve



Town of Holly Springs Staff Report to the Planning Board

REQUEST FOR SPECIAL EXCEPTION USE 117 E Maple St. 21-SEU-04, 21-VARTC-01, & 22-VARTC-01

PETITIONER(S):

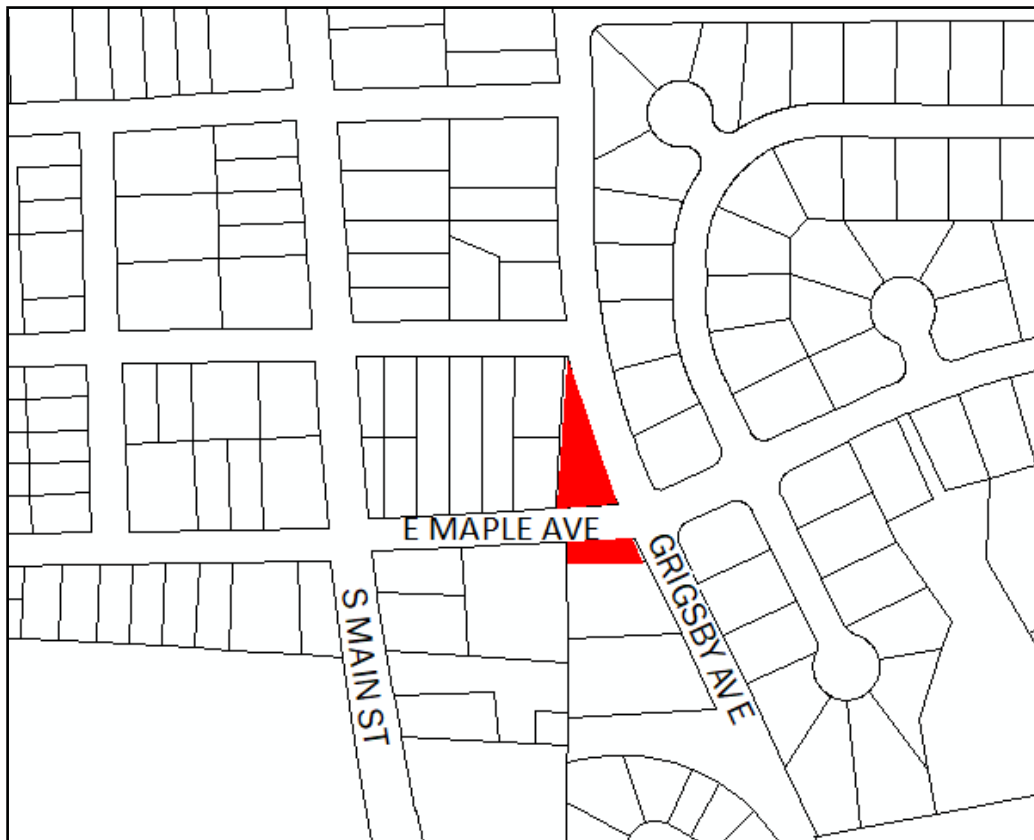
Randy Miller
Thompson & Associates
1149 Executive Cir, Suite 02
Cary, NC 27511

DEVELOPER(S):

Jason Brown
Starcraft Builders
5804 Cleome Court
Holly Springs, NC 27540

PROPERTY OWNER(S):

Jason Brown
5804 Cleome Ct.
Holly Springs, NC 27540

LOCATION MAP

LOCATION: [X] Within Corporate Limits of Holly Springs [] Within Holly Springs ETJ [] Annexation Pending

ANTICIPATED REVIEW SCHEDULE:

Planning Board: February 22, 2022
Town Council Action: March 15, 2022

STAFF CONTACTS: Cheryl Caines, Senior Planner
Steidrick Baker, Development Plan Reviewer

ATTACHMENTS:

Development Petition
 Petitioner's Response to the Special Exception Use Findings of Fact
 Variance of Development Standards Petition
 Proposed Plot Plan
 Proposed Elevation sketch

PARCEL INFORMATION			
OWNER	PARCEL #	ZONING	AREA
Jason Brown	0648999313	R-10	0.25
		Total:	0.25 acres

ADJACENT PROPERTY SITE DATA		
	ZONING	EXISTING LAND USE
Subject Property	R-10 Residential	Vacant
North	R-10 Residential	Existing single-family home
South	R-10 Residential	Street, then existing single family home
East	R-10 Residential	Street, then existing single-family home
West	R-10 Residential District	Existing single family home/vacant

PROPERTY HISTORY	
Rezoning History N/A	Project History N/A

SPECIAL EXCEPTION USE

Request to allow for a Special Exception Use as specified in Unified Development Ordinance Section 2.04 R-10 Residential District to allow for one (1) single family dwelling within the adopted Village District Area Plan boundary at the property located at 117 E Maple Ave, Wake County PIN 0648999313.

Special Exception Use Findings of Fact:

A special exception use may only be granted upon the presentation of sufficient evidence to enable a written determination that:

- a. The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare;
- b. The proposed use will not injure or adversely affect the adjacent area;
- c. The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan;
- d. The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved as set forth above, in which case the proposed use shall conform to the terms and conditions of such waiver).

- e. Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 – Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency;
- f. Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood;
- g. The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of those persons whom may work at, visit or own property nearby to the proposed use;
- h. Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the needs of the proposed use;
- i. The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts; and,
- j. The type, size, and intensity of the proposed use (including but not limited to such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use) will not have significant adverse impacts on adjoining properties or the neighborhood.

TOWN COUNCIL VARIANCE REQUESTS NOT FOR PLANNING BOARD DISCUSSION OR CONSIDERATION

- 1. **21-VARTC-01: Request to allow for a Variance of Regulations of UDO Section 2.04 B. 5. a Development Standards, Minimum Yards & Building Setbacks, to reduce the minimum front setback along Grigsby Avenue from 20 feet to 8 feet in association with Special Exception Use Petition #21-SEU-04.**
- 2. **22-VARTC-01: Request to allow for a Variance of Regulations of UDO Section 2.04 B. 5. a Development Standards, Minimum Yards & Building Setbacks, to reduce the minimum front setback along E Maple Avenue from 20 feet to 8 feet in association with Special Exception Use Petition #21-SEU-04.**

UDO Requirements:

UDO Section 2.04, B. 5. a Minimum Yards and Minimum Building Setbacks in the R-10 Residential District

The following minimum yard and minimum building setback requirements shall apply to all buildings and structures, unless specifically provided otherwise:

- a. Front - a minimum front yard and minimum building setback measured from the greater of the proposed right-of-way or existing right-of-way shall be provided as follows:

Local Street/Cul-de-Sac Street: 20'

Variance Findings of Fact:

- (1) Unnecessary hardship would result from the strict application of the ordinance. It shall not be necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property.
- (2) The hardship results from conditions that are peculiar to the property, such as location, size, or topography. Hardships resulting from personal circumstances, as well as

- hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis for granting a variance.
- (3) The hardship did not result from actions taken by the applicant or the property owner. The act of purchasing property with knowledge that circumstances exist that may justify the granting of a variance shall not be regarded as a self-created hardship.
 - (4) The requested variance is consistent with the spirit, purpose, and intent of the ordinance, such that public safety is secured, and substantial justice is achieved.

STAFF ANALYSIS

PROJECT OVERVIEW

A Special Exception Use is a Permitted Use within a specific zoning district that may not necessarily fit in with the surrounding areas and uses and is subject to further review. Applicants requesting a Special Exception Use, must be able to demonstrate that all required Findings of Fact are being met. The Town Council through the public hearing and sworn testimony must be able to make findings that these facts will be met and/or adhered to as part of the motion. If the Town Council determines that a Fact cannot be met or adhered to, then the Special Exception should be denied.

In December of 2015, the Town Council adopted an amendment to the Unified Development Ordinance (UDO) regarding future land uses and appropriate residential densities in the Town's Village District. Many of the residential lots within the Village District were platted in the early 1900's and do not meet the lot standards required by the UDO. New single-family homes in the R-10 residential zoning district are required to obtain approval through the Special Exception Use process so that the development of that parcel can be evaluated through the Special Exception Use findings of fact to ensure that it is appropriate for the neighborhood.

The applicant is requesting Special Exception Use approval for one single-family dwelling located at 117 E Maple Avenue. Since the parcel is zoned R-10 Residential and is located within the boundaries of the Village District Area Plan, a Special Exception Use is required to evaluate the appropriateness of a single-family home in this location.

PLANNING & ZONING

Vision Holly Springs Comprehensive Plan

Future Land Use & Character Plan Designation: Downtown Village District

Residential neighborhoods in the Downtown Village District offer different choices for residents to live near and experience the two activity centers (core area and medical campus). Preserving the character of existing homes is a high priority in this area, though some existing large-lot neighborhoods may be subdivided or redeveloped to introduce more housing units (including single dwelling homes on small lots, townhomes, duplexes, cottage dwellings, multi-unit houses and accessory dwelling units) and to increase the number of residents living near both the downtown core and the medical campus.

Land Use Policies that apply to this project include:

- Residential buildings should be traditional in design and orientation to mesh with the existing neighborhood fabric.
- Residential building types shall be small lot single-dwelling homes, townhomes, duplexes, cottage dwellings, multi-unit houses and accessory dwelling units.
- Lots are rear-loaded to maximize walkability and reduce the emphasis on automobiles.
- Parking is located in and accessed from the rear.
- Lots are relatively small, with a high percentage of frontage buildout along the street.
- Low-impact landscape design techniques and sustainable stormwater practices should be incorporated.

Village District Area Plan

The property is located within the Village District Area Plan (VDAP) and is designated as Park and Open Space. This category is intended to identify areas that would ensure a system of parks, trails and open spaces adequate for a wide variety of active and passive leisure pursuits, contributing to the quality of life within the Town.

Village District Area Plan Objectives that apply to this request include:

LU-1. a. Encourage residential uses as depicted on the Plan. These uses include:

- Single-family Residential in the form of patio homes or zero lot lines with a density of four to five dwelling units per acre.
- Mixed Residential development, including a variety of housing types within a single project (i.e. condo, patio homes, attached and detached, etc.)
- Attached Residential in the form of apartments, townhomes, and condos IDR-1. Allow increases in density in existing residential neighborhoods.

SPECIAL EXCEPTION USE

The applicant is requesting a Special Exception Use approval for one single-family dwelling located at 117 E Maple Avenue. Since the parcel is zoned R-10 Residential and is located within the boundaries of the Village District Area Plan, a Special Exception Use is required to evaluate the appropriateness of a single-family home in this location.

Special Exception Use Analysis

All development standards have been met based on the exhibits submitted by the applicant with the exception of front yard setbacks along Grigsby Avenue and E Maple Avenue. The applicant has requested variances to reduce the front yard setbacks along both of these streets. These requests will be reviewed by the Town Council at a public hearing. Adjacent properties in the area are accessed by private driveways and provide private garages or parking pads to the front or side of the dwelling units. The proposed height, bulk, and orientation of the structure on the lot is compatible with the single-family residential development patterns on nearby properties.

Development Standards & Architectural and Site Design Requirements

Gross Density/Lot Area/Lot Size:

Current Lot Size: 0.25 Acres

Setbacks:

Required Setbacks

Front: 20 feet

Side: 6 feet

Rear: 25 feet

Proposed Setbacks to Primary Structure

Front: 8 feet, Grigsby Avenue, Variance requested

Front: 12 feet, E Maple Avenue, Variance requested

Side: 6.5 $\pm$ feet

Rear: N/A

Building Height

Maximum Allowed: 35 feet

Proposed: 12 $\pm$ feet

Gross Floor Area

Proposed: 1,334

Parking and Loading

Required: 2 off-street spaces per dwelling unit

Proposed: 2 car parking pad

Accessory Structures

None proposed.

Fences:

There is no fence proposed with this project. If at any time a fence is proposed, it must comply with UDO requirements.

Building Materials, Colors, Textures, Architecture, Roof Treatment, and Façade Modulation:

There are no specific architectural requirements for single family dwellings which are not located within a Development Options neighborhood.

In accordance with NC General Statutes, the Town cannot require single-family dwellings to comply with any architectural design standards unless agreed to by the property owner. This includes:

1. Exterior building color;
2. Type or style of exterior cladding material;
3. Style or materials of roofs or porches;
4. Exterior nonstructural architectural ornamentation;
5. Location or architectural styling of windows and doors, including garage doors;
6. Location of rooms; and
7. Interior layout of rooms.

Building Orientation

The proposed building will be oriented towards E Maple Avenue and will be accessed with a private driveway from Grigsby Avenue.

Tree Preservation

Projects or subdivisions within the adopted Village District Area Plan boundary as indicated in the Comprehensive Plan are not subject to the tree preservation area requirements. However: (1) The removal of any tree twenty (20) inches or greater Diameter at breast height (DBH) must be approved by the Town Council or their designee.

The applicant has indicated on the site plan that the site does not currently contain any existing qualifying trees.

CIVIL IMPROVEMENTS

Water Service:

This project will be served by a new water service connection to the existing 12" waterline in East Maple Ave.

Sewer Service:

This project will be served by a new sewer service connection to the existing 8" gravity sewer main in Grigsby Ave.

Transportation:

Right-of-way will be dedicated across the property frontage on East Maple Ave and Grigsby Ave in accordance with the Comprehensive Transportation Plan and the Engineering Design & Construction Standards. New 5' sidewalk will be constructed across the property frontage on East Maple Ave. New 10' sidepath will be constructed across the property frontage on Grigsby Ave.

Environmental:

This project will be required to meet the Town of Holly Springs NPDES Ph. II Post Construction Stormwater Ordinance.

REQUESTED ACTION

Staff has reviewed the requested Special Exception Use Petition and has found that the Petition as submitted and presented to the Planning Board complies with the minimum requirements as specified in Town adopted land development policies and ordinances.

SUGGESTED MOTION:

Motion to recommend that the Town Council **approve/deny** Special Exception Use #21-SEU-04 as specified in Unified Development Ordinance Section 2.04 R-10 Residential District to allow for (1) single family dwelling within the adopted Village District Area Plan boundary as indicated in the Comprehensive Plan, in the R-10 District at the property located at 117 E Maple Avenue, Wake County PIN 0648999313, as submitted by Thompson & Associates with the following conditions:

1. All operations must adhere to the evidence submitted by the applicant as stated in the findings of fact submitted and those findings of fact specified by the Town Council in conjunction with 21-SEU-04.
2. Minor modifications to the height, bulk, orientation of the structure on the lot, location of the structure on the lot, and site design may be authorized by the Director of Development Services. If the Director determines that the proposed minor modifications are of such a nature as to adversely impact the purpose or intent of this approval, the petitioner shall be required to file a new petition for Special Exception Use approval.
3. This project will be required to meet the Town of Holly Springs NPDES PH. 2 Post Construction Ordinance.

DEVELOPMENT PETITION

The current Filing Fees can be found on-line in the Town of Holly Springs Fee Schedule:
http://www.hollyspringsnc.us/planning

**Petition Type:**☐ **Master Plan**

- ☐ New Detailed ☐ New Schematic
☐ Major Amendment ☐ Minor Amendment*

☒ **Preliminary Plan- Major Subdivision**

- ☒ New ☐ Major Amendment ☐ Minor Amendment*

☐ **Development Plan** (check all that apply)

- ☐ New ☐ Major Amendment ☐ Minor Amendment*
☐ Gateway Non-Residential/Mixed Use Gross Building Floor Area _____
☐ Non-Gateway Non-Residential/Mixed Use Gross Building Floor Area _____
☐ Multifamily
☐ Residential Development Options or Infill Development Options

☒ **Special Exception Use**

- ☒ New ☐ Family Child Care Home

* Specify purpose of amendment on Certificate of Plan Revisions

For DPZ Use only

Project # _____

Fees Paid: \$ _____

Date Received: _____

☐ Initial ☐ Revised ☐ Final

Project Information:

Project Name: 117 E. MAPLE AVE

If this project is part of a previously approved plan, please specify:

PUD/Master Plan/Subdivision N/A Shopping Center/Lot# N/A

Project Location: 117 E. MAPLE AVE HOLLY SPRINGS, NC

Use street address. If none, use the closest intersection

☒ Within Corporate Limits ☐ Within Holly Springs ETJ ☐ Pending Annexation

PIN: 648-99-9313 Real Estate ID: 0222587

Project Acreage (rounded to nearest tenth): 0.25 AC Partial Parcel: ☒ No ☐ Yes (additional fee)

Current Zoning: R-10 Proposed Use (see UDO Primary Use List): SINGLE FAMILY RESIDENCE

Open Space [See UDO Section 7.06(F)(4)]: ☐ Dedication ☐ Fee-in-lieu ☐ Combination ☒ N/A

Waivers Requested: ☐ No ☒ Yes- Specify UDO Section Number(s): 7.06 (SETBACK)

If yes, complete and attach appropriate Waiver Petition(s) from Waiver Packet

Scoping Meeting Date: _____ Concept Meeting Date: _____

If the Concept Meeting Date is not within 8 weeks of the submittal date, another Concept Meeting is required prior to submittal.

Petition Contact Information: (complete each contact in its entirety- please print or type)**Project Applicant/Contact**

(check one) ☐ Owner ☐ Owner's Agent ☒ Design Professional ☐ Developer ☐ Other _____

Name RANDY MILLER Company THOMPSON & ASSOCIATES

Mailing Address 1149 EXECUTIVE CIRCLE SUITE D2

City CARY State NC Zip 27511

Telephone # (919) 465-1566 E-Mail miller.pee@att.net

How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Design Professional if different than Applicant/Contact SAME

Name _____ Company _____

Mailing Address _____

City _____ State _____ Zip _____

Telephone # () _____ E-Mail _____

How would you like to receive staff review comments? ☐ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Developer

Name JASON BROWN Company STARCRAFT BUILDERS
Mailing Address 5804 CLEOME COURT
City HOLLY SPRINGS State NC Zip 27540
Telephone # (919) 369-1228 E-Mail JASON@starcraftbuilders.com
How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Architect N/A

Name _____ Company _____
Mailing Address _____
City _____ State _____ Zip _____
Telephone # () _____ E-Mail _____
How would you like to receive staff review comments? ☐ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Landscape Architect N/A

Name _____ Company _____
Mailing Address _____
City _____ State _____ Zip _____
Telephone # () _____ E-Mail _____
How would you like to receive staff review comments? ☐ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Other: _____ (any other contact that should receive comments and correspondence for this project)

Name _____ Company _____
Mailing Address _____
City _____ State _____ Zip _____
Telephone # () _____ Alternate Telephone # () _____
Fax # () _____ E-Mail _____
How would you like to receive staff review comments? ☐ Fax ☐ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☐ Fax ☐ E-Mail ☐ US Mail- Certified

Property Owner - Required

Name JASON BROWN Company STARCRAFT BUILDERS
Mailing Address 5804 CLEOME COURT
City HOLLY SPRINGS State NC Zip 27540
Telephone # (919) 369-1228 E-Mail JASON@starcraftbuilders.com
How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Certificate of Submittal Completion

I, Randall Miller RANDALL MILLER, certify that the information provided on this petition, plans and checklist are complete and accurate to the best of my knowledge.

Signature: Randall Miller Date: 10/1/20

SPECIAL EXCEPTION USE FINDINGS OF FACT



You must respond to all findings; please type or print legibly in blue or black ink.

Project Information:

Project Name: 117 E MAPLE AVE.

Special Exception Use:

UDO Section No.: 2.04 A 2 G

Special Exception Use: Single Family Residential

Specific Special Exception Use Request: Single Family Residential within Village District Area

For DPZ Use Only:

Project # _____

Date Received _____

Findings of Fact:

A petition for Special Exception Use may only be approved upon the presentation of sufficient evidence. Please include as much detailed information or unique conditions that would enable the Board to make a written determination that:

- (1) The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare:

Proposed single family residence in a single family residential area with residential zoning is compatible with area.

- (2) The proposed use will not injure or adversely affect the adjacent area or property values therein:

Proposed use is same as surrounding area and thus will not injure or adversely affect surrounding property values.

- (3) The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan:

Proposed single family residential use is consistent with surrounding area current uses.

While comprehensive plan suggests park and open space use, to date there has been no indication of that use in the near future.

- (4) The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved by the Town Council in which case the proposed use shall conform to the terms and conditions of such waiver):

Proposed use of single family residential will require a waiver. Residential use will adhere to all UDO requirements

except for a minor encroachment into the side setback along Grigsby Avenue and front setback along E. Maple Ave.

- (5) Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 - Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency:

Single family residential driveway only. Proposed driveway to have required width of 16' and the parking pad area will have a 25' depth from the new right of way line. There is no garage proposed as the lot shape and setbacks do not allow for a garage.

- (6) Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood:

This is not applicable. Use to be single family residential and all residential requirements will be adhered to.

- (7) The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of those persons whom may work at, visit or own property nearby to the proposed use:

This is not applicable. Use will be single family residential and all residential requirements will be adhered to.

- (8) Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the proposed use:

Proposed use/site is within all Town current service areas.

- (9) The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts:

Use of site to be residential and be akin to current existing surrounding residential properties.

There will be no adverse impacts to surrounding properties.

- (10) The type, size, and intensity of the proposed use, including such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use, will not have significant adverse impacts on adjoining properties or the neighborhood:

This is not applicable as the use will be single family residential.

Certificate of Completion

I certify that all information presented in this application is accurate to the best of my knowledge and belief. Further, I grant permission for members of the Planning Board, Town Council, and Town Staff to visit the site in question for informational, advertisement, and inspection needs.

Signature of Applicant: Randall Smith

Date: 10/1/21

Signature of Owner: [Signature]

Date: 10-1-21

VARIANCE OF DEVELOPMENT STANDARDS PETITION

The current Filing Fees can be found on-line in the Town of Holly Springs Fee Schedule:

<http://www.hollyspringsnc.us/planning>



Variance Request (please be specific)

UDO Section No.: 2.04 B 5 a

Section Title: R-10 RESIDENTIAL DISTRICT

Specific Variance Request: ALLOW REDUCTION OF SETBACK
ALONG GRIGSBY AVE TO BE 8' DUE
TO ADDITIONAL RIGHT OF WAY DEDICATION

For DPZ Use only

Project # _____

Fees Paid: \$ _____

Date Received: _____

Project Information

Project Name N7 MAPLE AVENUE

If this project is part of a previously approved plan, please specify:

PUD/Master Plan/Subdivision N/A Shopping Center/Lot # N/A

Project Location 117 MAPLE AVENUE HOLLY SPRINGS, NC
 Use street address. If none, use the closest intersection

☒ Within Corporate Limits ☐ Within Holly Springs ETJ ☐ Pending Annexation

PIN 0648-99-9313 Real Estate ID 0222587

Project Acreage 0.25 AC Current Zoning R-10

Scoping Meeting Date: _____ Concept Meeting Date: _____

If the Concept Meeting Date is not within 8 weeks of the submittal date, another Concept Meeting is required prior to submittal.

Petition Contact Information (complete each contact in its entirety- please print or type)

Project Applicant/Contact

(check one) ☐ Owner ☐ Owner's Agent ☒ Design Professional ☐ Developer ☐ Other: _____

Name RANDY MILLER Company THOMPSON & ASSOCIATES

Mailing Address 1149 EXECUTIVE CIRCLE SUITE D-2

City CARY State NC Zip 27511

Telephone # (919) 465-1566 E-Mail miller.p@att.net

How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Developer

CO Name STARCRAFT BUILDERS NAME Company JASON BROWN

Mailing Address 5804 CLEOME COURT

City HOLLY SPRINGS State NC Zip 27540

Telephone # (919) 369-1228 E-Mail jason@starcraftbuilders.com

How would you like to receive staff review comments? ☐ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Property Owner

Name JASON BROWN Company EQUITY TRUST COMPANY

Mailing Address 5804 CLEOME COURT

City HOLLY SPRINGS State NC Zip 27540

Telephone # (919) 369-1228 E-Mail jason@starcraftbuilders.com

How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

VARIANCE OF DEVELOPMENT STANDARDS

FINDINGS OF FACT



You must respond to all findings: please type or print legibly in blue or black ink.

Project Information

Project Name: 117 MAPLE AVE.

Findings of Fact

A petition for Variance of Development Standards may only be approved upon the presentation of sufficient evidence. Please include as much detailed information on unique conditions that would enable the Board to make a written determination that:

SEE ATTACHED SHEET

- (1) Unnecessary hardship would result from the strict application of the ordinance. It shall not be necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property.

- (2) The hardship results from conditions that are peculiar to the property, such as location, size, or topography. Hardships resulting from personal circumstances, as well as hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis for granting a variance.

- (3) The hardship did not result from actions taken by the applicant or the property owner. The act of purchasing property with knowledge that circumstances exist that may justify the granting of a variance shall not be regarded as a self-created hardship.

- (4) The requested variance is consistent with the spirit, purpose, and intent of the ordinance, such that public safety is secured, and substantial justice is achieved.

For DPZ Use only

Project # _____

Date Reviewed _____

Certificate of Completion

I certify that all information presented in this petition is accurate to the best of my knowledge and belief. Further, I grant permission for members of the Board of Adjustment and Town Staff to visit the site in question for informational, advertisement, and inspection needs.

Signature of Applicant: *Randall L. Allen*

Date: 12-1-21

Signature of Owner: *[Signature]*

Date: 12/1/21

117 MAPLE AVENUE – VARIANCE FOR SETBACK ALONG GRIGSBY AVENUE

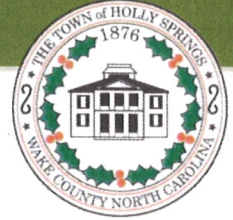
FINDINGS OF FACT

- (1) DUE TO THE TOWN REQUIRING THE DEDICATION OF AN ADDITIONAL 8.5' OF ROADWAY RIGHT OF WAY ALONG GRIGSBY AVENUE AND ALONG WITH THE REQUIRED BUILDING SETBACKS, THE RESULTING BUILDABLE AREA WOULD RESULT IN A BUILDABLE AREA OF AN UNDESIRABLE TRIANGULAR SHAPE. THE BASE WIDTH WOULD BE 32' GOING TO A COMMON POINT AT THE INTERSECTION OF THE HEIGHT DIMENSION OF 90'. OVERALL, WITH THE APPLICATION OF THE ADDITIONAL 8.5' RIGHT OF WAY TO GRIGSBY AND THE APPLICATION OF THE BUILDING SETBACKS, THE TOTAL BUILDABLE AREA OF THE LOT WOULD BE ~1,413 SF. THIS PRESENTS ONLY ~13% OF THE TOTAL 10,890 SF AREA OF THE LOT. THE RESULTING BUILDING ENVELOPE IS NOT FEASIBLE FOR THE CONSTRUCTION OF A SINGLE-FAMILY RESIDENCE.
- (2) DUE TO THE SIZE OF THE PROPERTY AND ITS LOCATION AT THE INTERSECTION OF MAPLE AVENUE AND GRIGSBY AVENUE, REQUIRING ADDITIONAL RIGHT OF WAY IMPEDES UPON BUILDABLE AREA. TO FURTHER HINDER BUILDABLE AREA, THE LOT SHAPE IS TRIANGULAR. AFTER APPLICATION OF A CORNER SIDE STREET SETBACK PLUS ITS TRIANGULAR SHAPE, THE AVAILABLE BUILDABLE AREA OF THE LOT IS NOT FEASIBLE.
- (3) THE HARDSHIP IS NOT THE RESULT OF ACTIONS BY THE PROPERTY OWNER/APPLICANT. THE LOT LOCATED AT 117 MAPLE AVENUE IS AN EXISTING PLATTED LOT AS PER WAKE COUNTY BOOK OF MAPS 1911 PAGE 41. THE LOT IS ZONED TO ALLOW FOR THE CONSTRUCTION OF A SINGLE FAMILY RESIDENTIAL UNIT. HOWEVER, WITH THE CURRENT REQUEST FOR ADDITIONAL DEDICATION OF ROADWAY RIGHT OF WAY, THE LOT WOULD HAVE A REDUCED AVAILABLE BUILDING FOOTPRINT. WITH THE ADDITIONAL DEDICATED RIGHT OF WAY, THE SUBJECT LOT WOULD HAVE AN UNBUILDABLE FOOTPRINT.
- (4) THE REQUESTED VARIANCE TO ALLOW FOR ENCROACHMENT INTO THE BUILDING SETBACK ALONG GRIGSBY AFTER THE DEDICATION OF 8.5' OF ADDITIONAL R/W, IS CONSISTENT WITH THE SPIRIT, PURPOSE, AND INTENT OF THE ORDINANCE. AS REFERENCED ABOVE, THE PROPERTY IS LOCATED WITHIN THE VDAP AREA. PER THE VDAP PLAN, SINGLE FAMILY RESIDENTIAL IS ENCOURAGED. WITH THIS, THE VDAP STATES THAT CONSIDERATION SHOULD BE GIVEN TO ALLOW FOR REDUCED SETBACKS FOR RESIDENTIAL UNITS. WITH THE GRANTING OF A VARIANCE TO ALLOW FOR AN ENCROACHMENT TO THE CORNER SIDE SETBACK OF GRIGSBY AVENUE WILL BE CONSISTENT WITH THE INTENT AND SPIRIT OF THE VDAP. IN ADDITION, IT WILL NOT BE OF HARM TO THE GENERAL PUBLIC AND WILL PROVIDE SUBSTANTIAL JUSTICE TO THE PROPERTY OWNER BY ALLOWING THE PLACEMENT OF A SINGLE FAMILY RESIDENCE ON A PLATTED LOT THAT IS ZONED FOR A SINGLE-FAMILY RESIDENCE.

VARIANCE OF DEVELOPMENT STANDARDS PETITION

The current Filing Fees can be found on-line in the Town of Holly Springs Fee Schedule:

<http://www.hollyspringsnc.us/planning>



Variance Request (please be specific)

UDO Section No.: 2.04 B 5 a

Section Title: R-10 RESIDENTIAL DISTRICT

Specific Variance Request: ALLOW REDUCTION OF SETBACK
ALONG MAPLE AVENUE TO BE 12' DUE
TO ADDITIONAL RIGHT OF WAY DEDICATION

For DPZ Use only

Project # _____

Fees Paid: \$ _____

Date Received: _____

Project Information

Project Name 117 MAPLE AVENUE

If this project is part of a previously approved plan, please specify:

PUD/Master Plan/Subdivision N/A Shopping Center/Lot # N/A

Project Location 117 MAPLE AVENUE HOLLY SPRINGS, NC
 Use street address. If none, use the closest intersection

☒ Within Corporate Limits ☐ Within Holly Springs ETJ ☐ Pending Annexation

PIN 0648-99-9313 Real Estate ID 0222587

Project Acreage 0.25 AC Current Zoning R-10

Scoping Meeting Date: _____ Concept Meeting Date: _____

If the Concept Meeting Date is not within 8 weeks of the submittal date, another Concept Meeting is required prior to submittal.

Petition Contact Information (complete each contact in its entirety- please print or type)

Project Applicant/Contact

(check one) ☐ Owner ☐ Owner's Agent ☒ Design Professional ☐ Developer ☐ Other: _____

Name RANDY MILLER Company THOMPSON & ASSOCIATES

Mailing Address 1149 EXECUTIVE CIRCLE SUITE D-2

City CARY State NC Zip 27511

Telephone # (919) 465-1546 E-Mail miller.p@att.net

How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Developer

☒ Name STARCRAFT BUILDERS ^{NAME} Company JASON BROWN

Mailing Address 5804 CLEOME COURT

City HOLLY SPRINGS State NC Zip 27540

Telephone # (919) 369-1228 E-Mail jason@starcraftbuilders.com

How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Property Owner

Name JASON BROWN Company EQUITY TRUST COMPANY

Mailing Address 5804 CLEOME COURT

City HOLLY SPRINGS State NC Zip 27540

Telephone # (919) 369-1228 E-Mail jason@starcraftbuilders.com

How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

VARIANCE OF DEVELOPMENT STANDARDS

FINDINGS OF FACT



You must respond to all findings; please type or print legibly in blue or black ink.

Project Information

Project Name: 117 MAPLE AVE.

Findings of Fact

A petition for Variance of Development Standards may only be approved upon the presentation of sufficient evidence. Please include as much detailed information or unique conditions that would enable the Board to make a written determination that:

SEE ATTACHED SHEET

- (1) Unnecessary hardship would result from the strict application of the ordinance. It shall not be necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property.

- (2) The hardship results from conditions that are peculiar to the property, such as location, size, or topography. Hardships resulting from personal circumstances, as well as hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis for granting a variance.

- (3) The hardship did not result from actions taken by the applicant or the property owner. The act of purchasing property with knowledge that circumstances exist that may justify the granting of a variance shall not be regarded as a self-created hardship.

- (4) The requested variance is consistent with the spirit, purpose, and intent of the ordinance, such that public safety is secured, and substantial justice is achieved.

For DPZ Use only

Project # _____

Date Received: _____

Certificate of Completion

I certify that all information presented in this petition is accurate to the best of my knowledge and belief. Further, I grant permission for members of the Board of Adjustment and Town Staff to visit the site in question for informational, advertisement, and inspection needs.

Signature of Applicant: *Randall L. Allen*

Date: 12-1-21

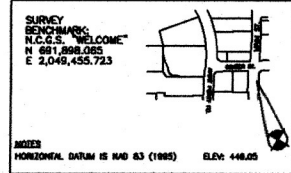
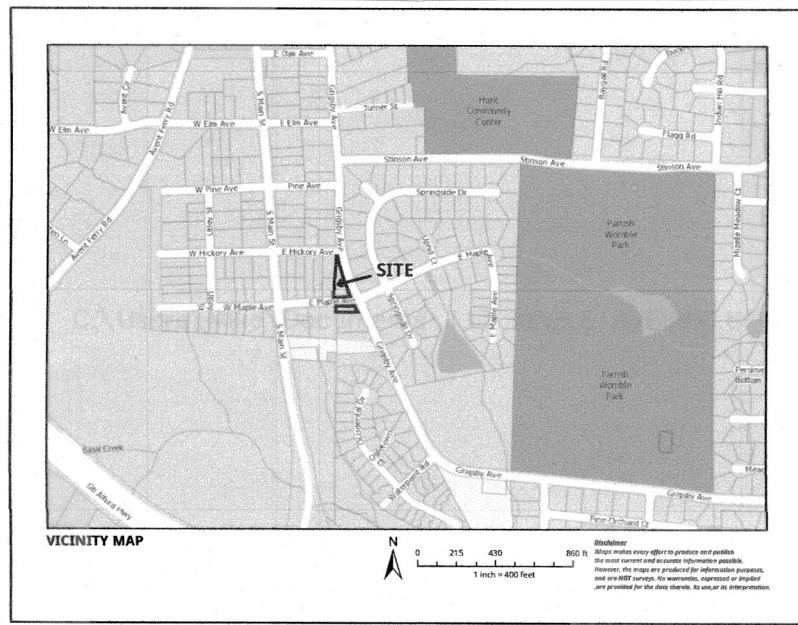
Signature of Owner: *[Signature]*

Date: 12/1/21

117 MAPLE AVENUE – VARIANCE FOR SETBACK ALONG MAPLE AVENUE

FINDINGS OF FACT

- (1) DUE TO THE TOWN REQUIRING THE DEDICATION OF AN ADDITIONAL 5' OF ROADWAY RIGHT OF WAY ALONG MAPLE AVENUE AND ALONG WITH THE REQUIRED BUILDING SETBACKS, THE RESULTING BUILDABLE AREA WOULD RESULT IN A BUILDABLE AREA OF AN UNDESIRABLE TRIANGULAR SHAPE. THE BASE WIDTH WOULD BE 32' GOING TO A COMMON POINT AT THE INTERSECTION OF THE HEIGHT DIMENSION OF 90'. OVERALL, WITH THE APPLICATION OF THE ADDITIONAL 5' RIGHT OF WAY TO MAPLE AND THE APPLICATION OF THE BUILDING SETBACKS, THE TOTAL BUILDABLE AREA OF THE LOT WOULD BE ~1,413 SF. THIS PRESENTS ONLY ~13% OF THE TOTAL 10,890 SF AREA OF THE LOT. THE RESULTING BUILDING ENVELOPE IS NOT FEASIBLE FOR THE CONSTRUCTION OF A SINGLE-FAMILY RESIDENCE.
- (2) DUE TO THE SIZE OF THE PROPERTY AND ITS LOCATION AT THE INTERSECTION OF MAPLE AVENUE AND GRIGSBY AVENUE, REQUIRING ADDITIONAL RIGHT OF WAY IMPEDES UPON BUILDABLE AREA. TO FURTHER HINDER BUILDABLE AREA, THE LOT SHAPE IS TRIANGULAR. AFTER APPLICATION OF A CORNER SIDE STREET SETBACK PLUS ITS TRIANGULAR SHAPE, THE AVAILABLE BUILDABLE AREA OF THE LOT IS NOT FEASIBLE.
- (3) THE HARDSHIP IS NOT THE RESULT OF ACTIONS BY THE PROPERTY OWNER/APPLICANT. THE LOT LOCATED AT 117 MAPLE AVENUE IS AN EXISTING PLATTED LOT AS PER WAKE COUNTY BOOK OF MAPS 1911 PAGE 41. THE LOT IS ZONED TO ALLOW FOR THE CONSTRUCTION OF A SINGLE FAMILY RESIDENTIAL UNIT. HOWEVER, WITH THE CURRENT REQUEST FOR ADDITIONAL DEDICATION OF ROADWAY RIGHT OF WAY, THE LOT WOULD HAVE A REDUCED AVAILABLE BUILDING FOOTPRINT. WITH THE ADDITIONAL DEDICATED RIGHT OF WAY, THE SUBJECT LOT WOULD HAVE AN UNBUILDABLE FOOTPRINT.
- (4) THE REQUESTED VARIANCE TO ALLOW FOR ENCROACHMENT INTO THE FRONT BUILDING SETBACK ALONG MAPLE AVENUE AFTER THE DEDICATION OF 5' OF ADDITIONAL R/W IS CONSISTENT WITH THE SPIRIT, PURPOSE, AND INTENT OF THE ORDINANCE. AS REFERENCED ABOVE, THE PROPERTY IS LOCATED WITHIN THE VDAP AREA. PER THE VDAP PLAN, SINGLE FAMILY RESIDENTIAL IS ENCOURAGED. WITH THIS, THE VDAP STATES THAT CONSIDERATION SHOULD BE GIVEN TO ALLOW FOR REDUCED SETBACKS FOR RESIDENTIAL UNITS. WITH THE GRANTING OF A VARIANCE TO ALLOW FOR AN ENCROACHMENT TO THE FRONT SETBACK OF MAPLE WILL BE CONSISTENT WITH THE INTENT AND SPIRIT OF THE VDAP. IN ADDITION, IT WILL NOT BE OF HARM TO THE GENERAL PUBLIC AND WILL PROVIDE SUBSTANTIAL JUSTICE TO THE PROPERTY OWNER BY ALLOWING THE PLACEMENT OF A SINGLE FAMILY RESIDENCE ON A PLATTED LOT THAT IS ZONED FOR A SINGLE-FAMILY RESIDENCE.



MINIMUM DESIGN CRITERIA FOR DISCONNECTED ROOFS:
 MAX. OF 500 SF OF ROOF SHALL DRAIN TO EACH DISCONNECTED DOWNSPOUT RECEIVING VEGETATED AREA SHALL BE RECTANGULAR IN SHAPE. THE LENGTH OF THE RECTANGLE IN THE DIRECTION OF FLOW SHALL BE A MINIMUM OF 0.04 TIMES THE AREA OF THE ROOF THAT DRAINS TO IT. THE WIDTH OF THE RECTANGLE SHALL BE 1/2 OF THE LENGTH OF THE RECTANGLE.
 THE DOWNSPOUT SHALL DISCHARGE IN THE CENTER OF THE UPSLOPE END OF THE VEGETATED RECEIVING AREA.
 THE DOWNSPOUT SHALL BE EQUIPPED WITH A SPLASH PAD
 THE VEGETATED RECEIVING AREA SHALL NOT INCLUDE ANY BUILT UPON AREA.
 VEGETATED RECEIVING AREAS SHALL HAVE A UNIFORM TRANSVERSE SLOPE OF 8%
 THE pH, COMPACTION, AND OTHER ATTRIBUTES OF THE FIRST 8" OF THE SOIL SHALL BE ADJUSTED IF NECESSARY TO PROMOTE PLANT ESTABLISHMENT AND GROWTH.
 THE VEGETATED RECEIVING AREA SHALL BE PLANTED WITH A NON-CLUMPING, DEEP ROOTED GRASS SPECIES.
 SOLUS SHALL BE STABILIZED WITH TEMPORARY MEANS SUCH AS STRAW OR MATTING UNTIL THE PERMANENT VEGETATIVE COVER HAS TAKEN ROOT OR THE RUNOFF SHALL BE DIRECTED ELSEWHERE UNTIL VEGETATION HAS ESTABLISHED.
 DIS MAINTENANCE:
 DO NOT REGRADE THE VEGETATED RECEIVING AREAS OR COVER THEM WITH IMPERVIOUS SURFACES SUCH AS A SHED OR PATIO.
 NO STOCKPILE SOIL, SAN, MULCH OR OTHER MATERIALS SHALL BE PLACED ON THE VEGETATIVE RECEIVING AREA.
 IMMEDIATELY REPAIR ANY AREAS THAT ARE ERODING OR WHERE VEGETATION HAS DIED.
 IMMEDIATELY REMOVE SEDIMENT AND DEBRIS FROM CONTRIBUTING IMPERVIOUS SURFACES.
 AFTER DIS IS CONSTRUCTED, IT SHALL BE INSPECTED ONCE A QUARTER. INSPECTOR SHALL CHECK COMPONENTS AND ADDRESS DEFICIENCIES.
 THE RESPONSIBLE MAINTENANCE PARTY SHALL KEEP A SIGNED AND NOTARIZED OPERATION AND MAINTENANCE AGREEMENT AND INSPECTION RECORDS.
 TO ENSURE PROPER OPERATION AS DESIGNED, A LICENSED PROFESSIONAL ENGINEER, LANDSCAPE ARCHITECT OR OTHER QUALIFIED PROFESSIONAL SHALL INSPECT THE SYSTEM ANNUALLY.
 THE SYSTEM COMPONENTS SHALL BE REPAIRED OR REPLACED AS NEEDED WHEN THEY FAIL TO FUNCTION PROPERLY.

NOTE:
 CONSTRUCTION DRAWING APPROVAL IS REQUIRED BEFORE CONSTRUCTION ON THIS PROJECT MAY BEGIN. DEVELOPMENT FEES ARE DUE BEFORE CONSTRUCTION DRAWING APPROVAL.

PER FEMA MAP 3720064900J DATED 5/2/2006 AREA IS NOT WITHIN A FEMA 100 YEAR FLOOD AREA

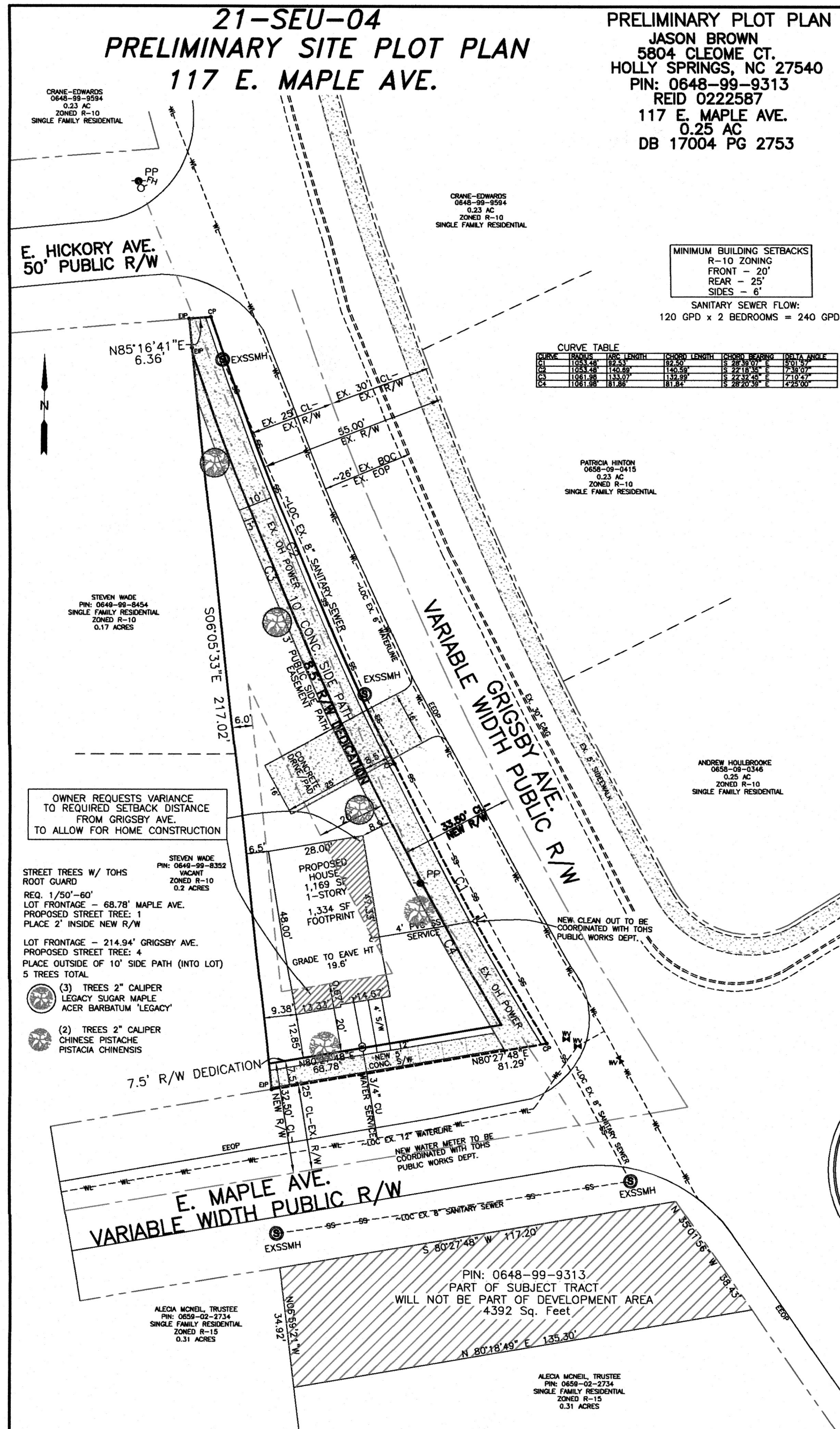
ALL CONSTRUCTION SHALL CONFORM TO TOWN OF HOLLY SPRINGS DESIGN AND CONSTRUCTION STANDARDS.

21-SEU-04 PRELIMINARY SITE PLOT PLAN 117 E. MAPLE AVE.

PRELIMINARY PLOT PLAN
 JASON BROWN
 5804 CLEOME CT.
 HOLLY SPRINGS, NC 27540
 PIN: 0648-99-9313
 REID 0222587
 117 E. MAPLE AVE.
 0.25 AC
 DB 17004 PG 2753

MINIMUM BUILDING SETBACKS
 R-10 ZONING
 FRONT - 20'
 REAR - 25'
 SIDES - 6'
 SANITARY SEWER FLOW:
 120 GPD x 2 BEDROOMS = 240 GPD

CURVE	CHORD	ARC	ANGLE	CHORD	ARC	ANGLE	CHORD	ARC	ANGLE
1	10.00	10.00	90.00	10.00	10.00	90.00	10.00	10.00	90.00
2	10.00	10.00	90.00	10.00	10.00	90.00	10.00	10.00	90.00
3	10.00	10.00	90.00	10.00	10.00	90.00	10.00	10.00	90.00
4	10.00	10.00	90.00	10.00	10.00	90.00	10.00	10.00	90.00



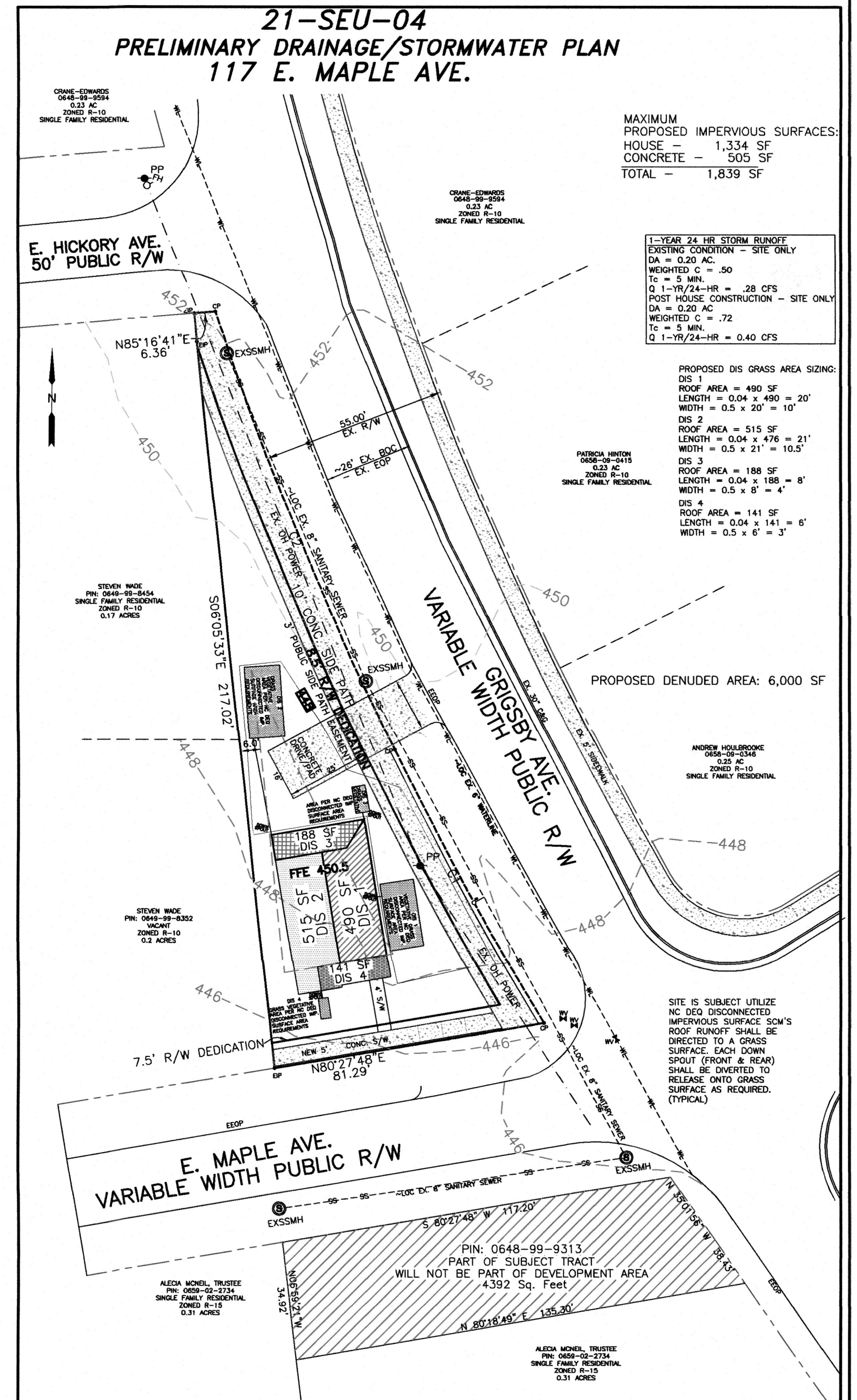
21-SEU-04 PRELIMINARY DRAINAGE/STORMWATER PLAN 117 E. MAPLE AVE.

MAXIMUM PROPOSED IMPERVIOUS SURFACES:
 HOUSE - 1,334 SF
 CONCRETE - 505 SF
 TOTAL - 1,839 SF

1-YEAR 24 HR STORM RUNOFF
 EXISTING CONDITION - SITE ONLY
 DA = 0.20 AC
 WEIGHTED C = .50
 Tc = 5 MIN.
 Q 1-YR/24-HR = .28 CFS
 POST HOUSE CONSTRUCTION - SITE ONLY
 DA = 0.20 AC
 WEIGHTED C = .72
 Tc = 5 MIN.
 Q 1-YR/24-HR = 0.40 CFS

PROPOSED DIS GRASS AREA SIZING:
 DIS 1
 ROOF AREA = 490 SF
 LENGTH = 0.04 x 490 = 20'
 WIDTH = 0.5 x 20' = 10'
 DIS 2
 ROOF AREA = 515 SF
 LENGTH = 0.04 x 476 = 21'
 WIDTH = 0.5 x 21' = 10.5'
 DIS 3
 ROOF AREA = 188 SF
 LENGTH = 0.04 x 188 = 8'
 WIDTH = 0.5 x 8' = 4'
 DIS 4
 ROOF AREA = 141 SF
 LENGTH = 0.04 x 141 = 6'
 WIDTH = 0.5 x 6' = 3'

PROPOSED DENUDED AREA: 6,000 SF



SITE IS SUBJECT UTILIZE NC DEO DISCONNECTED IMPERVIOUS SURFACE SCM'S ROOF RUNOFF SHALL BE DIRECTED TO A GRASS SURFACE, EACH DOWN SPOUT (FRONT & REAR) SHALL BE DIVERTED TO RELEASE ONTO GRASS SURFACE AS REQUIRED. (TYPICAL)

SITE NOTES:
 SITE IS NOT SUBJECT TO TREE PRESERVATION AREAS PER SECTION 7.01. FURTHERMORE, SITE DOES NOT CURRENTLY CONTAIN ANY EXISTING QUALIFYING TREE OF 20" OR GREATER IN DIAMETER AT DBH.

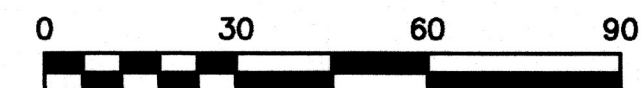
OWNER:
 JASON BROWN
 5804 CLEOME CT.
 HOLLY SPRINGS, NC 27540
 919-369-1228

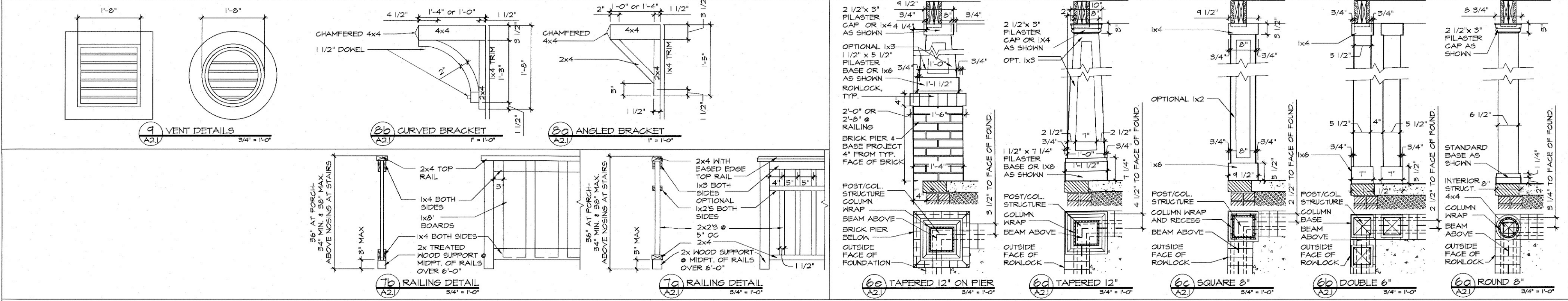


PRELIMINARY PLOT PLAN 117 E. MAPLE AVE. JASON BROWN

THOMPSON & ASSOCIATES, PA
 1149 EXECUTIVE CIRCLE
 SUITE D2
 CARY, NC 27511
 (919) 465-1566
 FAX (919) 465-1585
 NC LIC# C-0343

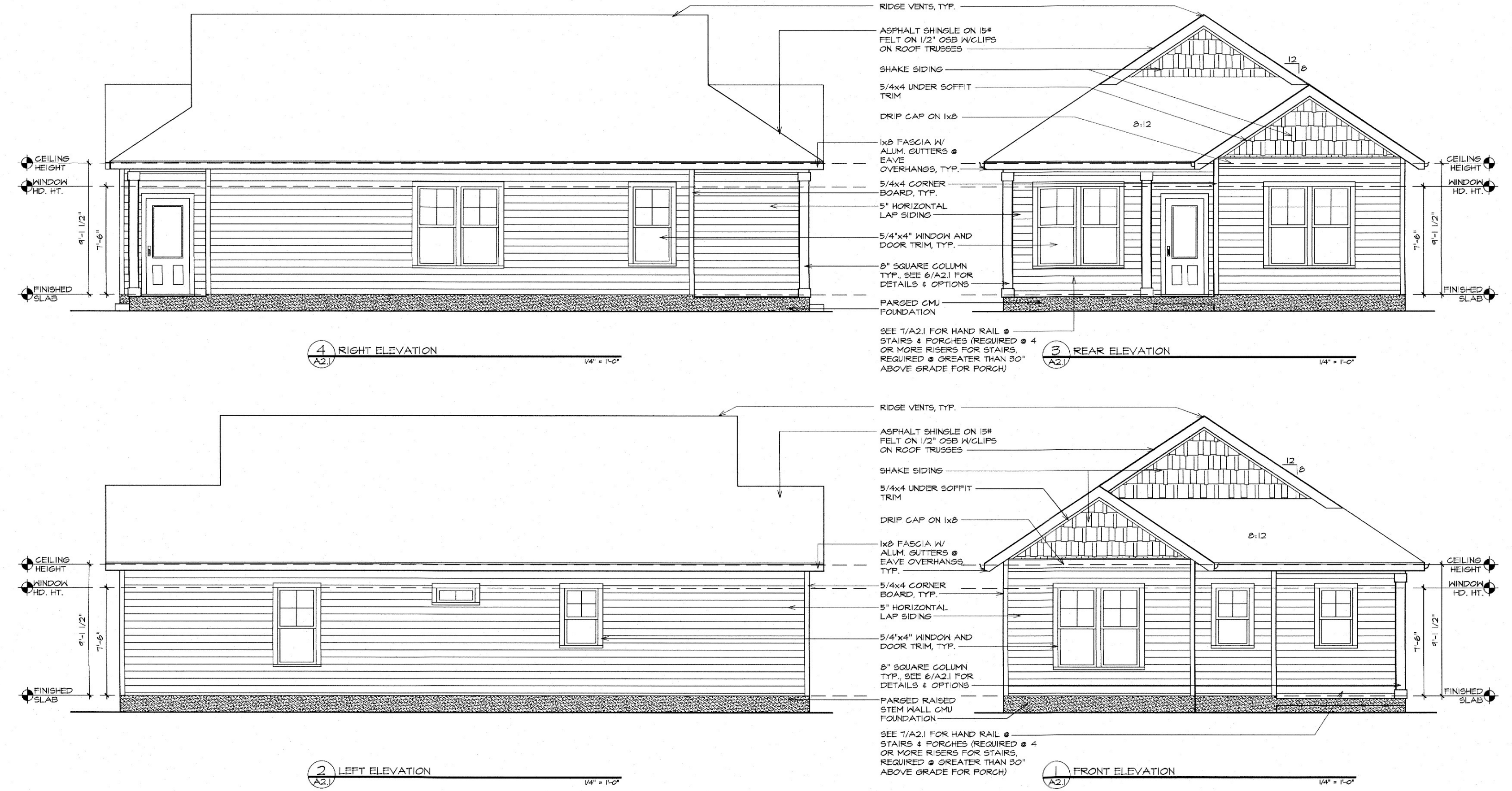
HOLLY SPRINGS TOWNSHIP	TOWN OF HOLLY SPRINGS
WAKE COUNTY	NORTH CAROLINA
DATE: 9/30/21	DRAWN: MTH
SCALE 1" = 30'	SURVEYED: NA
REVISIONS: 12/3/21 1/14/22 2/7/22:2/11/22	PIN: 0648-99-9313
ZONED: R-10	JOB NO.
DWG: JB-117 MAPLE AVE	





GUARDRAIL AND HANDRAILS:
 1) INSTALL HANDRAILS AND GUARDS PER 2018 NC RESIDENTIAL BUILDING CODE SECTIONS R311.2 THROUGH R312. PORCHES, BALCONIES, RAMPS OR RAISED FLOOR SURFACES LOCATED MORE THAN 30" ABOVE THE FLOOR OR GRADE BELOW SHALL HAVE GUARDS NOT LESS THAN 36" IN HEIGHT. OPEN SIDES OF STAIRS WITH A TOTAL RISE OF MORE THAN 30" ABOVE THE FLOOR OR GRADE BELOW SHALL HAVE GUARDS NOT LESS THAN 34" IN HEIGHT MEASURED VERTICALLY FROM THE NOSING OF THE TREADS. REQUIRED GUARDS ON OPEN SIDES OF STAIRWAYS, RAISED FLOOR AREAS, BALCONIES AND PORCHES SHALL HAVE INTERMEDIATE RAILS OR ORNAMENTAL CLOSURES WHICH DO NOT ALLOW PASSAGE OF AN OBJECT 4" OR MORE IN DIAMETER. HORIZONTAL SPACING BETWEEN THE VERTICAL MEMBERS IN REQUIRED GUARDRAILS SHALL BE A MAXIMUM OF 4" AT THE NEAREST POINT BETWEEN MEMBERS.
 2) INSTALL HANDRAILS PER 2018 RESIDENTIAL BUILDING CODE SECTION R311.3.6 AT ALL PORCH STAIRS WITH MORE THAN 4 RISERS. HANDRAIL HEIGHT, MEASURED VERTICALLY FROM THE SLOPED PLANE ADJOINING THE TREAD NOSING, OR FINISH SURFACE OF RAMP SLOPE, SHALL NOT BE LESS THAN 34" AND NOT MORE THAN 38".

CLADDING VALUES:
 PROVIDE POS. AND NEG. WALL & ROOF CLADDING DESIGN VALUES. PLANS MAY STATE THAT WALL CLADDING IS DESIGNED FOR 24.1 LBS/SF OR GREATER POS. OR NEG. PRESSURE FOR HOUSES W/ MEAN ROOF HGT. OF 30 FT. OR LESS. ROOF VALUES, BOTH POS. & NEG. SHALL BE DESIGNED AS FOLLOWS:
 - 45.4 LBS/SF FOR ROOF PITCHES OF 0/12 TO 2.25/12
 - 24.8 LBS/SF FOR ROOF PITCHES OF 2.25/12 TO 1/12
 - 21 LBS/SF FOR ROOF PITCHES OF 1/12 TO 12/12
 VALUES STATED ARE FOR ROOFS WITH A MEAN HGT. OF 30 FT. OR LESS. ROOFS W/ MEAN HGT. GREATER THAN 30 FT. MUST SHOW SPECIFIC INFORMATION FOR CLADDING.
 MEAN ROOF HEIGHT: 17'-0"



5 NOTES
 A2.1

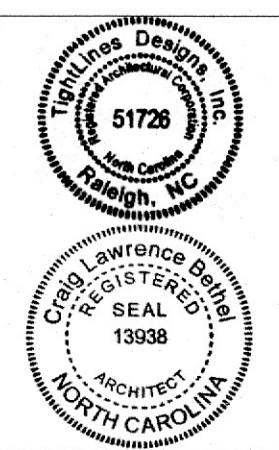
2 LEFT ELEVATION
 A2.1

1 FRONT ELEVATION
 A2.1

THIS PLAN IS AUTHORIZED FOR THIS ADDRESS ONLY AND IS NOT TO BE USED FOR ANY ADDITIONAL ADDRESSES WITHOUT THE PURCHASE OF ADDITIONAL LICENSES OR WRITTEN AUTHORIZATION FROM TIGHTLINES:
 Single-Use License
 0 Grigsby Avenue,
 Holly Springs, NC.

TightLines Designs
 creating great places to live
 19 W. Hargett St. Suite 501 • Raleigh, NC 27601
 919.834.3600 • www.tightlinesdesigns.com

Grigsby-Maple Avenue



date 04.19.21
 drafter D.A.S.
 checked by C.L.B.
 proj. no. T-21021.2
 revisions date

Elevations,
 Details, & Notes

A2.1



THE TOWN OF

Holly Springs

117 E Maple Avenue Special Exception Use and Variances 21-SEU-04/21-VARTC-01/22-VARTC-01 Conditions of Approval

Motions and Conditions of Approval:

Motion to adopt Resolution #22-10 to make and accept the Findings of Fact for consideration of and to approve Special Exception Use 21-SEU-04 allow for one (1) single family dwelling within the adopted Village District Area Plan boundary, 21-VARTC—1, and 22-VARTC-01 at the property located at 117 E Maple Avenue, Wake County PIN 0648999313, with the following conditions:

1. All operations must adhere to the evidence submitted by the applicant as stated in the findings of fact submitted and those findings of fact specified by the Town Council in conjunction with 21-SEU-04.
2. Minor modifications to the height, bulk, orientation of the structure on the lot, location of the structure on the lot, and site design may be authorized by the Director of Development Services. If the Director determines that the proposed minor modifications are of such a nature as to adversely impact the purpose or intent of this approval, the petitioner shall be required to file a new petition for Special Exception Use approval.
3. This project will be required to meet the Town of Holly Springs NPDES PH. 2 Post Construction Ordinance.

Variance 21-VARTC-01 to reduce the front yard setback on Grigsby Avenue from 20 feet to 8 feet:

1. This Variance shall only apply to 21-SEU-04 117 E Maple Avenue.

Variance 22-VARTC-01 to reduce the front yard setback on E Maple Avenue from 20 feet to 12 feet:

1. This Variance shall only apply to 21-SEU-04 117 E Maple Avenue.

Office of the Mayor

P.O. Box 8 • 128 S. Main Street • Holly Springs, NC 27540 • www.hollyspringsnc.us

Email: dick.sears@hollyspringsnc.us



Resolution No. 22-10

Date Adopted: March 15, 2022

Effective Date: March 15, 2022

**RESOLUTION OF THE TOWN OF HOLLY SPRINGS TOWN COUNCIL
MAKING FINDINGS OF FACT FOR SPECIAL EXCEPTION USE (21-SEU-
02) VARIANCE OF DEVELOPMENT STANDARDS (21-VARTC-01); &
VARIANCE OF DEVELOPMENT STANDARDS (22-VARTC-01) FOR 117 E
MAPLE AVENUE**

WHEREAS, the Town of Holly Springs Town Council adopted *Town of Holly Springs Unified Development Ordinance* ("UDO") in November 2002; and

WHEREAS, pursuant to NCGS §§160A-361 & 388 and the UDO, the town council of Holly Springs ("Town Council") has the authority to grant special exception uses and variances if competent and substantial evidence is presented by the Petitioner which allows the Town Council to find as a fact that conditions either currently exist or may exist after implementation of conditions by the Town Council. Such findings are each of the following:

Special Exception Use Findings of Fact:

A special exception use may only be granted upon the presentation of sufficient evidence to enable a written determination that:

- a. The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare;
- b. The proposed use will not injure or adversely affect the adjacent area;
- c. The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan;
- d. The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved as set forth above, in which case the proposed use shall conform to the terms and conditions of such waiver).
- e. Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 – Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency;
- f. Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood;
- g. The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of

those persons whom may work at, visit or own property nearby to the proposed use;

- h. Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the needs of the proposed use;
- i. The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts; and,
- j. The type, size, and intensity of the proposed use (including but not limited to such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use) will not have significant adverse impacts on adjoining properties or the neighborhood.

Variance Findings of Fact:

A *variance* may be granted by the Board if competent and substantial evidence is presented by the applicant which persuades the Board to either reach each of the following conclusions independently or be reasonably able to meet these conclusions upon implementation of conditions by the Board:

- 1. Unnecessary hardship would result from the strict application of the ordinance. It shall not be necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property.
- 2. The hardship results from conditions that are peculiar to the property, such as location, size, or topography. Hardships resulting from personal circumstances, as well as hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis for granting a variance.
- 3. The hardship did not result from actions taken by the applicant or the property owner. The act of purchasing property with knowledge that circumstances exist that may justify the granting of a variance shall not be regarded as a self-created hardship.
- 4. The requested variance is consistent with the spirit, purpose, and intent of the ordinance, such that public safety is secured, and substantial justice is achieved.

WHEREAS, the Town Council has heard sworn testimony and has accepted and entered the Petitioner's written findings of fact into the minutes (Exhibit A) and have received site plans (Exhibit B) for the following requested Special Exception Uses & Variances of Development Standards:

Part 1: Special Exception Use (21-SEU-02)

Special Exception Use #21-SEU-04 as specified in Unified Development Ordinance Section 2.04 R-10 Residential District to allow for one (1) single family dwelling within the adopted Village District Area Plan boundary at the property located at 117 E Maple Avenue, Wake County PIN 0648999313.

Part 2: Variance (21-VARTC-01)

Variance Request #21-VARTC-01 of Unified Development Ordinance Section 2.04, B. 5. A R-10 Residential District Development Standards to allow for the front

setback on Grigsby Avenue to be reduced from 20' to 8' at the property located at 117 E Maple Avenue, Wake County PIN 0648999313.

Part 3: Variance (22-VARTC-01)

Variance Request #22-VARTC-01 of Unified Development Ordinance Section 2.04, B. 5. A R-10 Residential District Development Standards to allow for the front setback on E Maple Avenue to be reduced from 20' to 12' at the property located at 117 E Maple Avenue, Wake County PIN 0648999313.

WHEREAS, the Town Council has received competent and substantial evidence and has therefore found the Petitioner's written findings of fact. The Town Council finds that the Petitioner's findings of fact to be consistent with the public testimony received on the requested Special Exception Uses and Variances, and therefore the Town Council is able to reach conclusions independently (Exhibit C) or be reasonably able to meet the conclusions on the Findings of Fact upon implementation of conditions listed on Exhibit D to this Resolution.

WHEREAS, a public hearing was held and a summary of the facts brought out in the hearing are described in the March 15, 2022 Town Council meeting minutes.

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

1. Based on the evidence presented to the Town, the Town Council hereby makes and accepts the Findings of Facts for the Special Exception Use as submitted by the Applicant.
2. Based on the evidence presented to the Town, the Town Council hereby makes and accepts the Findings of Facts for the Variances.
3. The Special Exception Use and Variances as described in the Application is hereby allowed, subject to the conditions listed in the document entitled "117 E Maple Avenue Special Exception Use and Variances 21-SEU-04/21-VARTC-01/22-VARTC-01 attached hereto and incorporated by reference, along with the following Conditions added by the Town Council as a result of the evidence presented at the hearing:

[List additional conditions, if any, as necessary and as supported by evidence]

4. This resolution shall take effect immediately, unless an appeal is filed NCGS 160D-406(k).

Adopted by the Holly Springs Town Council on this, the 15th day of March, 2022.

Town of Holly Springs by

Sean Mayefskie, Mayor

ATTEST:

Linda McKinney, Town Clerk



RESOLUTION EXHIBIT A

Part 1: Special Exception Use (21-SEU-04) Findings of Fact Submitted By Petitioner

TOWN OF HOLLY SPRINGS
**SPECIAL EXCEPTION USE
FINDINGS OF FACT**

DRM-Accession # RA-04
Document # 112
December 2019

You must respond to all findings; please type or print legibly in blue or black ink.

Project Information:

Project Name: 117 E MAPLE AVE.

Special Exception Use:

UDO Section No.: 2.04 A 2 G

Special Exception Use: Single Family Residential

Specific Special Exception Use Request:
Single Family Residential within Village District Area

For TPT Use only

Project #

Date Received

Findings of Fact:

A petition for Special Exception Use may only be approved upon the presentation of sufficient evidence. Please include as much detailed information or unique conditions that would enable the Board to make a written determination that:

(1) The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare:
Proposed single family residence in a single family residential area with residential zoning is compatible with area.

(2) The proposed use will not injure or adversely affect the adjacent area or property values therein:
Proposed use is same as surrounding area and thus will not injure or adversely affect surrounding property values.

(3) The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan:
Proposed single family residential use is consistent with surrounding area current uses. While comprehensive plan suggests park and open space use, to date there has been no indication of that use in the near future.

(4) The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved by the Town Council in which case the proposed use shall conform to the terms and conditions of such waiver):
Proposed use of single family residential will require a waiver. Residential use will adhere to all UDO requirements except for a minor encroachment into the side setback along Grigsby Avenue and front setback along E. Maple Ave.

(5) Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 - Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency:
Single family residential driveway only. Proposed driveway to have required width of 16' and the parking pad area will have a 25' depth from the new right of way line. There is no garage proposed as the lot shape and setbacks do not allow for a garage.

- (6) Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood:

This is not applicable. Use to be single family residential and all residential requirements will be adhered to.

- (7) The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of those persons whom may work at, visit or own property nearby to the proposed use:

This is not applicable. Use will be single family residential and all residential requirements will be adhered to.

- (8) Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the proposed use:

Proposed use/site is within all Town current service areas.

- (9) The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts:

Use of site to be residential and be akin to current existing surrounding residential properties.

There will be no adverse impacts to surrounding properties.

- (10) The type, size, and intensity of the proposed use, including such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use, will not have significant adverse impacts on adjoining properties or the neighborhood:

This is not applicable as the use will be single family residential.

Part 2: Variance (21-VARTC-01) Findings of Fact Submitted By Petitioner

117 MAPLE AVENUE – VARIANCE FOR SETBACK ALONG GRIGSBY AVENUE

FINDINGS OF FACT

- (1) DUE TO THE TOWN REQUIRING THE DEDICATION OF AN ADDITIONAL 8.5' OF ROADWAY RIGHT OF WAY ALONG GRIGSBY AVENUE AND ALONG WITH THE REQUIRED BUILDING SETBACKS, THE RESULTING BUILDABLE AREA WOULD RESULT IN A BUILDABLE AREA OF AN UNDESIRABLE TRIANGULAR SHAPE. THE BASE WIDTH WOULD BE 32' GOING TO A COMMON POINT AT THE INTERSECTION OF THE HEIGHT DIMENSION OF 90'. OVERALL, WITH THE APPLICATION OF THE ADDITIONAL 8.5' RIGHT OF WAY TO GRIGSBY AND THE APPLICATION OF THE BUILDING SETBACKS, THE TOTAL BUILDABLE AREA OF THE LOT WOULD BE ~1,413 SF. THIS PRESENTS ONLY ~13% OF THE TOTAL 10,890 SF AREA OF THE LOT. THE RESULTING BUILDING ENVELOPE IS NOT FEASIBLE FOR THE CONSTRUCTION OF A SINGLE-FAMILY RESIDENCE.
- (2) DUE TO THE SIZE OF THE PROPERTY AND ITS LOCATION AT THE INTERSECTION OF MAPLE AVENUE AND GRIGSBY AVENUE, REQUIRING ADDITIONAL RIGHT OF WAY IMPEDES UPON BUILDABLE AREA. TO FURTHER HINDER BUILDABLE AREA, THE LOT SHAPE IS TRIANGULAR. AFTER APPLICATION OF A CORNER SIDE STREET SETBACK PLUS ITS TRIANGULAR SHAPE, THE AVAILABLE BUILDABLE AREA OF THE LOT IS NOT FEASIBLE.
- (3) THE HARDSHIP IS NOT THE RESULT OF ACTIONS BY THE PROPERTY OWNER/APPLICANT. THE LOT LOCATED AT 117 MAPLE AVENUE IS AN EXISTING PLATTED LOT AS PER WAKE COUNTY BOOK OF MAPS 1911 PAGE 41. THE LOT IS ZONED TO ALLOW FOR THE CONSTRUCTION OF A SINGLE FAMILY RESIDENTIAL UNIT. HOWEVER, WITH THE CURRENT REQUEST FOR ADDITIONAL DEDICATION OF ROADWAY RIGHT OF WAY, THE LOT WOULD HAVE A REDUCED AVAILABLE BUILDING FOOTPRINT. WITH THE ADDITIONAL DEDICATED RIGHT OF WAY, THE SUBJECT LOT WOULD HAVE AN UNBUILDABLE FOOTPRINT.
- (4) THE REQUESTED VARIANCE TO ALLOW FOR ENCROACHMENT INTO THE BUILDING SETBACK ALONG GRIGSBY AFTER THE DEDICATION OF 8.5' OF ADDITIONAL R/W, IS CONSISTENT WITH THE SPIRIT, PURPOSE, AND INTENT OF THE ORDINANCE. AS REFERENCED ABOVE, THE PROPERTY IS LOCATED WITHIN THE VDAP AREA. PER THE VDAP PLAN, SINGLE FAMILY RESIDENTIAL IS ENCOURAGED. WITH THIS, THE VDAP STATES THAT CONSIDERATION SHOULD BE GIVEN TO ALLOW FOR REDUCED SETBACKS FOR RESIDENTIAL UNITS. WITH THE GRANTING OF A VARIANCE TO ALLOW FOR AN ENCROACHMENT TO THE CORNER SIDE SETBACK OF GRIGSBY AVENUE WILL BE CONSISTENT WITH THE INTENT AND SPIRIT OF THE VDAP. IN ADDITION, IT WILL NOT BE OF HARM TO THE GENERAL PUBLIC AND WILL PROVIDE SUBSTANTIAL JUSTICE TO THE PROPERTY OWNER BY ALLOWING THE PLACEMENT OF A SINGLE FAMILY RESIDENCE ON A PLATTED LOT THAT IS ZONED FOR A SINGLE-FAMILY RESIDENCE.

Part 3: Variance (22-VARTC-01) Findings of Fact Submitted By Petitioner

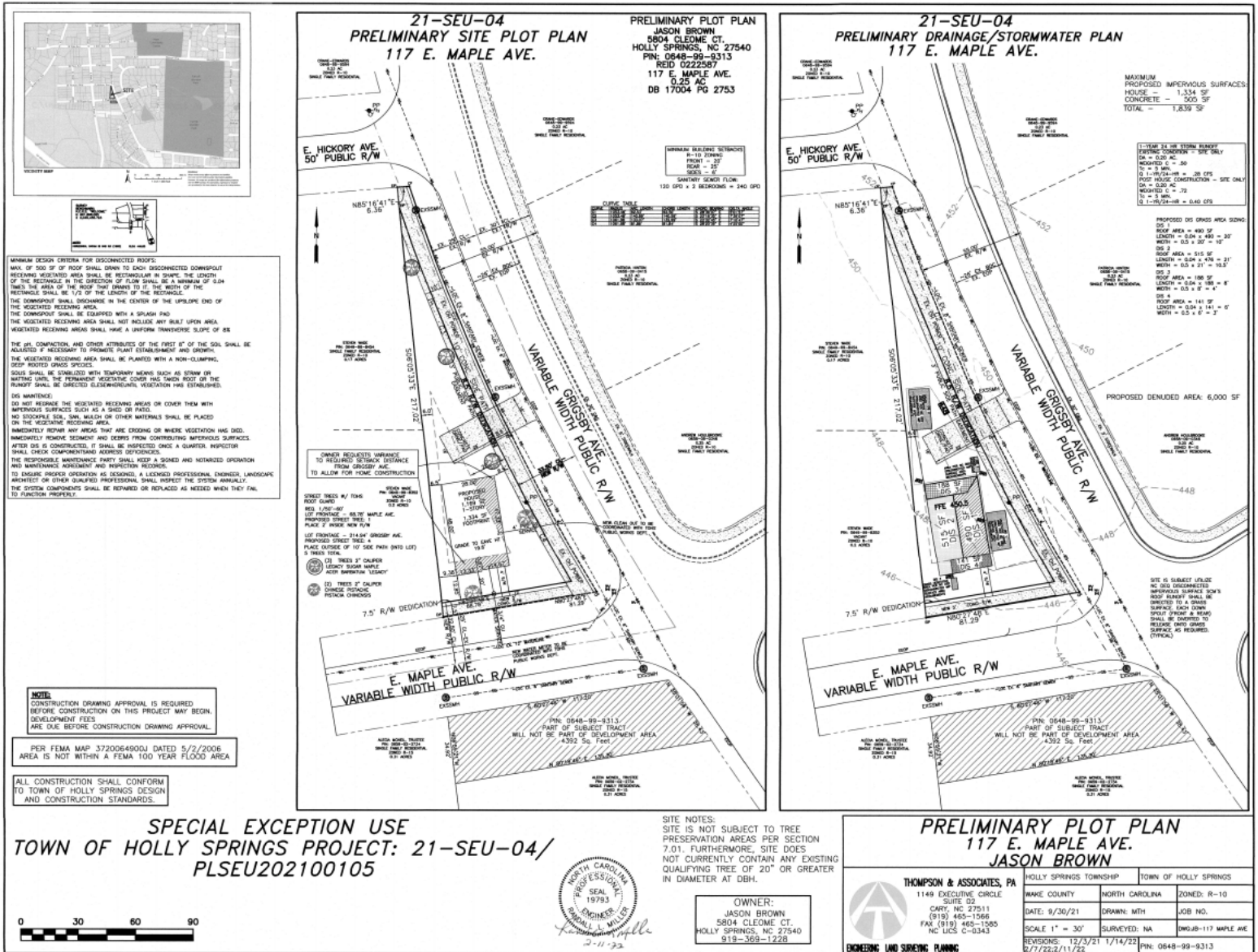
117 MAPLE AVENUE – VARIANCE FOR SETBACK ALONG MAPLE AVENUE

FINDINGS OF FACT

- (1) DUE TO THE TOWN REQUIRING THE DEDICATION OF AN ADDITIONAL 5' OF ROADWAY RIGHT OF WAY ALONG MAPLE AVENUE AND ALONG WITH THE REQUIRED BUILDING SETBACKS, THE RESULTING BUILDABLE AREA WOULD RESULT IN A BUILDABLE AREA OF AN UNDESIRABLE TRIANGULAR SHAPE. THE BASE WIDTH WOULD BE 32' GOING TO A COMMON POINT AT THE INTERSECTION OF THE HEIGHT DIMENSION OF 90'. OVERALL, WITH THE APPLICATION OF THE ADDITIONAL 5' RIGHT OF WAY TO MAPLE AND THE APPLICATION OF THE BUILDING SETBACKS, THE TOTAL BUILDABLE AREA OF THE LOT WOULD BE ~1,413 SF. THIS PRESENTS ONLY ~13% OF THE TOTAL 10,890 SF AREA OF THE LOT. THE RESULTING BUILDING ENVELOPE IS NOT FEASIBLE FOR THE CONSTRUCTION OF A SINGLE-FAMILY RESIDENCE.
- (2) DUE TO THE SIZE OF THE PROPERTY AND ITS LOCATION AT THE INTERSECTION OF MAPLE AVENUE AND GRIGSBY AVENUE, REQUIRING ADDITIONAL RIGHT OF WAY IMPEDES UPON BUILDABLE AREA. TO FURTHER HINDER BUILDABLE AREA, THE LOT SHAPE IS TRIANGULAR. AFTER APPLICATION OF A CORNER SIDE STREET SETBACK PLUS ITS TRIANGULAR SHAPE, THE AVAILABLE BUILDABLE AREA OF THE LOT IS NOT FEASIBLE.
- (3) THE HARDSHIP IS NOT THE RESULT OF ACTIONS BY THE PROPERTY OWNER/APPLICANT. THE LOT LOCATED AT 117 MAPLE AVENUE IS AN EXISTING PLATTED LOT AS PER WAKE COUNTY BOOK OF MAPS 1911 PAGE 41. THE LOT IS ZONED TO ALLOW FOR THE CONSTRUCTION OF A SINGLE FAMILY RESIDENTIAL UNIT. HOWEVER, WITH THE CURRENT REQUEST FOR ADDITIONAL DEDICATION OF ROADWAY RIGHT OF WAY, THE LOT WOULD HAVE A REDUCED AVAILABLE BUILDING FOOTPRINT. WITH THE ADDITIONAL DEDICATED RIGHT OF WAY, THE SUBJECT LOT WOULD HAVE AN UNBUILDABLE FOOTPRINT.
- (4) THE REQUESTED VARIANCE TO ALLOW FOR ENCROACHMENT INTO THE FRONT BUILDING SETBACK ALONG MAPLE AVENUE AFTER THE DEDICATION OF 5' OF ADDITIONAL R/W IS CONSISTENT WITH THE SPIRIT, PURPOSE, AND INTENT OF THE ORDINANCE. AS REFERENCED ABOVE, THE PROPERTY IS LOCATED WITHIN THE VDAP AREA. PER THE VDAP PLAN, SINGLE FAMILY RESIDENTIAL IS ENCOURAGED. WITH THIS, THE VDAP STATES THAT CONSIDERATION SHOULD BE GIVEN TO ALLOW FOR REDUCED SETBACKS FOR RESIDENTIAL UNITS. WITH THE GRANTING OF A VARIANCE TO ALLOW FOR AN ENCROACHMENT TO THE FRONT SETBACK OF MAPLE WILL BE CONSISTENT WITH THE INTENT AND SPIRIT OF THE VDAP. IN ADDITION, IT WILL NOT BE OF HARM TO THE GENERAL PUBLIC AND WILL PROVIDE SUBSTANTIAL JUSTICE TO THE PROPERTY OWNER BY ALLOWING THE PLACEMENT OF A SINGLE FAMILY RESIDENCE ON A PLATTED LOT THAT IS ZONED FOR A SINGLE-FAMILY RESIDENCE.

RESOLUTION EXHIBIT B

SITE PLANS & ELEVATIONS



RESOLUTION EXHIBIT C

TOWN COUNCIL'S FINDINGS OF FACT

The Town Council accepts the findings of fact as presented in Exhibit A unless specified below:

The Town Council made the following additional findings:

Part 1: Special Exception Use (21-SEU-04)

☒ No additional findings

Part 2: Variance (21-VARTC-01)

☒ No additional findings

Part 3: Variance (22-VARTC-01)

☒ No additional findings

RESOLUTION EXHIBIT D
CONDITIONS OF APPROVAL

The Town Council added the following conditions in order to adequately make and accept the Findings of Fact:

Part 1: Special Exception Use (21-SEU-04)

1. All operations must adhere to the evidence submitted by the applicant as stated in the findings of fact submitted and those findings of fact specified by the Town Council in conjunction with 21-SEU-04.
2. Minor modifications to the height, bulk, orientation of the structure on the lot, location of the structure on the lot, and site design may be authorized by the Director of Development Services. If the Director determines that the proposed minor modifications are of such a nature as to adversely impact the purpose or intent of this approval, the petitioner shall be required to file a new petition for Special Exception Use approval.
3. This project will be required to meet the Town of Holly Springs NPDES PH. 2 Post Construction Ordinance.

Part 2: Variance (21-VARTC-01)

1. This Variance shall only apply to 21-SEU-04 117 E Maple Avenue.

Part 3: Variance (22-VARTC-01)

1. This Variance shall only apply to 21-SEU-04 117 E Maple Avenue.



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 10.

Public Hearings

Title: Thales Expansion Development Plan & Special Exception Use - Quasi-Judicial Hearing

Strategic Priority Area: Responsible & Balanced Growth

Staff Resource: Cheryl Caines, Development Services

Action(s):

1. Conduct Quasi-Judicial Public Hearing to consider a Special Exception Use (21-SEU-02) to allow for the development of a middle/high school and gymnasium as part of the Thales School Expansion.
2. Adopt Resolution 22-11 to make and accept the Findings of Fact for consideration of and to approve the SEU and Alternate Compliance for Architectural Design Standards.
3. Approve/deny/table Development Plan (17-DP-02-A02) for Thales Expansion with the conditions stated in the attachment.

Explanation:

- A new Unified Development Ordinance (2022 UDO) was effective March 1, 2022. Over the next 12-24 months, there will be a crossover period where some projects are able to utilize the old UDO (2002 UDO) due to state statutes. This section of the cover sheet will be utilized to specify the UDO version (2002 or 2022) and the approval type that the Council is considering for each respective case.
 - Applicable Ordinance: 2002 UDO
 - Process: Quasi-judicial Public Hearing; Special Exception Use
- The Town has received a request for a Special Exception Use (SEU) to allow a private school in the R-10 Residential District.
- Two buildings (a classroom building and a gymnasium) are proposed, totaling 45,800 square feet. The proposal also includes other uses associated with the school, including bus drop-off/pick-up areas, and staff, student, and visitor parking on the 9.74 acre site.
- In conjunction with the requested SEU, the applicant is requesting Alternate Compliance of certain architectural design requirements, as follows:
 - to allow the maximum building bay width of 30 feet to be extended to 39 feet, 4 inches due to interior fixed plan items such as stairs and restrooms
 - to allow the back side of one parapet wall visible from the elevated section of Holly Springs-New Hill Road to be finished with a tan color tpo roof membrane material
 - to reduce minimum glazing requirements on the east facade due to interior features such as sprinkler risers and utility and electrical rooms along this wall

Planning Board Recommendation

Town Council Business Meeting
March 15, 2022

The Planning Board discussed the following issues and concerns on February 22, 2022:

- Increased traffic along Holly Springs New Hill Road from this project and other developments
- Timing of intersection/realignment improvements at Holly Springs New Hill Road/Old Holly Springs Apex Road in relation to the opening of the new school
- Connectivity from the Thales site to the property to the east
- Parking for the high school

Planning Board Recommendation:

The Planning Board recommended approval of the Alternate Compliance (8-0), Special Exception Use (6-2), and Development Plan (6-2). The dissenting votes were due to traffic concerns in the area.

Transportation Follow up:

It should be noted that the school falls within the NCGS 136 parameters, which limits the Town's authority to require certain transportation improvements, including fee-in-lieu contributions toward future intersection improvements. The project impact at the two (2) intersections below was evaluated. The Thales proposed high school expansion had the following percent impact:

- Bennett Knoll Pkwy/Old Holly Springs Apex Rd. intersection improvements - 1.3% (\$13,500 est.)
- HS New Hill Rd./Old Holly Springs Apex Rd. Intersection improvements - 6.5% (\$135,000 est.)

Staff inquired with Thales Academy representatives to explore a possible contribution by the school to help in a partnership to advance adjacent transportation improvements. However, the representative indicated that Thales was not able to make a contribution citing NCGS 160A-307.1.

It should also be noted that the elementary school and high school will have an increased bell stagger time of 45 minutes vs. the standard 30 minutes. This will aid in more efficient traffic circulation and less congestion. There are additional modifications to the site plan that allow for increased stacking on-site to exceed the North Carolina Department of Transportation's Municipal School Transportation Assistance (MSTA) recommended length in an effort to alleviate overflow onto the adjacent public streets.

Background:

- The site was rezoned from R-20 to R-10 on October 26, 1996.
- A Special Exception Use (SEU) and Development Plan for the existing elementary school was approved on July 18, 2017.
- The site was rezoned from R-10 to SR Suburban Residential as part of the 2022 UDO update effective March 1, 2022. Per North Carolina General Statutes, the applicant is proceeding with the application under R-10 zoning and the UDO effective at the time they made the application, which required a SEU for schools within a residential zone.

Funding Source(s):

N/A

Attachment(s):

1. 17DP04A02 Thales Expansion_PB StaffReport
2. 17DP02A02 Thales Expansion_Petition_Plans_TC
3. 17DP04A02_Thales Expansion_Motions and Conditions
4. 17DP02A02 Thales_Consultant Affidavits
5. Resolution 22-11 Findings of Fact Thales Expansion_Final



Town of Holly Springs Staff Report to the Planning Board

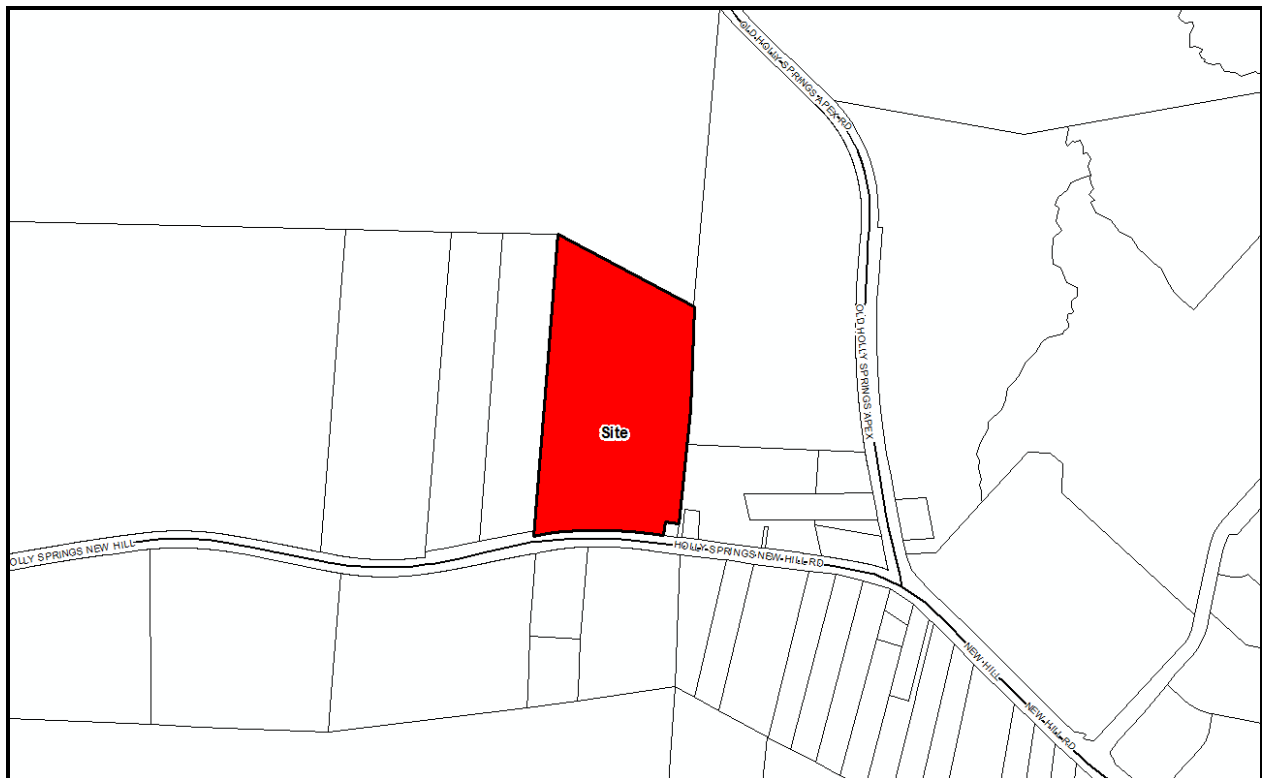
REQUEST FOR SPECIAL EXCEPTION USE & DEVELOPMENT PLAN THALES ACADEMY EXPANSION 17-DP-04-A02 & 21-SEU-02

APPLICANT(S):
Brandon Hafner
CaptiveAire
4641 Paragon Park Rd.
Raleigh, NC 27616

DEVELOPER(S):
None

OWNER(S):
Thales Academy
4641 Paragon Park Rd.
Raleigh, NC 27616

LOCATION:



☒ Within Corporate Limits of Holly Springs ☐ Within Holly Springs ETJ ☐ Annexation Pending

ANTICIPATED REVIEW SCHEDULE:

Planning Board: February 22, 2022
Town Council: March 15, 2022

STAFF CONTACTS: Cheryl Caines, Senior Planner
Rachel Jones, Development Review Engineer

ATTACHMENTS: Development Petition; Development Plans

PARCEL INFORMATION

OWNER	PARCEL #	ZONING	AREA
Thales Academy	0649265028	R-10 Residential	9.74 acres

ADJACENT PROPERTY SITE DATA

	ZONING	EXISTING LAND USE
Subject Property	R-10 Residential	School
North	IT: Industry & Technology	Landfill and vacant land
South	PUD: Planned Unit Development	Vacant and commercial
East	R-10: Residential & IT: Industry & Technology	Vacant
West	R-10: Residential	Single family residences (Hensley subdivision)

PROPERTY HISTORY

Rezoning History

Rezoning Number: 96-R-09
 Original Zoning: R-20 Residential
 Proposed Zoning: R-10 Residential
 Approved by Town Council on: 10/26/1996

Development History

Description: Special Exception Use and Development Plan for elementary school.
 Project Numbers: 17-SEU-02 & 17-DP-04
 Approved on: July 18, 2017

Rezoning Number: 97-R-07
 Original Zoning: R-10 Residential
 Proposed Zoning: I-1 Industrial
 Denied by Town Council on: 11/04/1997

SPECIAL EXCEPTION USE

20-SEU-02: Request to allow for a Special Exception Use as specified in Unified Development Ordinance Section 2.01 A.1.c to allow for a school use in the R-10 Residential zoning district at the properties located at 11244 Holly Springs New Hill Road, Wake County PIN 0649265028.

Special Exception Use Findings of Fact:

A special exception use may only be granted upon the presentation of sufficient evidence to enable a written determination that:

- a. The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare;
- b. The proposed use will not injure or adversely affect the adjacent area;
- c. The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan;
- d. The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved as set forth above, in which case the proposed use shall conform to the terms and conditions of such waiver).
- e. Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 – Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency;
- f. Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency,

and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood;

- g. The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of those persons whom may work at, visit or own property nearby to the proposed use;
- h. Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the needs of the proposed use;
- i. The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts; and,
- j. The type, size, and intensity of the proposed use (including but not limited to such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use) will not have significant adverse impacts on adjoining properties or the neighborhood.

WAIVER OF REGULATIONS OF UDO REQUESTS

Request to allow for a Alternate Compliance off UDO Section 3.08, A.1.c Primary Façade Building to allow waivers for variations in massing, animating features, and roof treatment in association with Development Petition #17-DP-02-A02 as listed here:

- **Variation in Massing:**
Exceed the 30 feet maximum bay width on west façade of the school building
- **Animating Features:**
Less glazing than required on the east façade of the gymnasium building
- **Roof Treatment:**
Allow different materials to be used on the back side of a parapet wall that is visible

UDO Requirements:

3.08, A 1. c. Primary Façade Building Materials, and Building Massing and Façade Treatment, Primary Building Material

Variation in Massing (required) – Building walls shall consist of a building bay or structural building system that is a maximum of thirty (30) feet in width. Bays shall be visually established by architectural features such as columns, ribs, pilasters or piers, changes in plane, no less than twelve (12) inches in width and four (4) inches in depth or an equivalent element that subdivides the wall into human scale proportions.

Animating Features (required) - Windows and glass doors shall be provided on a minimum of two (2) building facades based on highest levels of pedestrian traffic and vehicular visibility as follows:

Ground level (first ten (10) feet measured vertically at street level) of office and institutional uses: twenty (20) percent minimum surface area. Upper levels of all uses: fifteen (15) percent minimum surface area.

Roof Treatment - All sides of parapet walls visible from public view shall be finished to match the primary façade and shall extend an appropriate depth that is proportionate with the building size.

Waiver Findings of Fact:

1. The proposed development represents the use of (building materials, building massing and façade treatment, building orientation, signs, landscaping, lighting or open space) which will result in a development pattern which is equivalent to or superior to that achievable under the applicable regulations;
2. The proposed development will be compatible with and will enhance the use or value of area properties;
3. The proposed development is consistent with the intent of the Comprehensive Plan; and,
4. The proposed development is consistent with the intent and purpose of this UDO.

STAFF ANALYSIS

PROJECT OVERVIEW

Part 1: Special Exception

A Special Exception Use is a Permitted Use within a specific zoning district that may not necessarily fit in with the surrounding areas and uses and is subject to further review. Applicants requesting a Special Exception Use, must be able to demonstrate that all required Findings of Fact are being met. The Town Council through the public hearing and sworn testimony must be able to make findings that these facts will be met and/or adhered to as part of the motion. If the Town Council determines that a Fact cannot be met or adhered to, then the Special Exception should be denied.

The applicant has requested a Special Exception Use to allow for school in the R-10 Residential District.

Part 2: Development Plan

Any Development Plan that is submitted along with a Special Exception Use is required to be reviewed by the Planning Board for recommendation to the Town Council and then ultimately acted upon by the Town Council after determination if the proposed Special Exception Use of the land is approved.

A Development Plan has been submitted alongside the Special Exception Use Petition for a new, middle/high school on the Thales campus. Two buildings (a classroom building and a gymnasium) are proposed totaling 45,800 square feet. The proposal also includes other uses associated with the school including bus drop-off/pick-up areas, and staff and visitor parking on the 9.74 acre site. Connectivity to the adjacent area will be through existing access points onto public streets/sidewalks/sidepaths for pedestrians, bikes, and automobiles. A gated, emergency only access is being provided along the eastern boundary that will connect to future commercial development. Tree preservation areas are around an on-site creek and adjacent to the Hensley subdivision to the west.

PLANNING & ZONING

Vision Holly Springs Comprehensive Plan

Future Land Use & Community Character: The Future Land Use Plan has this property designated as Mixed Residential Neighborhood. The Mixed Residential Neighborhood category is intended to provide a range of home choices in the same neighborhood. This mixed approach allows residents at all stages of life, with different housing needs and preferences, to live in a multi-generational community for a lifetime. Smaller blocks and a grid street network support a well-connected, cohesive community. New Mixed Residential Neighborhoods should include a comprehensive and connected network of open space that provide gathering space; preserve large tree stands; and help manage stormwater run-off.

Development Standards

Minimum Yards and Setbacks:

Minimum Required:

Front, Thoroughfare (Holly Springs New Hill Rd): 50 feet, Type A-50

Side:

East property line: 10 feet, Type A-20

West property line: 20 feet, Type C-75

Rear: 25 feet, Type A-20

Provided:

Front Adjacent to Holly Springs New Hill Rd., 50 feet, Type-A 50, existing, no change

Side: 10 feet, Type A-20 along the east and 20 feet, Type C-75 along the west

Rear: 25 feet, Type- A-20

Building Height:

Maximum Permitted: 35 feet

Proposed: 32 feet, 3 inches

Parking & Loading:

Parking Required:

Elementary & Junior High - one (1) parking space for every five (5) seats in auditorium or assembly hall at maximum capacity calculated pursuant to Fire Code, plus: two and one-half (2.5) parking spaces per classroom.

High School – two (2) parking spaces per classroom, plus one (1) parking space for each five (5) students.

Bike parking: three (3) bicycle racks

Total Required: 116 spaces + 3 bike racks (15 spaces)

Parking Provided: 116 parking spaces + 16 spaces

Landscape Requirements:

Yard/Bufferyard:

Minimum Required:

Adjacent to New Hill Holly Springs Rd: 50 feet, Type-A 50 bufferyard

Side: East - 10 feet, Type A-20 yard; West – 20 feet, Type C-75 bufferyard

Rear: 25 feet, Type A-20

Provided:

Adjacent to Holly Springs New Hill Rd.: existing, 50 feet, Type-A 50 bufferyard

Side: East - 10 feet, Type A-20 yard

Plants include existing deciduous and evergreen trees. New supplemental plantings include Water Oak, Dawn Redwood, Camelia, and Viburnum.

West – 20 feet, Type C-75 bufferyard

Plants include existing deciduous and evergreen trees. New plantings include Deodar Cedar, Japanese Cedar, Eastern Red Cedar, Glossy Abelia, and Camelia.

Rear: 25 feet, Type A-20 yard
Plants include existing deciduous and evergreen trees.

Foundation:

Foundation landscaping has been provided including Eastern Red Cedar, Carolina Cherry Laurel, Distylium, Yaupon Holly, Camelia, Encore Azalea, among others.

Interior Parking Lot Landscape Islands:

Required: 12 Landscape Islands containing 1 tree and 4 shrubs
Provided: 17 Landscape Islands containing 1 tree and 4 shrubs including Overcup Oak, Maidenhair Tree, American Elm, Distylium, Hydrangea, and Spreading Japanese Plum Yew.

Parking Area Screening:

Parking area screening has been provided along all parking spaces which face an adjacent residential area, which is only to the west in the expansion area.

Tree Preservation

Required: 10% of the project area (0.98 acres)
Provided: 11.5% (1.12 acres) including specimen trees, tree stands, and significant natural resource areas. Additional trees will be preserved in landscape yards, but these areas are not included in the provided preservation area.

General Regulations

Trash Containers:

A trash collection area is proposed on the east side of the new school building within the parking area. An enclosure that matches the building architecture along with a metal gate with matching building colors is proposed. Foundation landscaping will screen the facility from adjacent properties and other areas of the site.

Architectural and Site Design Requirements

Building Materials, Colors, Textures, Architecture, Roof Treatment, and Façade Modulation:

A Special Exception Use in the R-10 District shall be subject to the Architectural and Site Design Review regulations of the Local Business District (UDO 3.08). The petitioner has requested Alternate Compliance (through the waiver process) for an overall design that does not completely meet the architectural design requirements.

Building Materials

A minimum of 60% of the primary building façade must be constructed using a masonry material, such as brick or stone. Brick is proposed as the primary building material.

Colors

A variety of brown and gray tones are used throughout the various building materials for the two buildings.

Base, Body, and Cap

The base, body, and cap percentages meet the minimum required on all required facades.

Variation in Massing

Walls have distinct bays in accordance with the maximum width required with one exception (the west elevation of the school building). The maximum is 30 feet. The petitioner has requested Alternate Compliance for a bay that is 39 feet, 4 inches due to interior fixed plan items such as stairs and restrooms.

Roof Treatment

Rooflines extend in a continuous plane for more than fifty (50) feet along some facades and all sides of visible parapet walls finished to match the facade. The petitioner is asking for Alternate Compliance for the back side of one parapet wall visible from the elevated section of Holly Springs-New Hill Road. It is proposed to cover the wall with a tan color tpo roof membrane.

Animating Features

Glazing (windows and glass doors) and other animating features are provided except the minimum glazing requirement is not met on the first 10 feet on the eastern façade of the gymnasium. The petitioner has requested has requested Alternate Compliance due to interior features such as sprinkler risers and utility and electrical rooms along this wall. A precast portico has been added to mitigate the lack of glazing.

Lighting

The Town maximum light levels at property lines, which are stricter along residential property lines to prevent light pollution spilling onto residential properties, has been met in the expansion portion of the site.

Pedestrian Circulation and Vehicular Area Design (UDO Section 7.09)

Walkways or Pedestrian/Bikeway System Design:

A connection to the public sidewalk system and between site buildings is proposed. Decorative crosswalks are proposed where the pathways cross an interior access drive.

CIVIL IMPROVEMENTS:

The Thales Academy Expansion project is in compliance with the Town's Ordinances and Standards related to civil improvement requirements. It should be noted that the school falls within the NCGS 136 parameters which limits the Town's authority to enforce certain transportation improvements.

Water Service:

Potable Water service will be provided to the project site through connection with existing 8" water main on the Elementary School site. New 8" water main will be extended through the site and new fire hydrants installed. A hydraulic water model and fire flow analysis (FFA) report was completed with this development plan to confirm minimum pressure and flow requirements are met through the proposed design.

Sewer Service:

Sanitary Sewer service will be provided to the project site through connection with existing 8" sewer main on the Elementary School site. New 8" sewer main will be extended through the site and stubbed to the adjacent Womble property to provide access for future development of that property.

Transportation

Traffic Impact Analysis (TIA):

A Traffic Impact Analysis was completed with this project and review was completed by the Town and the NCDOT's the Municipal School Transportation Assistance (MSTA). The MSTA evaluates overall pedestrian safety and traffic operations on a school campus, and how traffic affects adjacent state roadways. Existing site driveways and access points are being utilized with this expansion. No additional access points to public R/W are being proposed.

- As part of the recommendations from the TIA, the access point at Socratic Way and Holly Springs New Hill Rd. will be converted to a right-in-right-out movement only. A signal warrant analysis (SWA) was conducted at Socratic Way and Holly Springs New Hill Rd; however, the result showed that signal warrants are not yet met at this 3 leg intersection.
- A potential fee-in-lieu toward future improvements identified at the intersection of Bennett Knoll Pkwy and Old Holly Springs Rd. is being considered, though this project's impact is minimal and well below the 10% benchmark.
- The intersection of Old Holly Springs Apex Rd./Holly Springs New Hill Rd has been identified as a Hot Spot Study in the Town's Draft CTP Update. Realignment of the 3-leg intersection is the near term recommendation. Ultimately the intersection will be converted to a 4 leg intersection, as Old Holly Springs Apex Rd will extend south to connect to Thomas Mill Rd. Town Staff has coordinated with the applicant team to determine the project's percent impact at the intersection and calculated a fee-in-lieu of toward the near term intersection realignment project.
- *Staff is continuing to coordinate with the applicant to determine if the developer is willing to commit to the fee-in-lieu contribution mentioned above, as the Town is actively seeking funding partnership with the development community to address this Hot Spot intersection improvement.*

Road Widening:

Thoroughfare widening along Holly Springs New Hill Rd., required by the Unified Development Ordinance (UDO) and in accordance with the Comprehensive Transportation Plan (CTP), was previously completed with the originally approved Thales Elementary School development and includes existing 10-ft sidepath.

Connectivity:

A public vehicular access stub is being constructed from the drive aisle to the eastern property line to meet NC Fire Code requirements, and Town standard and ordinance requirements, for access and interconnectivity with the adjacent parcel when it develops in the future.

Environmental & Stormwater

Storm Water: This project is required to meet the Town of Holly Springs NPDES Ph. II Post Construction Stormwater Ordinance.

Environmental Buffers: This project is located in the Cape Fear River Basin and will be subject to all applicable requirements of that basin

STAFF RECOMMENDATION TO THE PLANNING BOARD

ACTION #1: WAIVER OF REGULATIONS OF UDO

Motion that the Planning Board recommends the Town Council approve / deny the following Waiver for Thales Academy Expansion, as submitted by Withers Ravenel, Project Number: 09210285, dated 10/29/21:

1. Request to allow for Alternate Compliance with Architectural and Site Design Standards of UDO Section 3.08, A 1. c. Building Massing, Animating Features, and Roof Treatment.

ACTION #2: DEVELOPMENT PETITION REQUEST

Motion that the Planning Board recommends the Town Council approve / deny Development Plan / Preliminary Plan #17-DP-02-A02 for Thales Academy Expansion as submitted by Withers Ravenel, Project Number 09210285, dated Revised 10/29/21 with the following conditions:

1. All previous conditions of approval for Thales Academy Development Plan apply to this plan except for any condition that describes a fee or a fee-in-lieu to be paid shall now comply with the current amounts due pursuant to the Town's current annual budget or any unexpired development agreement.
2. A UDO Permit must be submitted and approved for Sign Installation for permanent signage.
3. Invoiced fees from Special Study third party review must be paid prior to first Construction Drawing Submittal, and no later than prior to Construction Drawing Approval.
4. If build out exceeds the anticipated time frame in the approved TIA, an update of the TIA will be required prior to or with the Development Plan for the associated phase. Recommended improvements will be required to be completed prior to plat approval of that phase.
5. Thoroughfares, collectors and boulevards will require a calculated pavement design with 1st construction drawing submittal. This may result in a pavement cross section bigger than the specified minimum.
6. A Deed of Easement is required to be executed for public vehicular & public pedestrian access between the property owners at the time of plat.
7. Offsite Sewer Infrastructure Incomplete: If any off site sewer facilities are needed to serve this project and are not completed and accepted by the Town at the time of approval of this preliminary subdivision plan, then these facilities must be completed prior to construction drawing approval unless otherwise approved by the Director of Engineering. The Town is not responsible for completion of off-site sewer facilities, and will not guarantee completion of such facilities by any other party. This will become a condition of plan approval.
8. A verification letter that confirms no changes occurred to the gravity sewer network; including final sizing for lines that are stubbed upstream, will be required with first construction drawing submittal. A Final Gravity Sewer Line Sizing Report may be required with first construction drawing submittal review for all lines that are stubbed to adjacent upstream properties. Include calculations to document line sizes, adequacy of proposed sanitary sewer lines to serve all future upstream development.
9. Continue to monitor the northwest drive aisle connection, Seale Wood Trail, for additional traffic control measures during school operations. Any necessary mitigations shall be the responsibility of the developer.
10. Approval of Stormwater Management Plan is required prior to issuance of a land disturbance permit or construction drawing approval.
11. Payment of the Stormwater Fee-in-Lieu will be required prior to construction drawing approval.
12. All items listed on the Stormwater Submittal Checklist, Form #16003, must be included with the first construction drawing submittal.
13. This project will be required to meet Town's NPDES Phase II Post Construction Stormwater ordinance.
14. Stormwater sureties are required on this project. A performance surety in the form of a bond, letter of credit or cash is required in the amount of 125% estimated construction cost of the stormwater BMP prior to the preconstruction meeting and a

maintenance surety in the form of a cash escrow account in the amount of 35% the actual construction cost of the SCM is required at the end of the performance monitoring period for the project.

- 15. All environmental permits must be obtained prior to construction drawing approval and/or issuance of a land disturbance permit for the entire project.**
- 16. Prior to Town Council**
 - a. Continue coordination with the Town related to fee-in-lieu contribution proportionate to project impact toward the Hot Spot Study identified in the CTP located at Old Holly Springs Apex Rd./Holly Springs New Hill Rd.**
 - b. Continue coordination with the Town related to fee-in-lieu contribution proportionate to project impact toward the improvements at the intersection of Old Holly Springs Apex Rd./Bennett Knoll Pkwy**
 - c. Finalize the remaining TIA comments**

SPECIAL EXCEPTION USE FINDINGS OF FACT



You must respond to all findings; please type or print legibly in blue or black ink.

Project Information:

Project Name: Proposed School Expansion

Special Exception Use:

UDO Section No.: 2.04 R-10 Residential District.

Special Exception Use: School - Public or Private

Specific Special Exception Use Request:

The applicant is proposing to add a new upper school building to the existing
Thales Academy Campus.

For DPZ Use only

Project # _____

Date Received:

Findings of Fact:

A petition for Special Exception Use may only be approved upon the presentation of sufficient evidence. Please include as much detailed information or unique conditions that would enable the Board to make a written determination that:

(1) The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare:
See attached.

(2) The proposed use will not injure or adversely affect the adjacent area or property values therein:
See attached.

(3) The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan:
See attached.

(4) The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved by the Town Council in which case the proposed use shall conform to the terms and conditions of such waiver):
See attached.

(5) Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 – Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency:
See attached.

(6) Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood:
See attached.

(7) The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of those persons whom may work at, visit or own property nearby to the proposed use:
See attached.

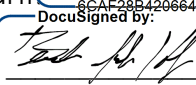
(8) Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the proposed use:
See attached.

(9) The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts:
See attached.

(10) The type, size, and intensity of the proposed use, including such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use, will not have significant adverse impacts on adjoining properties or the neighborhood:
See attached.

Certificate of Completion

I certify that all information presented in this application is accurate to the best of my knowledge and belief. Further, I grant permission for members of the Planning Board, Town Council, and Town Staff to visit the site in question for informational, advertisement, and inspection needs.

Signature of Applicant	 DocuSigned by: Courtney Landoll 8CAF28B420664A1...	Date: 7/30/2021
Signature of Owner	 DocuSigned by: [Signature] A587213432464C4...	Date: 7/30/2021

Proposed School Expansion

Statement of Justification

- (1) The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience, or general welfare.

The school will not injure the public health, safety, comfort, community moral standards, convenience, or general welfare. Thales Academy will provide an additional, convenient education choice to area residents thereby reducing the burden on the public school system in this rapidly growing area.

- (2) The proposed use will not injure or adversely affect the adjacent area or property values therein.

The Thales Academy site was carefully designed to comport with the surrounding community. Sidewalks and street connections are being provided to promote walkability and improve interconnection with the surrounding area. Sidewalk connections to public streets are also provided via Socratic Way. Driveways were designed to provide easy access with ample room for drop-off and pick-up.

- (3) The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan.

The school will be consistent with the district character and land uses and the Town of Holly Springs Comprehensive Plan. The property is zoned R-10, Residential District, which is established to protect, promote, and maintain the development of medium-density, single-family dwellings and provide limited public and institutional uses, such as schools, that are compatible therewith. The Comprehensive Plan designates this property as Mixed Residential Neighborhood. The character area description identifies schools as a contextually appropriate use. The expansion of the existing school and architecture will be consistent with previous approvals.

- (4) The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as apart of a special exception use petition and approved by the Town Council in which case the proposed use shall conform to the terms and conditions of such waiver).

The school will conform to all development standards of the R-10 district, excepting the provisions previously approved in 17-SEU-02, 17-VARTC-03, and the associated waiver for alternate compliance with architectural design requirements. Thales Academy has developed a unique and attractive design configuration for use around the Triangle and would like to continue that tradition here.

- (5) Access drives or driveways are or will be sufficient in size and property located to ensure automotive and pedestrian traffic safety and convenience, traffic flow as set forth in Section 7.09 Pedestrian Circulation and Vehicular Area Design, and control and access in case of fire or other emergency.

Drives are sufficiently sized and located to ensure automotive and pedestrian safety and convenience, as required by the Town, and to allow for sufficient control and access in the event of fire or other emergency. Internal drives loop to encourage slow speed and allow for queuing during

drop-off and pick-up. Sidewalk connections and associated crosswalks are provided to encourage pedestrian access and site walkability. Fire and emergency services access meeting the Town's standards is provided.

- (6) Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood.

All off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located to be safe and convenient, to allow for emergency access, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood. Code-required off-street parking is provided on-site along with significant queuing area for drop-off and pick-up of school children. Trash facilities are enclosed away from the site perimeter, easily accessible, and conveniently located for school use and pick-up. The school building is located near the center of the site with the playground immediately behind it. No economic, glare, odor, or other impacts from the school are expected.

- (7) The lot, building, or structure proposed for the use has adequate restroom facilities, safety equipment (smoke alarms, floatation devices, etc.) or any other service or equipment necessary to provide for the needs of those persons who may work at, visit, or own property nearby to the proposed use.

Thales Academy is designed to have adequate restroom facilities, safety equipment, including smoke alarms, and all necessary services and equipment to provide for the needs of those who may work at or visit the school. Thales academy is a proven model. They have similarly equipped and successfully operated similar schools around the region. Thales Academy will comply with all state-level regulations for schools.

- (8) Utilities, schools, fire, police, and other necessary public and private facilities and services will be adequate to handle the proposed use.

Utilities, schools, fire, police, and other necessary public and private facilities and services will be adequate to handle the proposed use. Public water and sewer is available on the site to service the structure. As part of construction of the building, required off-site improvements will be made.

- (9) The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts.

The school building and playground are centrally located, away from adjacent properties. Driveways will be sufficiently setback from the property lines and the street. Landscape buffers and preservation of existing vegetation are proposed to meet applicable code requirements. Environmentally sensitive areas are preserved and protected providing a further transition for adjacent landowners in certain areas to the north and west. The school expansion is harmonious with the surrounding land uses.

- (10) The type, size, and intensity of the proposed use, including such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use, will not have significant adverse impacts on adjoining properties or the neighborhood.

Thales Academy will not have significant adverse impacts on adjoining properties or the neighborhood. The proposed upper school will operate on an ordinary school schedule. Landscaping, parking, access, drives, and stormwater all meet or exceed state and local requirements.

WAIVER/ALTERNATE COMPLIANCE PETITION



The current Filing Fees can be found on-line in the Town of Holly Springs Fee Schedule: www.hollyspringsnc.us/planning

Waiver/Alternate Compliance Type (check one)

- ☐ UDO Section 1.23 – Request for Incentives for the Preservation, Rehabilitation, or Adaptive Reuse of Historic Structures
- ☐ UDO Section 2.06 or 2.07- Waiver of Architectural and Site Design Requirements in R-MF-8 & R-MF-15
- ☐ UDO Section 2.09- Waiver of Development Requirements for Development Options in the R-30, R-20, R 15, R-10 and R-8 Districts
- ☐ UDO Section 2.10- Waiver of Development Requirements for Infill Development Options in the R-8 District
- ☐ UDO Section 3.03- Alternate Compliance with Architectural and Site Design Requirements in TV
- ☐ UDO Section 3.03- Alternate Compliance with Development Standards in TV
- ☒ UDO Section 3.08- Alternate Compliance with Architectural and Site Design Requirements in LB, CB, OR, GB
- ☐ UDO Section 4.05- Alternate Compliance with Architectural and Site Design Requirements in BT, RT, IT
- ☐ UDO Section 7.01- Alternate Landscape Plan Approval
- ☐ UDO Section 7.01- Waiver of Required Tree Preservation Requirements
- ☐ UDO Section 7.03- Waiver of Sign Regulations
- ☐ UDO Section 7.04- Reduction in the Number of Required Off-Street Parking Spaces
- ☐ UDO Section 7.04- Waiver of Off-Street Parking Regulations
- ☐ UDO Section 7.05- Waiver of Off-Street Loading Regulations
- ☐ UDO Sections 7.06, 7.07, or 7.08- Waiver of Lot Design, Street Design, or Utility Design
- ☐ UDO Section 7.09- Waiver of Pedestrian Circulation & Vehicular Area Design Requirements
- ☐ UDO Sections 9.05, B.- Waiver of Platting, Project Construction Drawing Approval, Recombination and Vacation Procedures
- ☐ DPM Section 1- Waiver of Voluntary Annexation

For DPZ Use only

Project # _____

Fees Paid: \$ _____

Date Received: _____

☐ Initial ☐ Revised ☐ Final

Project Information

Identify the project associated with this Waiver/Alternate Compliance request

Associated Project Name: _____ Associated Project Number: _____

Waiver/Alternate Compliance Request

Specific Request: (provide additional sheets if necessary)

SEE ATTACHMENT

Contact Information

Waiver/Alternate Compliance Contact

Name _____ Company _____

Mailing Address _____

City _____ State _____ Zip _____

Telephone # () _____ E-Mail _____

How would you like to receive staff review comments? ☐ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

TOWN OF HOLLY SPRINGS
UDO SECTION 3.08 OR 4.05: ALTERNATE COMPLIANCE WITH ARCHITECTURAL
AND SITE DESIGN REQUIREMENTS IN LB, CB, OR, GB & BT, RT, IT
FINDINGS OF FACT

DPM Appendix #A.06
Supplement #15
December 2018



Please print responses in blue or black ink or typewrite.

A petition for Alternate Compliance may only be approved upon the presentation of sufficient evidence. Please include as much detailed information or describe the unique conditions that would enable the decision making body to make a written determination that:

Findings of Fact

- (1) The proposed development represents the use of (building materials, building massing and façade treatment, building orientation, signs, landscaping, lighting or open space which will result in a development pattern which is equivalent to or superior to that achievable under the applicable regulations;

SEE ATTACHMENT

For DPZ Use only

Project # _____

Date Received: _____

☐ Initial ☐ Revised ☐ Final

- (2) The proposed development will be compatible with and will enhance the use or value of area properties;

SEE ATTACHMENT

- (3) The proposed development is consistent with the intent of the Comprehensive Plan; and,

SEE ATTACHMENT

- (4) The proposed development is consistent with the intent and purpose of this UDO.

SEE ATTACHMENT

Certificate of Completion

I certify that all information presented in this petition is accurate to the best of my knowledge and belief.

Signature: _____ Date: _____

Alternate Compliance Requests

3.08.A.1.c.2.b.i

Building walls shall consist of a building bay or structural building system that is a maximum of thirty (30) feet in width.

Thales Academy is requesting an Alternate Compliance for the use of a single 39'-4" building bay on the Left Side (West) Elevation of the High School. This bay is utilized because of the specific functional requirements of the building interior including fixed plan items such as sprinkler room, stairs and restrooms.

3.08.A.1.c.2.c.iii.3

Windows and glass doors shall be provided on a minimum of two (2) building facades based on highest levels of pedestrian traffic and vehicular visibility as follows: Ground level (first ten (10) feet measured vertically at street level) of office and institutional uses: twenty (20) percent minimum surface area.

Thales Academy is requesting an Alternate Compliance for the percentage of glazing on the first floor level of the Gymnasium East Elevation. The UDO requires 20% glazing. The functional requirements of the Gymnasium preclude the installation of windows at the court level. In addition, the sprinkler riser, utility and electrical rooms are best suited to the east wall location. Therefore, the lower level glazing of the east wall has been reduced to 11.9%. A precast portico and recessed brick faux windows has been added to mitigate the lack of glazing.

308.A.1.c.2.g

All sides of visible parapet walls shall be finished to match the primary façade and shall extend an appropriate depth that is proportionate with the building size.

Thales Academy is requesting an Alternative Compliance from the material on the back side of the parapet being required to match the primary façade. Per the site line studies on Sheet A-05, only one small section of the rear of the parapet is visible from any view point. This small visible section would only be seen from the elevated section of Holly Springs-New Hill Road. The back side of the parapet will be covered with a tan color TPO roofing membrane up to the cap flashing. The requirement to cover this visible section with masonry to match the primary wall would create a difficult construction detail, would make the roof less water tight, and would provide little aesthetic benefit.

Findings of Fact

1. The proposed development represents the use of (building materials, building massing and façade treatment, building orientation, signs, landscaping, lighting or open space which will result in a development pattern which is equivalent to or superior to that achievable under the applicable regulations;

The proposed Thales Academy High School and Gymnasium buildings have been designed to complement the existing Thales Academy Elementary School building. The brick selection and details, window colors and shapes and classical precast elements are consistent with the design of the existing school building. Thales Academy will comply with all developments standards with the exception of a waiver request regarding certain architectural elements of the building. The resulting development pattern will be equivalent to that achievable under the applicable regulations.

2. The proposed development will be compatible with and will enhance the use or value of area properties;

The proposed Thales Academy development includes the existing elementary school and the proposed High School and Gymnasium. The site has been carefully designed to complement and enhance the use and value of the surrounding community. Sidewalks and street connections are provided to promote walkability and improve interconnection with the surrounding area. Drives have been designed to provide ample access with room for drop off and pick up. Off-street parking, loading areas, trash enclosures and other services have been located in a manner to be safe and to minimize any negative impact on adjoining properties.

3. The proposed development is consistent with the intent of the Comprehensive Plan; and,

Thales Academy will be consistent with the land uses authorized in the Town of Holly Springs Comprehensive Plan. The subject property is zoned R-10, which is established to protect, promote and maintain the development of medium density single-family dwellings and to provide for limited public and institutional uses, such as schools, that are compatible with the residential uses. The Holly Springs Comprehensive Plan designates the site for development which includes limited institutional uses such as schools.

4. The proposed development is consistent with the intent and purpose of this UDO.

The Thales Academy proposed development, even with the requested waivers, falls well within the intent of the UDO. Each building, where required, has a discernable base and cap, adequate transparency, human element details within the first 15', variations in wall massing and parapet heights, and substantial brick exteriors.

3.08 A.1.c.(2)(b) - DEFINED WALL BAY: 30' - 0" MAX
3.08 A.1.c.(2)(g)(i) ROOFLINE VARY IN HEIGHT - NO CONTINUOUS PLANE FOR >50'

WALL OPENINGS - SOUTH ELEVATION

FIRE SEPARATION DISTANCE: >30'
DEGREE OF OPENING PROTECTION: UP, S
ALLOWABLE OPENINGS: NO LIMIT

BUILDING "CAP" - 3.08 A.1.c.(2)(a),(iii)
7% MINIMUM REQ'D
5' - 4" CAP HEIGHT / 37'-4" (HIGHEST PARAPET HEIGHT)
= 14.2% OF VERTICAL HEIGHT PROVIDED

3.08 A.1.c.(2)(c)(i),4: GLASS WINDOWS AT UPPER LEVEL
15% MIN. REQ'D (ALL USES)
(10 WINDOWS) * 58.7 SF PER WINDOW = 587 SF
+ 21' - 4" GLASS ENTRANCE ASSEMBLY = 213 SF
= 800 SF GLAZED AREA / 1632 SF UPPER LEVEL WALL AREA
= 49% GLAZED AREA PROVIDED AT UPPER LEVEL

3.08 A.1.c.(2)(d) - "HUMAN SCALE DESIGN ELEMENTS"
MIN. (2) CONTINUOUS OR REPEATING DETAILS 12" OR LESS WITHIN FIRST 15'

3.08 A.1.c.(2)(c)(i),3: GLASS WINDOWS AND DOORS AT GROUND LEVEL
20% MIN. REQ'D (OFFICE AND INSTITUTIONAL USES)
(10 WINDOWS) * 58.7 SF PER WINDOW = 587 SF
+ 21' - 4" GLASS ENTRANCE ASSEMBLY = 213 SF
= 800 SF GLAZED AREA / 1360 SF GROUND LEVEL WALL AREA TO 10' AFF
= 58.8% GLAZED AREA PROVIDED AT GROUND LEVEL

BUILDING "BASE" - 3.08 A.1.c.(2)(a),(ii)
9% MINIMUM REQ'D
4' - 0" BASE HEIGHT / 37'-4" (HIGHEST PARAPET HEIGHT)
= 10.7% OF VERTICAL HEIGHT PROVIDED

PRIMARY FACADE - HIGH PEDESTRIAN TRAFFIC

① SOUTH ELEVATION
3/16" = 1'-0"

WALL OPENINGS - NORTH ELEVATION

FIRE SEPARATION DISTANCE: 10' - 6"
DEGREE OF OPENING PROTECTION: UP, S
ALLOWABLE OPENINGS: 45%
ACTUAL OPENINGS:
(30 WINDOWS)*58.7SF = 1761 SF OPENINGS
/ 4529 SF WALL AREA = 39%

3.08 A.1.c.(1),(a),(i): PRIMARY BUILDING MATERIAL: "BRIGHT" BRICK

ARCHED BRICK SOLDIER COURSE AT TOP OF WINDOW (TYP)

DOUBLE BRICK SOLDIER COURSE (TYP)

"DARK BRONZE" PRE-FINISHED METAL GUTTER/ DOWNSPOUTS (TYP)

NOTE:
SEE ELEVATION 1/ A-1.01 FOR NOTING OF TYPICAL/ SIMILAR CONDITIONS.

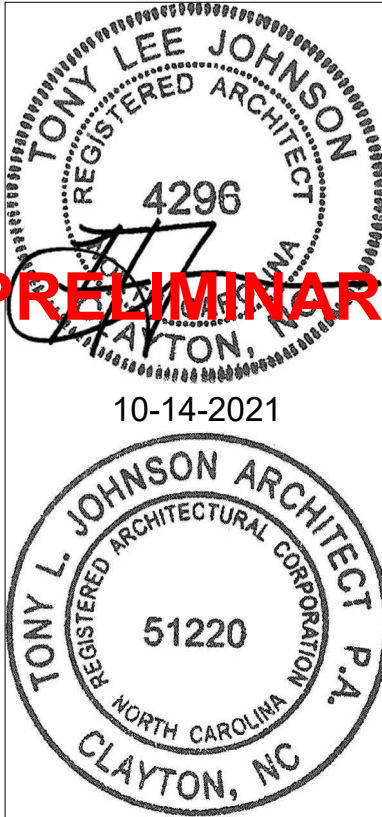
3.08 A.1.b: "OTHER FACADE" - ORIENTED TOWARD PARCEL ZONED IT (AND >105' FROM PARALLEL)
DESIGN IN COMPLIANCE WITH 3.08.A.1.d(1): "COLORS SHALL BE CONSISTENT WITH THE PRIMARY FACADE(S)"

② NORTH ELEVATION
3/16" = 1'-0"

MATERIAL INDEX:

	FIELD BRICK: PINE HALL "OLD HAMPTON" O/S TUMBLE BRICK. (MORTAR: STANDARD GREY)
	ACCENT BRICK: LAWRENCEVILLE "GLEN GERY BURNT CHIMNEY" O/S (MORTAR: STANDARD GREY)
	PRECAST CONCRETE

STOREFRONT:	DARK BRONZE ALUMINUM INSULATED, SOLARCOOL BRONZE
GLAZING:	DARK BRONZE ALUMINUM
COPING CAP:	TAN ROOFING MEMBRANE
MAIN ROOF:	TAN ROOFING MEMBRANE
PARAPET BACKSIDE:	DARK BRONZE STANDING SEAM
METAL ROOFING:	DARK BRONZE
GUTTER:	DARK BRONZE
DOWNSPOUTS:	DARK BRONZE



THALES ACADEMY
HIGH SCHOOL
HOLLY SPRINGS NEW HILL ROAD, HOLLY SPRINGS, NC

918-550-7717
Tony@TonyJohnsonArchitect.com
104 North Lombard St
Clayton, NC 27520
TonyJohnsonArchitect.com



ISSUE DATE: 10-14-2021
REVISION:

--	--

PROJECT #: 2021-052

HIGH SCHOOL
ELEVATIONS -
SOUTH & NORTH

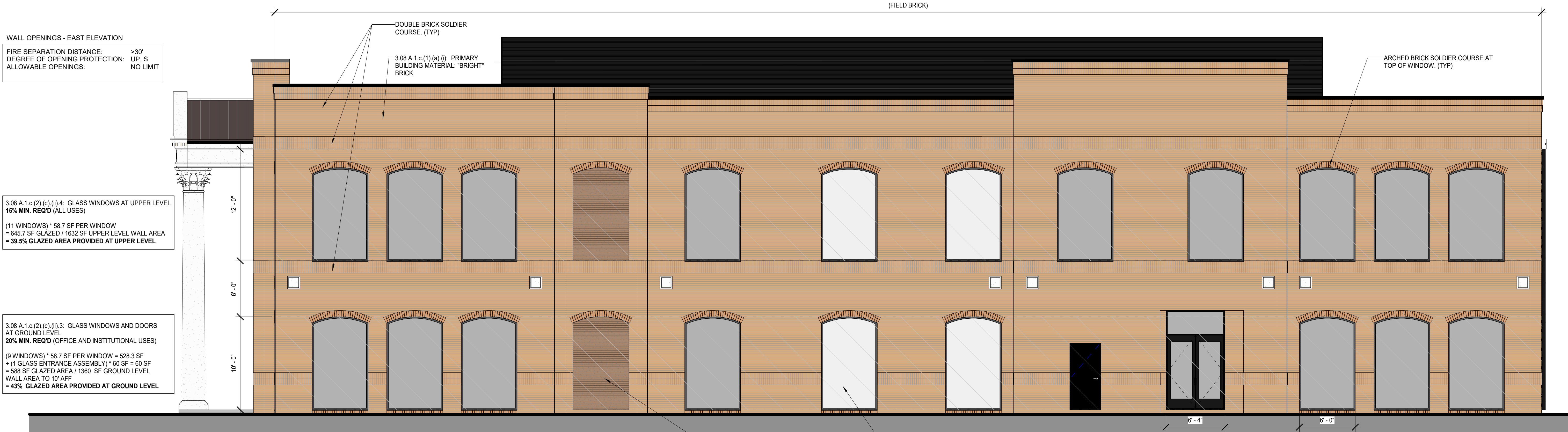
SHEET

A-01



3.08.A.1.b: "PRIMARY FACADE" - ORIENTED TOWARD RESIDENTIAL DISTRICT

① WEST ELEVATION
3/16" = 1'-0"



3.08.A.1.b: "OTHER FACADE" - ORIENTED TOWARD PARCEL ZONED IT (AND >105° FROM PARALLEL)
DESIGN IN COMPLIANCE WITH 3.08.A.1.d(1): "COLORS SHALL BE CONSISTENT WITH THE PRIMARY FACADE(S)"
FACADE WITH HIGH LEVEL OF PEDESTRIAN TRAFFIC

② EAST ELEVATION
3/16" = 1'-0"

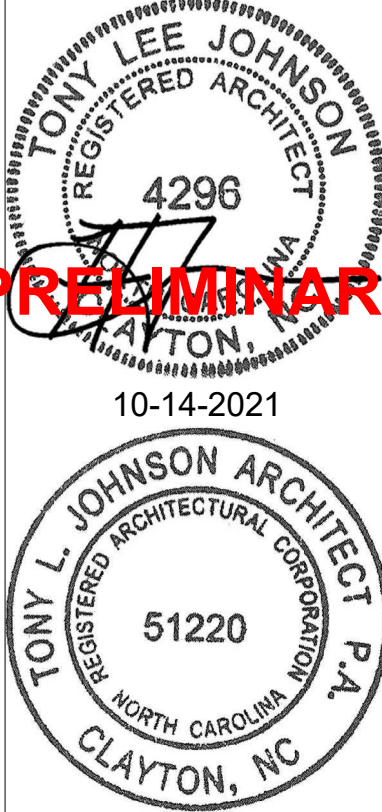
NOTE: EXPOSED GAS PIPING TO BE PAINTED
TO MATCH BRICK WALL COLOR.

MATERIAL INDEX:

	FIELD BRICK: PINE HALL "OLD HAMPTON" O/S TUMBLE BRICK (MORTAR: STANDARD GREY)
	ACCENT BRICK: LAWRENCEVILLE "GLEN GERY BURNT CHIMNEY" O/S (MORTAR: STANDARD GREY)
	PRECAST CONCRETE

STOREFRONT:
GLAZING:
COPING CAP:
MAIN ROOF:
PARAPET BACKSIDE:
METAL ROOFING:
GUTTER:
DOWNSPOUTS:

DARK BRONZE ALUMINUM
INSULATED, SOLARCOOL BRONZE
DARK BRONZE ALUMINUM
TAN ROOFING MEMBRANE
TAN ROOFING MEMBRANE
DARK BRONZE STANDING SEAM
DARK BRONZE
DARK BRONZE



THALES ACADEMY
HIGH SCHOOL
HOLLY SPRINGS NEW HILL ROAD, HOLLY SPRINGS, NC



ISSUE DATE: 10-14-2021
REVISION: 2021-052
PROJECT #
HIGH SCHOOL
ELEVATIONS - WEST
& EAST
SHEET

A-02

10/14/2021 5:27:30 PM
C:\Users\Robin\Documents\CURRENT PROJECT BACKUPS\10-14-2021 - THALES HOLLY SPRINGS SIGHTLINE VIEWS.rvt



3.08 A.1.c.(2)(c)(ii).4: GLASS WINDOWS AT UPPER LEVEL
15% MIN. REQ'D (ALL USES)
(6 WINDOWS) * 46.70 SF PER WINDOW
= 280 SF GLAZED / 1078 SF UPPER LEVEL WALL AREA
= 26% GLAZED AREA PROVIDED AT UPPER LEVEL

ALTERNATIVE COMPLIANCE REQUESTED
3.08 A.1.c.(2)(c)(ii).3: GLASS WINDOWS AND DOORS AT
GROUND LEVEL
20% MIN. REQ'D (OFFICE AND INSTITUTIONAL USES)
(2 GLASS ENTRANCE ASSEMBLIES) * 60 SF PER ENTRANCE
= 120 SF / 1010 SF GROUND LEVEL WALL AREA TO 10' AFF
= 11.9% GLAZED AREA PROVIDED AT GROUND LEVEL

3.08.A.1.b: "OTHER FACADE" - ORIENTED TOWARD PARCEL ZONED IT
DESIGN IN COMPLIANCE WITH 3.08.A.1.d(1): "COLORS SHALL BE CONSISTENT WITH THE PRIMARY FACADE(S)"
FACADE WITH HIGH LEVEL OF PEDESTRIAN TRAFFIC

① EAST ELEVATION - UDO STUDY
3/16" = 1'-0"



3.08 A.1.c.(2)(g)(i) ROOFLINE VARY IN HEIGHT -
NO CONTINUOUS PLANE > 50'
BUILDING "CAP" - 3.08 A.1.c.(2)(a)(iii)
7% MINIMUM REQ'D
4' - 8" CAP HEIGHT / 37'-0" (HIGH PARAPET HEIGHT)
= 13.7% OF VERTICAL HEIGHT PROVIDED

3.08 A.1.c.(2)(d) - "HUMAN SCALE DESIGN ELEMENTS"
MIN. (2) CONTINUOUS OR REPEATING DETAILS 12" OR
LESS WITHIN FIRST 15'

BUILDING "BASE" - 3.08 A.1.c.(2)(a)(iii)
9% MINIMUM REQ'D
4' - 0" BASE HEIGHT / 34' - 0" (HIGH PARAPET)
= 11.8% OF VERTICAL HEIGHT PROVIDED

3.08 A.1.c.(2)(b) -
DEFINED WALL BAY, 30' - 0" MAX
NOTE: PILASTERS 4" PROUD OF FLUSH (TYP)

3.08.A.1.b: "PRIMARY FACADE" - ORIENTED TOWARD RESIDENTIAL DISTRICT

② WEST ELEVATION - UDO STUDY
3/16" = 1'-0"

MATERIAL INDEX:

	FIELD BRICK: PINE HALL "OLD HAMPTON" O/S TUMBLE BRICK (MORTAR: STANDARD GREY)
	PRECAST CONCRETE

STOREFRONT:	DARK BRONZE ALUMINUM
GLAZING:	INSULATED, SOLARCOOL BRONZE
COPING CAP:	DARK BRONZE ALUMINUM
MAIN ROOF:	TAN ROOFING MEMBRANE
PARAPET BACKSIDE:	TAN ROOFING MEMBRANE
GUTTER:	DARK BRONZE
DOWNSPOUTS:	DARK BRONZE



THALES ACADEMY
GYMNASIUM
HOLLY SPRINGS NEW HILL ROAD, HOLLY SPRINGS, NC

918-550-7717
Tony@TonyJohnsonArchitect.com
104 North Lombard St
Clayton, NC 27520
TonyJohnsonArchitect.com

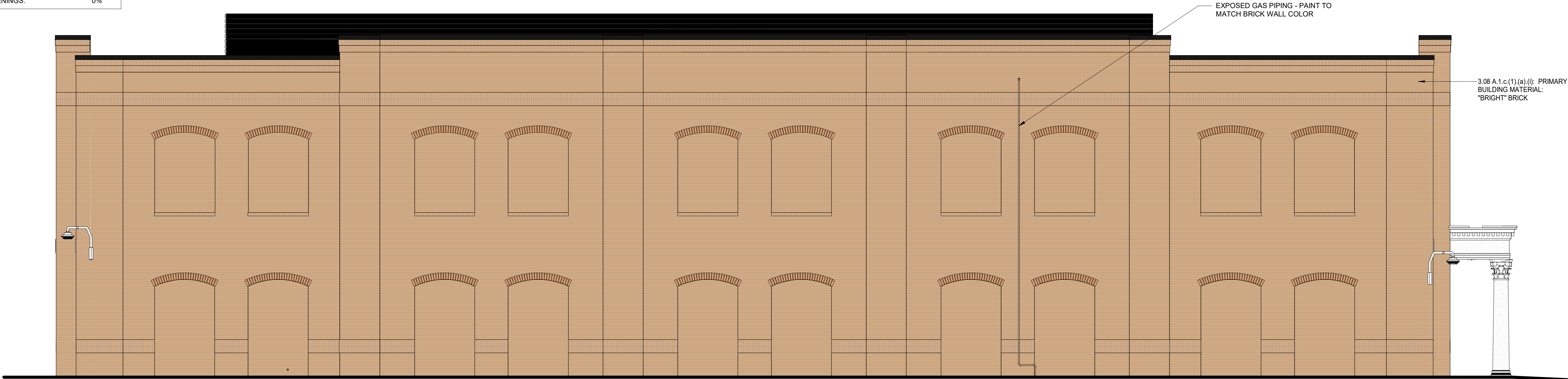


ISSUE DATE:	10-14-2021
REVISION:	
PROJECT #:	2021-052
GYMNASIUM ELEVATIONS - EAST & WEST	
SHEET	

A-03

10/14/2021 5:27:35 PM C:\Users\Robin\Documents\CURRENT PROJECT BACKUPS\10-14-2021 - THALES HOLLY SPRINGS SIGHTLINE VIEWS.rvt

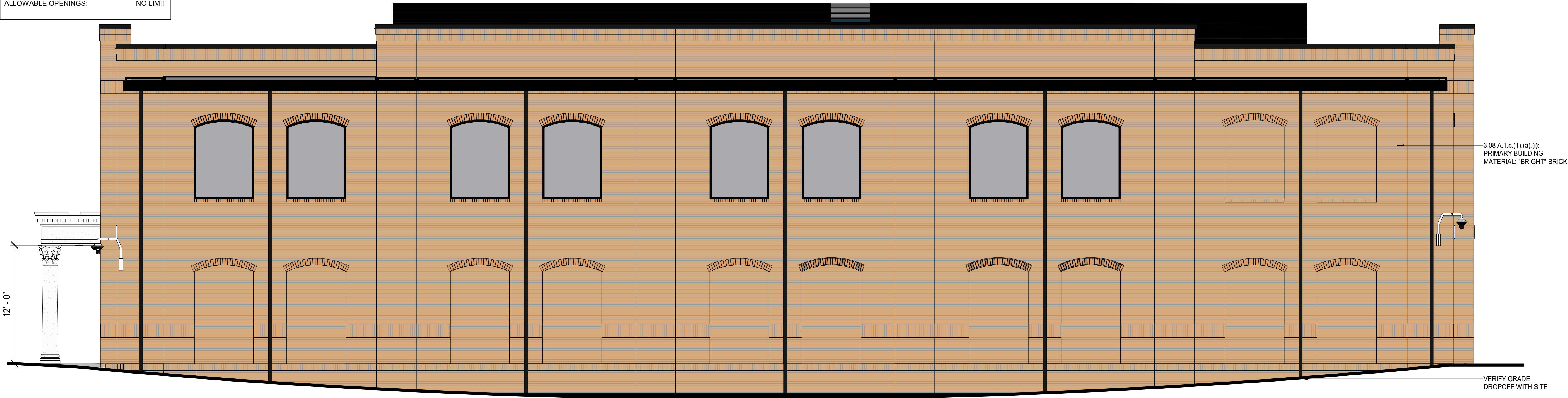
WALL OPENINGS - SOUTH ELEVATION
FIRE SEPARATION DISTANCE: >10' - 6"
DEGREE OF OPENING PROTECTION: UP, S
ALLOWABLE OPENINGS: 45%
ACTUAL OPENINGS: 0%



FACES HOLLY SPRINGS NEW HILL ROAD, BUT BLOCKED FROM VIEW BY ADJACENT BUILDING IN SAME DEVELOPMENT.

① SOUTH ELEVATION - UDO STUDY
3/16" = 1'-0"

WALL OPENINGS - NORTH ELEVATION
FIRE SEPARATION DISTANCE: >30'
DEGREE OF OPENING PROTECTION: UP, S
ALLOWABLE OPENINGS: NO LIMIT



3.08 A.1.b: "OTHER FACADE" - ORIENTED TOWARD PARCEL ZONED IT (AND >105° FROM PARALLEL)
DESIGN IN COMPLIANCE WITH 3.08 A.1.d(1): "COLORS SHALL BE CONSISTENT WITH THE PRIMARY FACADE(S)"

② NORTH ELEVATION - UDO STUDY
3/16" = 1'-0"

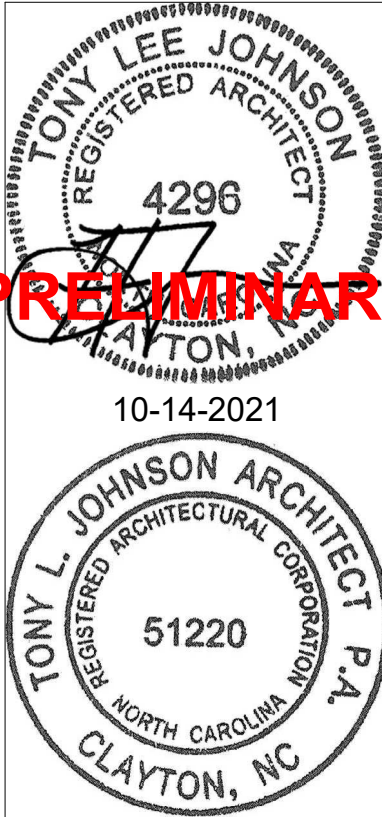
MATERIAL INDEX:

FIELD BRICK: PINE HALL "OLD HAMPTON"
O/S TUMBLE BRICK
(MORTAR: STANDARD GREY)

PRECAST CONCRETE

STOREFRONT: DARK BRONZE ALUMINUM
GLAZING: INSULATED, SOLARCOOL BRONZE
COPING CAP: DARK BRONZE ALUMINUM
MAIN ROOF: TAN ROOFING MEMBRANE
PARAPET BACKSIDE: TAN ROOFING MEMBRANE

GUTTER: DARK BRONZE
DOWNSPOUTS: DARK BRONZE



THALES ACADEMY
GYMNASIUM
HOLLY SPRINGS NEW HILL ROAD, HOLLY SPRINGS, NC

918-550-7717
Tony@TonyJohnsonArchitect.com
104 North Lombard St
Clayton, NC 27520
TonyJohnsonArchitect.com



ISSUE DATE: 10-14-2021
REVISION:
PROJECT #: 2021-052

GYMNASIUM
ELEVATIONS -
SOUTH & NORTH

SHEET

A-04



5 SIGHTLINE #5



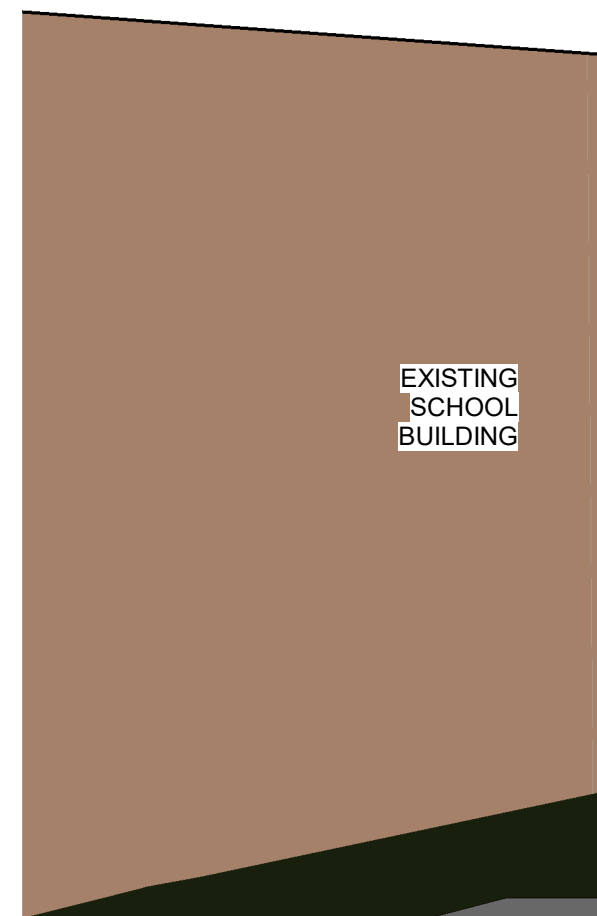
4 SIGHTLINE #4



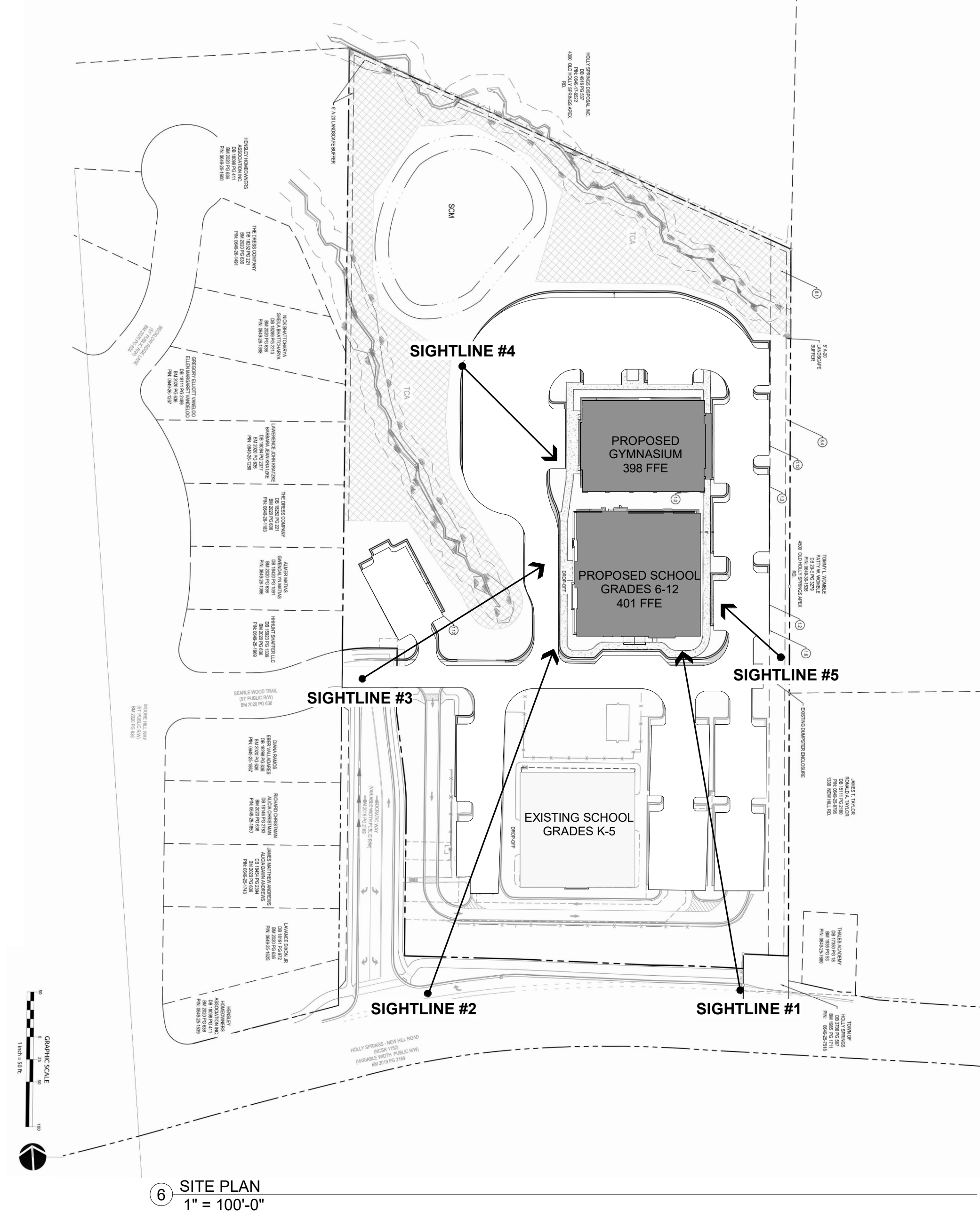
3 SIGHTLINE VIEW #3 FROM SEARL WOOD AND SOCRATIC WAY



2 SIGHTLINE VIEW #2 FROM HOLLY SPRINGS NEW HILL ROAD



1 SIGHTLINE VIEW #1 FROM HOLLY SPRINGS NEW HILL ROAD



ONLY LOCATION BACK SIDE OF PARAPET IS VISIBLE
TAN TPO ROOFING RUNS UP THE BACK SIDE OF THE PARAPET TO THE CAP FLASHING



THALES ACADEMY
GYMNASIUM
HOLLY SPRINGS NEW HILL ROAD, HOLLY SPRINGS, NC

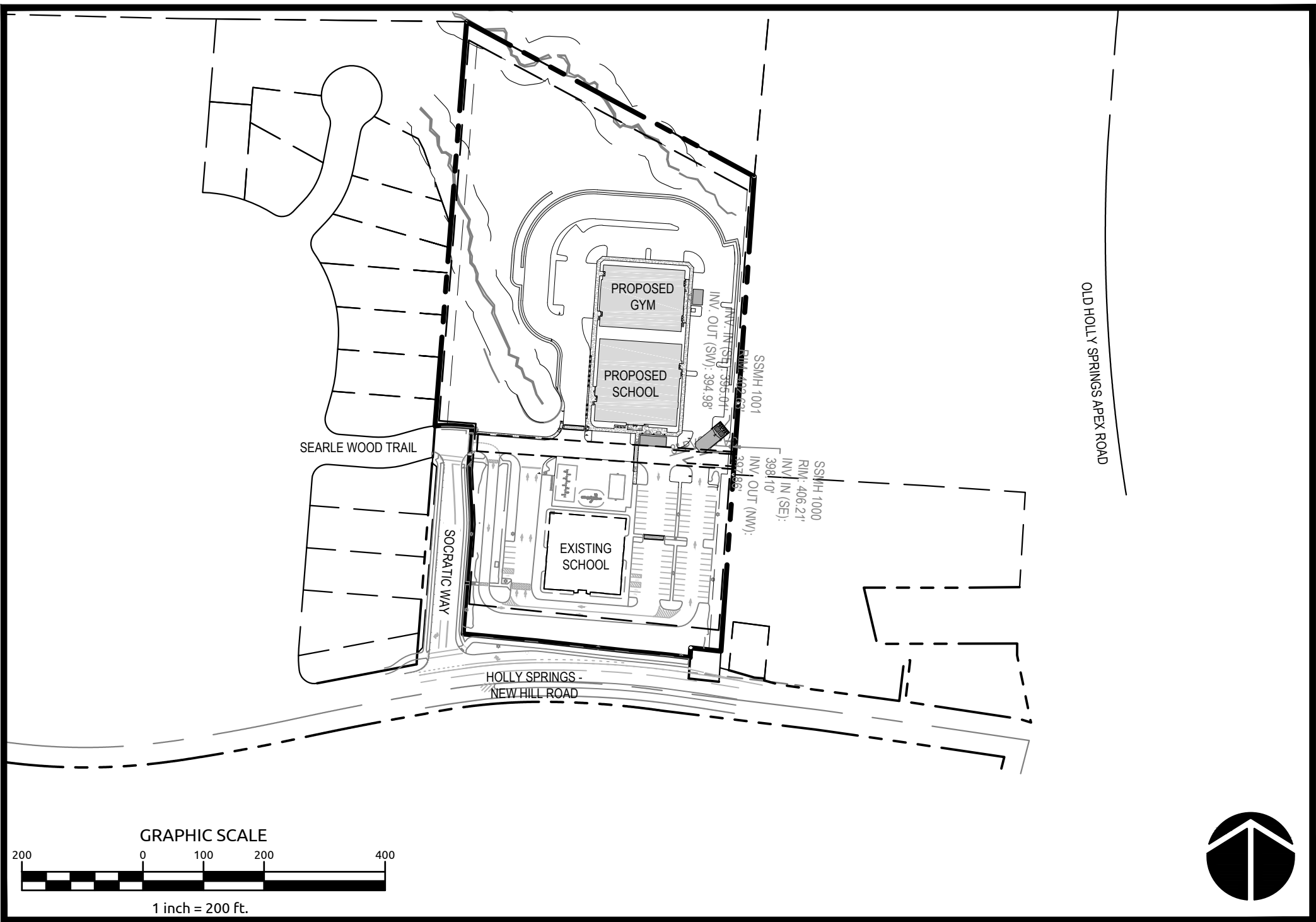
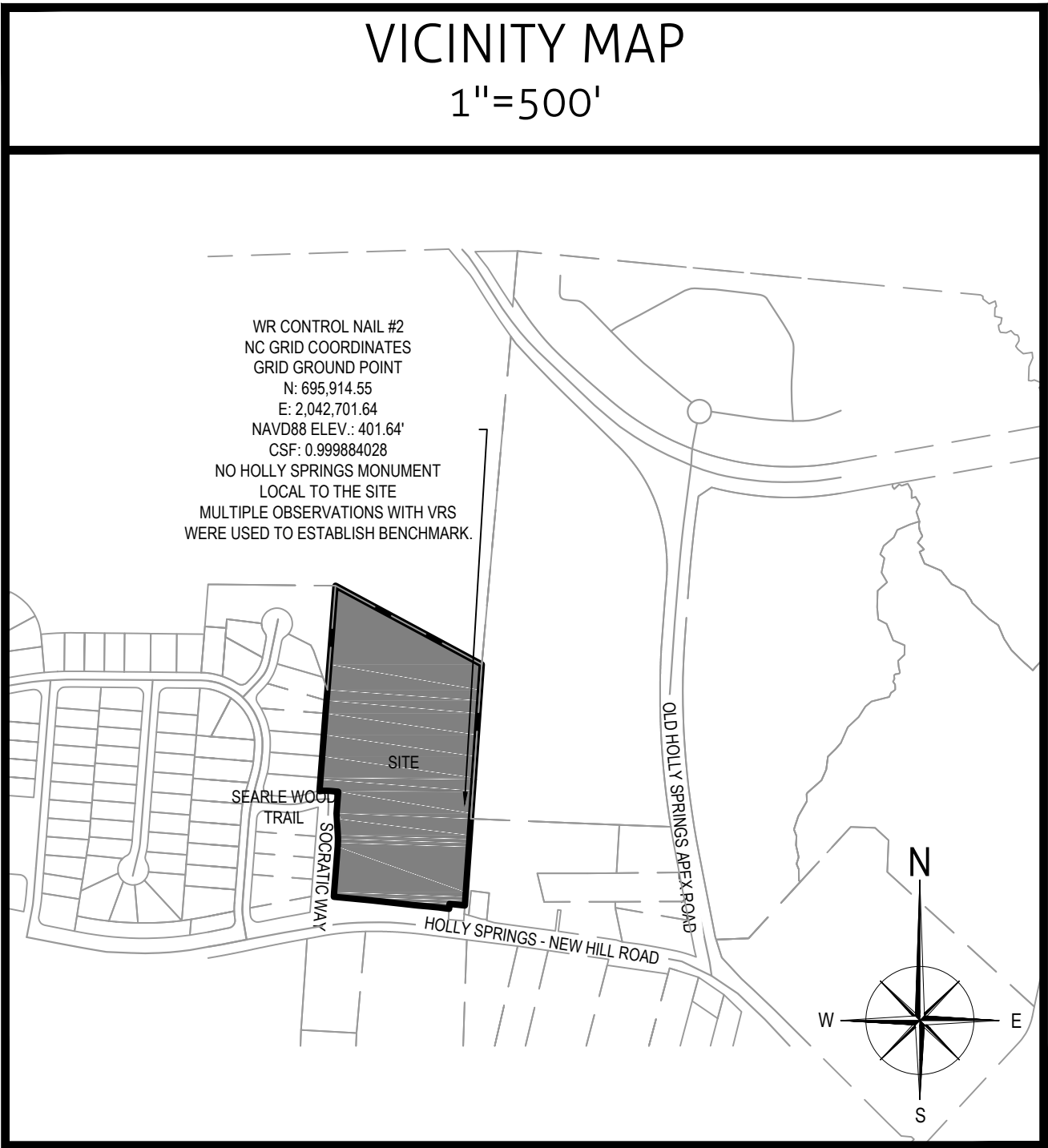


ISSUE DATE	10-14-2021
REVISION	
PROJECT #	2021-052
SIGHTLINE VIEWS	
SHEET	A-05

DEVELOPMENT PLAN FOR
PROPOSED SCHOOL EXPANSION
11244 HOLLY SPRINGS NEW HILL ROAD
HOLLY SPRINGS, NC 27540

DEVELOPMENT PLAN: 17-DP-04-A-02/PLDP202100048
SPECIAL EXCEPTION USE: 21-SEU-02
MINOR AMENDMENT # 1 - REVISE LANDSCAPING TO
MATCH AS-BUILT CONDITIONS JUNE 10, 2020

1ST SUBMITTAL: JULY 30, 2021
2ND SUBMITTAL: SEPTEMBER 24, 2021
3RD SUBMITTAL: OCTOBER 29, 2021
4TH SUBMITTAL: JANUARY 18, 2022
5TH SUBMITTAL: FEBRUARY 4, 2022
6TH SUBMITTAL: FEBRUARY 7, 2022



INDEX OF SHEETS			
Sheet List Table		C4.2	DETAILED UTILITY PLAN
Sheet Number	Sheet Title	C4.3	DETAILED UTILITY PLAN
C0.0	COVER	C5.0	SITE DETAILS
C0.1	GENERAL NOTES	C5.1	SITE DETAILS
C1.0	EXISTING CONDITIONS	L1.0	TREE PRESERVATION PLAN
C1.1	DEMOLITION PLAN	L1.1	HARDWOOD CANOPY MAP
C2.0	OVERALL SITE PLAN	L2.0	LANDSCAPE GENERAL CONDITIONS
C2.1	DETAILED LAYOUT PLAN	L2.0.1	OVERALL LANDSCAPE PLAN
C2.2	DETAILED LAYOUT PLAN	L2.1	DETAILED LANDSCAPE PLAN
C2.3	DETAILED LAYOUT PLAN	L2.2	DETAILED LANDSCAPE PLAN
C2.4	DETAILED LAYOUT PLAN	L2.3	DETAILED LANDSCAPE PLAN
C2.5	DETAILED LAYOUT PLAN	L2.4	DETAILED LANDSCAPE PLAN
C2.6	FIRE TRUCK TURNING AND ADA ACCESS PLAN	L2.5	DETAILED LANDSCAPE PLAN
C2.7	PROPOSED SCHOOL QUEUEING PLAN	L3.0	LANDSCAPE DETAILS
C2.8	EXISTING SCHOOL QUEUEING PLAN	L3.1	LANDSCAPE DETAILS
C3.0	OVERALL GRADING AND DRAINAGE PLAN	L3.2	LANDSCAPE DETAILS
C3.1	DETAILED GRADING AND DRAINAGE PLAN	SL1.0	LIGHTING PLAN (BY DUKE ENERGY)
C3.2	DETAILED GRADING AND DRAINAGE PLAN	A-01	HIGH SCHOOL ELEVATIONS SOUTH AND NORTH
C3.3	DETAILED GRADING AND DRAINAGE PLAN	A-02	HIGH SCHOOL ELEVATIONS WEST AND EAST
C4.0	OVERALL UTILITY PLAN	A-03	GYMNASIUM ELEVATIONS EAST AND WEST
C4.1	DETAILED UTILITY PLAN	A-04	GYMNASIUM ELEVATIONS SOUTH AND NORTH
		A-05	SIGHTLINE VIEWS - HIGH SCHOOL

SITE DATA TABLE			
APPLICANT INFORMATION:	NAME: THALES ACADEMY, INC. ADDRESS: 4641 PARAGON PARK ROAD RALEIGH, NC	PARKING CALCULATIONS: NEW SCHOOL AND GYM (GRADES 6-12, 600 STUDENTS) 12 MIDDLE SCHOOL CLASSROOMS AT 2.5/CLASSROOM = 30 SPACES 13 HIGH SCHOOL CLASSROOMS (12+1 CLASSROOM AT GYM) AT 2/CLASSROOM = 26 SPACES 1 PARKING SPOT PER 5 STUDENTS FOR 300 STUDENTS = 60 SPACES	
PROPERTY INFORMATION:	OWNER NAME: CAPTIVEAIRE, INC. OWNER ADDRESS: 4641 PARAGON PARK ROAD RALEIGH, NC 27616 SITE ADDRESS: HOLLY SPRINGS NEW HILL ROAD HOLLY SPRINGS, NC 27539 (TOWN OF HOLLY SPRINGS) PIN: 0649255028 0472476 TOWNSHIP: HOLLY SPRINGS COUNTY: WAKE	PARKING REQUIRED: 116 SPACES (5 ACCESSIBLE SPACES) PARKING PROVIDED: 116 (INCLUDING 4 STANDARD ACCESSIBLE SPACES, 1 VAN ACCESSIBLE SPACE) BIKE PARKING REQUIRED: 15 SPACES BIKE PARKING PROVIDED: 16 (2 SPACES PER RACK)	
SITE ACREAGE:	9.74 ACRES	ELEMENTARY SCHOOL AUDITORIUM 100 SPACES 1/5 = 20 SPACES 22 CLASSROOMS AT 2.5/CLASSROOM = 55 SPACES	
ZONING: R-10 OVERLAY: NONE		PARKING REQUIRED: 75 SPACES (3 ACCESSIBLE SPACES) PARKING PROVIDED: 75 SPACES (W/ 4 STANDARD ACCESSIBLE SPACES, 2 VAN ACCESSIBLE SPACES) BIKE PARKING REQUIRED: 15 SPACES BIKE PARKING PROVIDED: 16 (2 SPACES PER RACK)	
EXISTING USE: SPECIAL EXCEPTION - SCHOOL (17-SEU-02) PROPOSED USE: SPECIAL EXCEPTION - SCHOOL		UTILITY QUANTITIES: 8" PUBLIC WATER LINE: 845 LF 6" PUBLIC WATER LINE: 350 LF FIRE HYDRANT ASSEMBLY: 4 EACH FIRE DEPARTMENT CONNECTION (FDC): 2 EACH 2" DOMESTIC WATER SERVICE: 90 LF DOMESTIC WATER METER (IN BOX): 2 EACH DOMESTIC BACKFLOW (IN BLDG.): 2 EACH SANITARY MANHOLE: 3 EACH 8" SANITARY SEWER: 302 LF 4" SANITARY SEWER SERVICE: 22 LF	
EXISTING BUILDING AREA: 31,992 SF PROPOSED BUILDING AREA: PROPOSED SCHOOL AREA: 32,000 SF PROPOSED GYM AREA: 13,800 SF TOTAL: 45,800 SF		SANITARY SEWER FLOW (15A NCAC 02T .0114, SCHOOL W/ CAFETERIA, GYM & SHOWERS): EX. SCHOOL (CURRENT): 15 GPD/STUDENT x 450 STUDENTS = 6,750 GPD EX. SCHOOL (INCREASE): 15 GPD/STUDENT x 150 STUDENTS = 2,250 GPD PROPOSED SCHOOL: 15 GPD/STUDENT x 600 STUDENTS = 9,000 GPD TOTAL (ADDITIONAL FLOW PROPOSED) = 11,250 GPD **TOTAL FLOW (CURRENT + PROPOSED): 18,000 GPD	
PROPOSED NUMBER OF CLASSROOMS: 22 (EXISTING SCHOOL: K-5) 25 (PROPOSED SCHOOL: 6-12)		IMPERVIOUS SUMMARY: EXISTING IMPERVIOUS: 3.19 AC PROPOSED IMPERVIOUS: 5.47 AC DIFFERENCE: 2.28 AC	
ESTIMATED NUMBER OF EMPLOYEES: 40 (EXISTING SCHOOL: K-5) 40 (PROPOSED SCHOOL: 6-12)		DISTURBED AREA: 4.81 AC	
ESTIMATED NUMBER OF STUDENTS: 600 (EXISTING SCHOOL, INCREASE OF 150: K-5) 600 (PROPOSED SCHOOL: 6-12)			
YARDS: EAST: 10' PERIMETER YARD NORTH: 25' PERIMETER YARD WEST: 20' PERIMETER BUFFER YARD			
MAXIMUM BUILDING HEIGHT: 35' EXISTING BUILDING HEIGHT: 35'-4" (APPROVED VARIANCE #17-VARTC-03) PROPOSED BUILDING HEIGHT: 32'-3"			
CONSTRUCTION TYPE: II-B			

APPLICANT

CaptiveAire, Inc.
4641 PARAGON PARK ROAD
RALEIGH, NC 27616

ATTN: BRANDON HAFNER

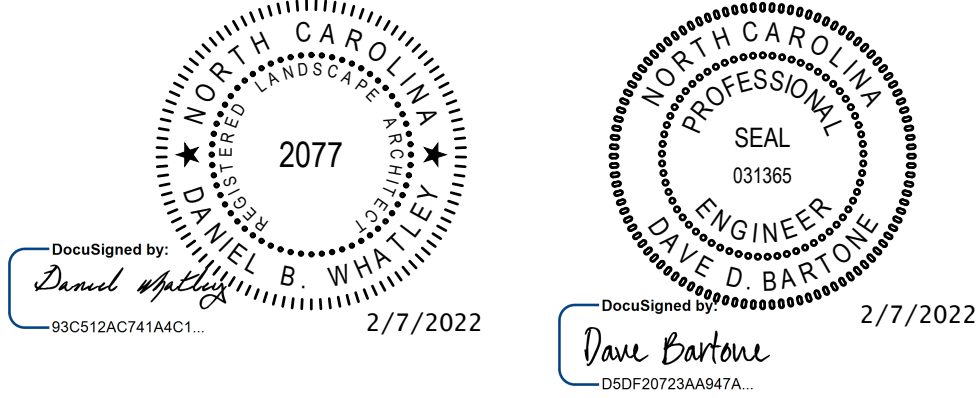
WithersRavenel
Engineers | Planners | Surveyors

115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: F-1479 | www.withersravenel.com

NOTES:

- AMENDMENT MADE TO PLAN:
 - JUNE 10, 2020: MINOR AMENDMENT #1 - REVISE LANDSCAPING MATCH AS BUILT CONDITIONS
- ALL CONSTRUCTION SHALL CONFORM TO TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS.
- CONSTRUCTION DRAWING APPROVAL IS REQUIRED BEFORE CONSTRUCTION ON THIS PROJECT MAY BEGIN. DEVELOPMENT FEES ARE DUE BEFORE CONSTRUCTION DRAWING APPROVAL
- PER TOWN COMPREHENSIVE TRANSPORTATION PLAN, NO NEW SIDEWALKS ARE REQUIRED FOR THIS PROJECT.
- AS NO NEW CONNECTIONS ARE PROPOSED TO EXISTING PUBLIC ROADS, SIGHT DISTANCES ARE NOT INCLUDED.

SURVEYOR	ENGINEER	LANDSCAPE ARCHITECT	ARCHITECT
WITHERSRAVENEL 115 MACKENAN DRIVE CARY, NC 27511 919-469-3340 ATTN: STEPHEN B. MULLINS	WITHERSRAVENEL 115 MACKENAN DRIVE CARY, NC 27511 919-469-3340 ATTN: DAVE BARTONE, P.E.	WITHERSRAVENEL 115 MACKENAN DRIVE CARY, NC 27511 919-469-3340 ATTN: DANIEL WHATLEY, PLA	TONY JOHNSON ARCHITECTURE 104 NORTH LOMBARD ST CLAYTON NC, 27520 919-550-7717 ATTN: TONY JOHNSON



NOTE: *PLAN IS SUBJECT TO REVISIONS DURING CONSTRUCTION
DRAWING AND APPROVAL PROCESS

1. BASIS OF BEARINGS: NC STATE PLANE GRID COORDINATES, NAD83(2011).
2. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCES IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
3. AREAS SHOWN HEREON WERE COMPUTED USING THE COORDINATE METHOD.
4. LINES NOT SURVEYED ARE SHOWN AS BROKEN LINES FROM INFORMATION REFERENCED ON THE FACE OF THIS PLAN.
5. PORTIONS OF THE SUBJECT PROPERTY ARE LOCATED WITHIN A FLOOD HAZARD AREA ACCORDING TO FLOOD INSURANCE RATE MAP 3720073000J DATED MAY 2, 2006.
6. IRON PIPES SET AT ALL CORNERS UNLESS OTHERWISE NOTED.
7. UPDATED BOUNDARY SURVEY AND GAS LINE EASEMENT INFORMATION PROVIDED AND PERFORMED BY BATEMAN CIVIL SURVEY COMPANY. WITHERRASVELL ASSUMES NO LIABILITY BASED ON THIS PROVIDED INFORMATION.
8. CALL 811 BEFORE DIGGING TO LOCATE UNDERGROUND UTILITIES.
9. ALL ON SITE DRIVEWAYS, SIDEWALKS, PARKING LOTS AND ENTRANCES/EXITS TO BUILDINGS SHALL BE SUFFICIENTLY AND ADEQUATELY LIGHTED TO ENSURE THE SECURITY OF PROPERTY/BUILDINGS AND THE SAFETY OF PERSONS.
10. ON SITE LIGHTING SHALL NOT UNNECESSARILY ILLUMINATE ANY OTHER LOT OR PUBLIC STREET.
11. TO THE EXTENT PRACTICABLE, THIS DEVELOPMENT SHALL CONFORM TO THE NATURAL CONTOURS OF THE LAND AND NATURAL AND PREEXISTING MANMADE DRAINAGE WAYS SHALL REMAIN UNDISTURBED.
12. THIS DEVELOPMENT MUST BE PROVIDED WITH A DRAINAGE SYSTEM THAT IS ADEQUATE TO PREVENT THE UNDUE RETENTION OF SURFACE WATER ON THE DEVELOPMENT SITE.
13. NO SURFACE WATER MAY BE CHanneled OR DIRECTED INTO A SANITARY SEWER.
14. WHENEVER PRACTICABLE, THE DRAINAGE SYSTEM OF THIS DEVELOPMENT SHALL COORDINATE WITH AND CONNECT TO THE DRAINAGE SYSTEMS OR DRAINAGE WAYS ON SURROUNDING PROPERTIES OR STREETS.
15. CONSTRUCTION SPECIFICATIONS FOR DRAINAGE SWALES, CURBS AND GUTTERS AND STORM DRAINS ARE CONTAINED IN AN ATTACHED C.
16. THIS DEVELOPMENT SHALL CONSTRUCTED AND MAINTAINED SO THAT ADJACENT PROPERTIES ARE NOT UNREASONABLY BURDENED WITH SURFACE WATERS AS A RESULT OF SUCH DEVELOPMENTS.
17. NO DEVELOPMENT MAY BE CONSTRUCTED OR MAINTAINED SO THAT SUCH DEVELOPMENT UNREASONABLY INTERFERES THE NATURAL FLOW OF WATER FROM HIGHER ADJACENT PROPERTIES ACROSS SUCH DEVELOPMENT, THEREBY UNREASONABLY CAUSING SUBSTANTIAL DAMAGE TO SUCH HIGHER ADJACENT PROPERTIES.
18. NO DEVELOPMENT MAY BE CONSTRUCTED OR MAINTAINED SO THAT SURFACE WATERS FROM SUCH DEVELOPMENT ARE UNREASONABLY COLLECTED AND CHanneled ONTO LOWER ADJACENT PROPERTIES AT SUCH LOCATIONS OR AT SUCH VOLUMES AS TO CAUSE SUBSTANTIAL DAMAGE TO SUCH LOWER ADJACENT PROPERTIES.
19. STORM WATER CONTROL FACILITIES SHALL BE MAINTAINED BY THE DEVELOPER.
20. ALL SIGNS REQUIRE SIGN PERMIT APPROVAL PRIOR TO INSTALLATION.
21. ANY VARIATION TO THE APPROVED PLAN SHALL BE BROUGHT TO THE ATTENTION OF THE TOWN OF HOLLY SPRINGS, A DIVISION OF PLANNING AND COMMUNITY DEVELOPMENT FOR EVALUATION AND REVISED PLAN SUBMITTED FOR REVIEW AND APPROVAL.
22. VEHICLE ACCOMMODATION AREAS OF ALL DEVELOPMENTS SHALL BE DESIGNED SO THAT SANITATION, EMERGENCY, AND OTHER PUBLIC SERVICE VEHICLES CAN SERVE SUCH DEVELOPMENTS WITHOUT THE NECESSITY OF BACKING UNREASONABLE DISTANCE OR MAKING OTHER DANGEROUS OR HAZARDOUS TURNING MOVEMENTS.
23. EVERY VEHICLE ACCOMMODATION AREA SHALL BE DESIGNED SO THAT VEHICLES CANNOT EXTEND BEYOND THE PERIMETER OF SUCH AREA ONTO ADJACENT PROPERTIES OF PUBLIC RIGHT-OF-WAY. SUCH AREA SHALL ALSO BE DESIGNED SO THAT VEHICLES DO NOT EXTEND OVER SIDEWALKS OR TEND TO BUMP AGAINST OR DAMAGE ANY WALL, VEGETATION, OR OTHER OBSTRUCTION.
24. CIRCULATION AREAS SHALL BE DESIGNED SO THAT VEHICLES CAN PROCEED SAFELY WITHOUT POSING A DANGER TO PEDESTRIANS OR OTHER VEHICLES AND WITHOUT INTERFERING WITH PARKING AREAS.
25. VEHICLE ACCOMMODATION AREA SURFACES SHALL BE KEPT IN GOOD CONDITION (FREE FROM POTHOLES, EROSION, DUST, ETC)
26. NO OBSTRUCTIONS ARE ALLOWED WITHIN THE 10'x70' SIGHT DISTANCE TRIANGLES LOCATED AT DRIVEWAYS EXITS.
27. PRIOR TO SITE PLAN APPROVAL OBTAIN STREET CLOSING AN ENCROACHMENT APPROVAL FROM THE BOARD OF COMMISSIONER.

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARD SPECIFICATIONS AND DETAILS.
2. BOUNDARY AND TOPOGRAPHIC INFORMATION BASED ON SURVEY BY WITHERSRAVENEL, INC.
3. WETLANDS AND RIPARIAN BUFFERS DELINEATED BY S&C AND SURVEYED BY WITHERSRAVENEL.
4. ALL ADJOINER ZONING INFORMATION IS TOWN OF HOLLY SPRINGS ZONING UNLESS NOTED OTHERWISE.
5. CONTRACTOR SHALL LOCATE ANY AND ALL UTILITIES PRIOR TO START OF CONSTRUCTION. NOTIFY ENGINEER IN WRITING OF ANY CONFLICTS WHICH MAY REQUIRE REVISION TO THESE PLANS.
6. EXISTING VISIBLE ABOVE-GROUND UTILITY INFORMATION BASED ON SURVEY BY WITHERSRAVENEL, INC. AND SUPPLEMENTED OUTSIDE OF THE PROJECT BOUNDARY BY GIS LIDAR.
7. DELINEATED WETLAND AND RIPARIAN BUFFER AREAS SHALL NOT BE CLEARED, DRAINED OR OTHERWISE DISTURBED UNLESS SPECIFICALLY PERMITTED BY THE U.S. ARMY CORPS OF ENGINEERS AND NCDENR-DWQ.
8. THE RESTRICTIVE COVENANTS FOR THE SUBDIVISION SHALL BE RECORDED AT WAKE COUNTY REGISTER OF DEEDS PRIOR TO THE RECORDATION OF ANY LOTS.
9. CONSTRUCTION DRAWING APPROVAL IS REQUIRED BEFORE CONSTRUCTION CAN BEGIN. ALL APPLICABLE FEES SHALL ALSO BE PAID PRIOR TO CONSTRUCTION DRAWING APPROVAL ON A PHASE BY PHASE BASIS.
10. REGULATORY FEMA FAPPED FLOODPLAINS DO NOT EXIST ON THIS SITE PER FIRM 3720064800J, DATED MAY 2, 2006.
11. TREE PROTECTION FENCING SHALL BE PROVIDED ALONG ALL VEGETATED RIPARIAN AND VEGETATED PERIMETER BUFFER AREAS AND TREE PRESERVATION AREAS.
12. ALL ONSITE POWER LINES WILL BE PROVIDED UNDERGROUND TO DUKE ENERGY PROGRESS STANDARDS.
13. NO FILL MATERIAL MAY BE ADDED TO CAPE FEAR BUFFER ZONE 1 (INNER 30') AND NO STRUCTURES ARE ALLOWED WITHIN ANY OF THE BUFFER AREAS UNLESS SPECIFICALLY PERMITTED BY THE TOWN OF HOLLY SPRINGS AND/OR NCDWQ.
14. COMMON OPEN SPACE INCLUDING LANDSCAPE BUFFER AREAS SHALL BE MAINTAINED BY HOMEOWNERS ASSOCIATION.
15. VEHICLE USE AREA LIGHTING SHALL BE REQUIRED FOR THIS PROJECT AND BE DESIGNED AND CONSTRUCTED WITHIN ACCORDANCE TO HOLLY SPRINGS AND DUKE ENERGY / PROGRESS ENERGY POLICIES AND STANDARDS AND PER THE APPROVED PLANS. ADJACENT ROADWAYS WILL BE REQUIRED TO BE LIGHTED PRIOR TO THE FIRST C.O. AND INTERNAL ROADWAYS MUST BE LIGHTED PRIOR TO STREET ACCEPTANCE FOR 1 YEAR WARRANTY.
16. ALL RETAINING WALLS SHALL REQUIRE A BUILDING PERMIT. WALLS GREATER THAN 4' IN HEIGHT WILL REQUIRE ENGINEERING DESIGN APPROVAL AT CONSTRUCTION DRAWING REVIEW AS WELL AS A BUILDING PERMIT. NO UTILITIES SHALL CONFLICT WITH STRUCTURAL REINFORCEMENT OF THE WALL.
17. ANY SIGNAGE WILL REQUIRE A SEPARATE SIGN PERMIT FOR APPROVAL.

1. ALL SCMS SHALL HAVE A MAINTENANCE AND ACCESS EASEMENT AROUND THEM.
2. STREAMS AND WETLANDS DELINEATED BY S&C AND SURVEYED BY WITHERSRAVEL.
3. TREE PROTECTION FENCING SHALL BE PROVIDED ALONG ALL VEGETATED RIPARIAN AND VEGETATED PERIMETER BUFFER AREAS.
4. CB=CATCH BASIN; FES=FLARED END SECTION; JB=JUNCTION BOX; YI=YARD INLET WITH SLAB TOP; DI=DRAINAGE INLET WITH GRATE
5. STORM DRAINAGE EASEMENTS SHALL BE CENTERED ON ALL STORM PIPE LOCATED OUTSIDE OF STREET RIGHT OF WAYS.
6. ALL STORM DRAINAGE PIPE SHALL BE CLASS III RCP UNLESS OTHERWISE NOTED.
7. DISCHARGE BASED ON 10-YR STORM EVENT UNLESS OTHERWISE NOTED.
8. RIM ELEVATION GIVEN IS FOR TOP OF CURB, Y1 OPENING INVERT FOR SLAB TOP OR TOP OF GRATE FOR GRATED INLET.
9. RETAINING WALL BOTTOM OF WALL ELEVATIONS REPRESENT THE SURROUNDING FINISHED GRADE. THESE ELEVATIONS DO NOT ACCOUNT FOR ANY BURYING NECESSARY AS PART OF WALL DESIGN/CONSTRUCTION.
10. NO STRUCTURES ARE ALLOWED WITHIN ANY OF THE BUFFER AREAS.

1. UTILITY AND PIPELINE EASEMENTS SHALL BE RECORDED AFTER CONSTRUCTION IS COMPLETED AS PART OF THE RIGHT-OF-WAY PLAT.
2. ALL STORM DRAINAGE AND SANITARY SEWER LINES SHALL HAVE 20' EASEMENTS CENTERED ON THE LINES UNLESS LOCATED COMPLETELY IN ROAD ROW.
3. ALL MANHOLES LOCATED OUTSIDE OF PAVED AREAS SHALL HAVE A RIM ELEVATION OF ONE FOOT ABOVE FINISHED GRADE. MANHOLES ADJACENT TO 100-YR FLOOD PLAIN SHALL HAVE A RIM ELEVATION OF 2' ABOVE THE 100-YR FLOOD ELEVATION.
4. WATER LINE SHALL BE 2' MINIMUM OFF EDGE OF CURB UNLESS SHOWN OTHERWISE.
5. WATER MAINS SHALL BE LAID AT LEAST 10 FEET Laterally MEASURED EDGE TO EDGE FROM EXISTING OR PROPOSED SANITARY OR STORM SEWER UNLESS THE ELEVATIONS OF THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER WITH A HORIZONTAL SEPARATION OF AT LEAST 3 FEET.
6. WHERE A WATER MAIN AND A SANITARY SEWER CROSS AND THE VERTICAL SEPARATION IS LESS THAN 18 INCHES OR THE WATER LINE PASSES UNDER THE SANITARY SEWER, THE SEWER MAIN SHALL BE DUCTILE IRON PIPE. ALL WATER LINES SHALL BE DUCTILE IRON PIPE.
7. EACH WATER SERVICE SHALL BE EQUIPPED WITH A PRESSURE REDUCING VALVE ON THE PRIVATE SIDE OF THE METER.
8. ALL NEW UTILITY LINES MUST BE UNDERGROUND.
9. WATER AND SEWER SERVICES SHALL BE INSTALLED WITHIN A 3' RADIUS OF EACH LOT LINE.
10. RECLAIMED WATER LINE SHALL BE C900 PVC.
11. 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.

1. RECEIVING WATERSHED: CAPE FEAR RIVER
2. RECEIVING WATERCOURSE: BIG BRANCH
3. TOTAL LIMITS OF CONSTRUCTION/LIMITS OF DISTURBANCE = 5.57 ACRES.
4. ANY AREA DISTURBANCES BY CONTRACTOR NOT SHOWN ON THE CONSTRUCTION DRAWINGS ARE TO BE PERMITTED THROUGH THE APPROPRIATE PERMITTING AGENCY.
5. PURSUANT TO G.S. 113A-57(2), THE ANGLE FOR GRADED SLOPES AND FILLS SHALL BE NO GREATER THAN THE ANGLE THAT CAN BE RETAINED BY VEGETATIVE COVER OR OTHER ADEQUATE EROSION CONTROL DEVICE OR STRUCTURE.
6. PROVIDE A ROLLED EROSION CONTROL PRODUCT (RECP) TO STABILIZE DISTURBED DITCHES IF ANY SIGNS OF SCOURING ARE EVIDENT EVEN IF NO RECP HAS BEEN SHOWN ON THE CONSTRUCTION DRAWINGS.
7. NO STOCK OR WASTE PILES ARE ALLOWED WITHIN 50' OF STREAMS OR DRAINAGE STRUCTURES.
8. WHERE DEWATERING OF TRENCHES, PITS, AND OTHER EXCAVATIONS BECOMES NECESSARY THE DISCHARGE MUST BE DIVERTED TO A SEDIMENT FILTER BAG BEFORE BEING DISCHARGED TO THE GROUND.
9. ADEQUATE EROSION CONTROL MEASURES MUST BE INSTALLED, MAINTAINED, AND ADJUSTED AS NEEDED DURING THE DEMOLITION OR CLEARING AND GRUBBING PHASES AS WELL AS THROUGHOUT THE LIFE OF THE PROJECT AND UNTIL PERMANENT VEGETATION IS ESTABLISHED.
10. NO SEDIMENT BASIN SHALL BE REMOVED WITHOUT THE APPROVAL OF THE TOWN OF HOLLY SPRINGS EROSION CONTROL INSPECTOR.

1. ALL TREES SHALL BE LOCATED A MINIMUM OF 25' FROM THE BASE OF ALL STREET LIGHT POLES.
2. TREES SHALL BE NURSERY GROWN, TYPICAL OF THEIR SPECIES OR VARIETY, FRESHLY DUG NORMALLY SHAPED, HEAVY AND WELL BRANCHED, WITH FULL FOLIAGE WHEN IN LEAF AND SHALL HAVE HEALTHY, WELL DEVELOPED SYSTEMS. TREES MUST BE SELF SUPPORTING, WITH STRAIGHT TRUNKS AND WITH LEADERS INTACT. ALL WOUNDS PRESENT AT THE TIME OF DIGGING MUST EXHIBIT CALLUSING, WITH THE BARK ON THE EDGES OF ANY SUCH WOUND TIGHT AND INTACT. NO ABRASIONS OR UNHEALED CUTS ARE ALLOWED ON THE TRUNK OR LEAVES. TREES THAT ARE FURNISHED SHALL BE FREE OF ANY INSECT INFESTATIONS.
3. ALL TREES PLANTED TO MEET THE STREET TREE REQUIREMENT MUST BE WELL MATCHED SPECIMENS. THE DEVELOPER SHALL PROVIDE WRITTEN CERTIFICATION THAT THE PLANT MATERIAL MEETS THIS QUALITY REQUIREMENT AT THE TIME OF INSTALLATION.
4. IN ORDER TO MAINTAIN A HIGH QUALITY OF URBAN STREETScape, EACH RESIDENTIAL STREET MUST CONTAIN AT LEAST (2) SPECIES OF TREES WITH A SIMILAR CANOPY. NO MORE THAN 50% OF A SINGLE SPECIES SHALL BE USED ON EACH STREET.
5. CENTERED IN THE PUBLIC RIGHT-OF-WAY WITHIN THE UTILITY STRIP BETWEEN THE SIDEWALK AND CURB OR CENTERED BETWEEN RIGHT-OF-WAY LINE AND CURB IF NO SIDEWALK IS PRESENT.
6. WHERE NOTE #5 IS DEEMED NOT FEASIBLE AND PRACTICAL, THE DIRECTOR SHALL HAVE THE AUTHORITY TO MODIFY AND APPROVE ACCEPTABLE ALTERNATIVES TO STREET TREE REQUIREMENTS.
7. STREET TREES MUST BE INSTALLED PRIOR TO THE CERTIFICATE OF UDC COMPLIANCE FOR THE DWELLING.
8. AT THE TIME OF INSTALLATION THE NURSERY TAGS MUST REMAIN ON THE STREET TREES AND WRITTEN STATEMENT MUST BE SUBMITTED TO THE DEPARTMENT OF PLANNING & ZONING TO CERTIFY THE CORRECT SPECIES OF TREES HAVE BEEN INSTALLED.
9. ALL REPLACEMENT AND MAINTENANCE SHALL BE IN ACCORDANCE WITH TOWN POLICY STATEMENT "TOWN CODE CHAPTER 4 DIVISION 6".
10. NO SPECIES OF PLANT WITHIN ITS GIVEN CATEGORY SHALL EXCEED 25% OF THE TOTAL QUANTITY OF PLANTS WITH THAT CATEGORY.
11. FINAL DESIGN OF THE PERIMETER BUFFER YARDS SHALL USE THE TYPICAL DETAIL FOR SUPPLEMENTATION OF PLANT MATERIAL, BUT MODIFICATIONS CAN BE MADE TO ACCOMMODATE SITE FEATURES AS NECESSARY.
12. STREET TREES ARE REQUIRED AT DEVELOPMENT PLAN OR PRELIMINARY SUBDIVISION PLAN REVIEW.
13. STREET TREE SPECIFICATIONS SHALL ADHERE TO THE RECOMMENDATION OF THE TOWN OF HOLLY SPRINGS PROPOSED MATERIAL LIST 12.01.
14. STREET TREE LOCATIONS SHALL BE SHOWN WITH APPROVED LIGHTING FIXTURE LOCATIONS SHALL BE POSITIONED AS TO NOT INTERFERE WITH ANY LIGHTING FIXTURES OR ANY SITE DIRECTION TRANGLES.
15. ALL PREVIOUS CONDITIONS OF CAROLINA SPRINGS PLANNED UNIT DEVELOPMENT SHALL APPLY TO THIS AMENDMENT EXCEPT FOR ANY CONDITIONS THAT DESCRIBES FEE OR FEE-IN-LIEU TO BE PAID SHALL NOW COMPLY WITH THE CURRENT AMOUNTS DUE PURSUANT TO THE TOWN'S CURRENT ANNUAL BUDGET OR ANY UNEXPIRED DEVELOPMENT AGREEMENT.

16. ALL LANDSCAPING REQUIRED SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF THE USE ON THE REAL ESTATE OR THE ISSUANCE OF A CERTIFICATE OF UDO COMPLIANCE. IF SEASONS AND WEATHER CONDITIONS ARE NOT APPROPRIATE FOR THE INSTALLATION OF LANDSCAPING IMMEDIATELY PRIOR TO COMMENCEMENT OF THE USE OR THE ISSUANCE OF A CERTIFICATE OF UDO COMPLIANCE, A PERFORMANCE BOND, OR OTHER SURETY ACCEPTABLE TO THE TOWN OF HOLLY SPRINGS, SHALL BE PROVIDED TO THE DIRECTOR, IN COMPLIANCE WITH THE PROVISIONS OF SECTION 9.05.5.5. CONSTRUCTION DRAWINGS, ALL LANDSCAPING REQUIRED SHALL BE INSTALLED WITHIN THE FIRST (3) MONTHS OF THE NEXT PLANTING SEASON AFTER THE USE OF THE LOT IS COMMENCED.
17. THE MONTHS OF JUNE, JULY AND AUGUST ARE CONSIDERED SEASON OR WEATHER CONDITIONS WHICH ARE NOT APPROPRIATE FOR THE INSTALLATION OF LANDSCAPING, UNLESS AN ADEQUATE IRRIGATION SYSTEM IS INSTALLED AND OPERATED AS PART OF THE LANDSCAPE PLAN.
18. ALL PLANTS AND PLANTING PROCEDURES SHALL MEET OR EXCEED THE STANDARDS SET FORTH IN THE AMERICAN STANDARDS FOR NURSERY STOCK (2014 OR LATER EDITION).
19. ALL TREES AND SHRUBS SHALL BE FULL, WELL BRANCHED PLANTS WHICH ARE CHARACTERISTIC TO THE SPECIES.
20. TOPSOIL SHALL BE SPREAD OVER THE ENTIRE MEDIAN LANDSCAPE AREA TO A DEPTH OF AT LEAST 6" IN LAWN AREAS AND IN PLANT BEDS.
21. SOIL SHALL BE RIPPED AND SUB-SOILED TO A MINIMUM DEPTH OF 12 INCHES TO REDUCE COMPACTION AND RESTORE THE SOIL'S STRUCTURE. PLANT BEDS AND LAWN AREAS SHALL BE AMENDED WITH FERTILIZER AND LIME BASED ON SOIL SAMPLE RECOMMENDATIONS; THEN SHALL BE TILLED AND FINE GRADED.

1. THE OWNER SHALL BE RESPONSIBLE FOR THE FOLLOWING:
 - 1.1. THE MAINTENANCE OF ALL REQUIRED LANDSCAPING BY KEEPING LAWNS MOWED, ALL PLANTS MAINTAINED AS DISEASE-FREE, ALL PLANTING BEDS GROUNDED AND KEPT WEED FREE (EXCEPT IN AREAS OF PRESERVED OR EXISTING NATURAL VEGETATION) AND KEPT FREE FROM TRASH, DEBRIS AND OTHER OBJECTABLE MATERIALS.
 - 1.2. THE REPLACEMENT OF ANY REQUIRED PLANTING, WHICH IS REMOVED OR DIES AFTER THE DATE OF PLANTING, SUCH REPLACEMENT SHALL OCCUR DURING THE NEXT PLANTING SEASON.
 - 1.3. THE REPLACEMENT OF ANY TREE IN A TREE SAVE AREA WHICH IS REMOVED OR DIES AFTER THE DATE OF APPROVAL OF A REPLACEMENT LANDSCAPE PLAN. SUCH REPLACEMENT SHALL OCCUR DURING THE NEXT PLANTING SEASON.
2. FAILURE TO MAINTAIN REQUIRED LANDSCAPE AREAS SHALL CONSTITUTE A VIOLATION OF THE HOLY SPRINGS UDO ENFORCEABLE UNDER THE PROVISIONS OF SECTION 10-ENFORCEMENT.

(UNLESS OTHERWISE DENOTED)					
DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED
TOUR INTERVAL	=====	=====	WOODS LINE		N/A
TOUR INTERVAL	=====	=====	WATERWAYS	=====	N/A
PROPERTY LINE	=====	=====	TREE PROTECTION FENCE	N/A	TP
RAY CENTERLINE	=====	=====	SILT FENCE	N/A	SF
RIGHT OF WAY	=====	=====	SPOT ELEVATION		
EASEMENT LINE	=====	=====	GUY ANCHOR		N/A
CURB & GUTTER	=====	=====	POWER POLE		N/A
E OF PAVEMENT	=====	=====	LIGHT POLE		N/A
WER FACILITIES	=====	=====	PROPERTY IRON		N/A
WER FACILITIES	=====	=====	CURB INLET		N/A
WATERLINE	=====	=====	STORM DRAIN JUNCTION BOX		N/A
MED WATERLINE	=====	=====	YARD INLET		N/A
FRANT ASSEMBLY			WATER METER		N/A
FORCE MAIN	=====	=====	CONCRETE MONUMENT		N/A
ELECTRIC	=====	N/A	TELEPHONE PEDESTAL		N/A
HEAD ELECTRIC	=====	N/A	MAIL BOX		N/A
GAS MAIN	=====	N/A	WATER VALVE		N/A
TELEPHONE	=====	N/A	CHECK DAM	N/A	
STRUCTURES	=====	=====	INLET PROTECTION	N/A	
NG STRUCTURE	- X - X - X -	=====	SILT FENCE	N/A	SF
SION PEDESTAL		N/A	SILT FENCE OUTLET	N/A	
ATER MANHOLE		N/A			
HONE MANHOLE		N/A			
D END SECTION		N/A			
EWER MANHOLE		N/A			
GAS VALVE		N/A			
ILITY MANHOLE		N/A			
ICAL PEDESTAL		N/A			
SIGN		N/A			
OPTIC MARKER		N/A			

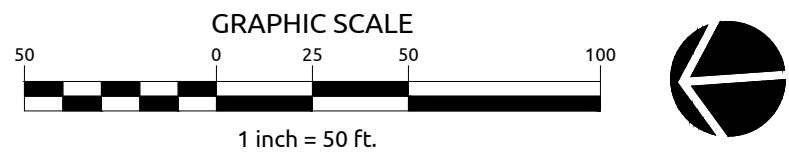
AREA OF DETAIL ENLARGEMENT		APPROX - APPROXIMATE AD - ANGLE DEVIATION BPE - BUILDING PAD ELEVATION CMP - CORRUGATED METAL PIPE CB - CATCH BASIN CONC - CONCRETE DMH - DRAIN MANHOLE D - DELTA DIP - DUCTILE IRON PIPE E - EAST ELIP - ELLIPTICAL EX OR EXIST - EXISTING FFE - FINISHED FLOOR ELEVATION FEET - FEET GV - GATE VALVE HC - HANDICAPPED HDPE - HIGH DENSITY POLYETHYLENE PIPE HORIZ - HORIZONTAL ID - INSIDE DIAMETER I.D. - IDENTIFICATION INV - INVERT IPF - IRON PIPE FOUND LEN - LENGTH NCDENR - NC DEPT. OF ENVIRONMENT AND NATURAL RESOURCES MIN. - MINIMUM NAD - NORTH AMERICAN DATUM NAVD - NORTH AMERICAN VERTICAL DATUM N OR NO - NORTH NTS - NOT TO SCALE NIC - NOT IN CONTRACT OD - OUTSIDE DIAMETER PI - POINT OF INTERSECTION PT - POINT OF TANGENCY PVC - POLY VINYL-CHLORIDE PIPE R - RADIUS RCP - REINFORCED CONCRETE PIPE S - SLOPE S OR SO - SOUTH SD - STORM DRAIN SEC - SEDIMENT AND EROSION CONTROL SS - SANITARY SEWER SMH - SEWER MANHOLE SWL - SINGLE WHITE LINE STA - STATION SP - SPACE TBD - TO BE DETERMINED TYPICAL - TYPICAL VERT - VERTICAL W - WEST
ANNOTATION STYLE		
CENTERLINE		
CONSTRUCTION CALLOUT		
DIMENSION STYLE		
VIEW LABEL		
DETAIL SHEET NUMBERING		
MATCHLINE		
NORTH ARROW		
PLANTING CALLOUT		
SCALE BAR		
SECTION TAGS		
ELEVATION TAGS		
TOP OF WALL SPOT ELEVATION		
BOTTOM OF WALL SPOT ELEVATION		
END OF WALL SPOT ELEVATION		
EXISTING GRADE SPOT ELEVATION		
TOP OF CURB SPOT ELEVATION		
FINISHED GRADE SPOT ELEVATION		
FINISHED GRADE SLOPE		

GENERAL NOTES

DEVELOPMENT PLANS
FOR PROPOSED SCHOOL EXPANSION
112 HOLLY SPRINGS NEW HILL ROAD
11244 HOLLY SPRINGS NEW HILL ROAD
HOLLY SPRINGS, NC 27540

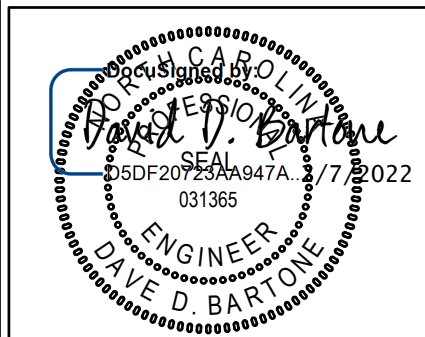
Documented By: [Signature]
 NORTH CAROLINA
 PROFESSIONAL ENGINEER
 LICENSE NO. 0723AA9414
 EXPIRATION DATE 07/2022
 SEAL
 031365
 ENGINEER
 DAVE D. BARTONE

C0.1



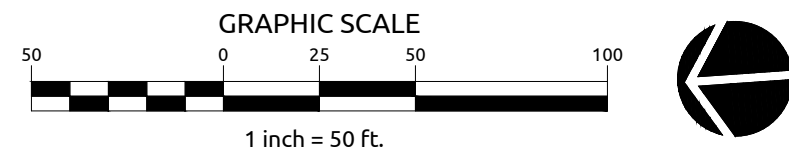
EXISTING LINETYPE LEGEND:	
LINETYPE	DESCRIPTION
	PROPERTY LINE
	ADJOINER NOT SURVEYED
	STORM DRAINAGE
	CONTOUR MAJOR
	CONTOUR MINOR
	SEWER EASEMENT
	ACCESS EASEMENT
	STREAM BUFFER
	UNDERGROUND ELEC
	FORCE MAIN
	SEWER LINE
	WATERLINE
	CATV
	TELEPHONE
	GAS

Job No. 09210285	
Date 2021.07.30	Drawn By WR
Checked By WR	Designer WR



Revisions		
1	TOWN COMMENTS 1	2021.09.24
2	TOWN COMMENTS 2	2021.10.25
3	TOWN COMMENTS 3	2021.11.10
4	TOWN COMMENTS 4	2022.02.04
5	TOWN COMMENTS 5	2022.02.07

Sheet No.
C1.1



EASEMENTS LEGEND:

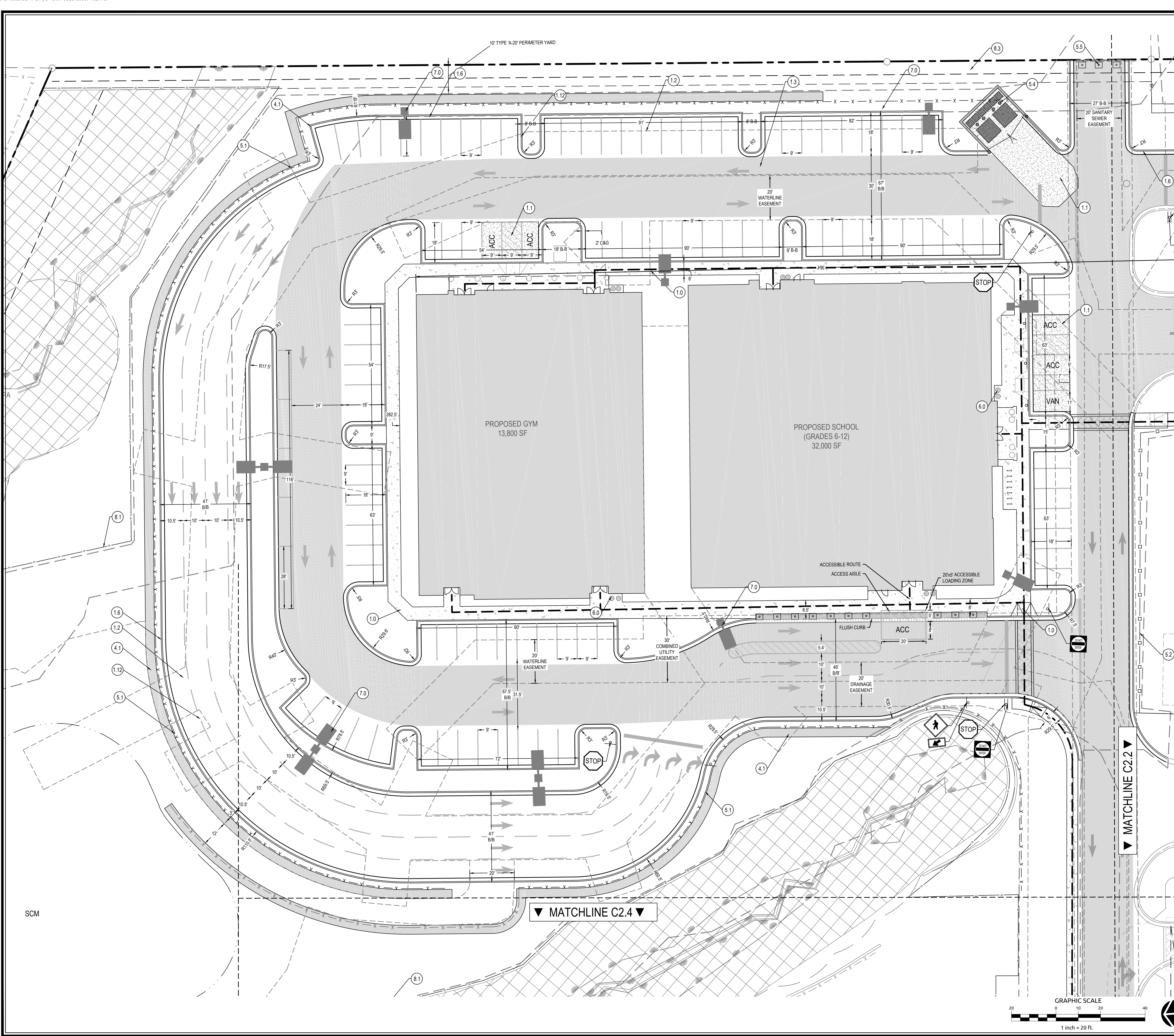
EXISTING EASEMENTS [E-]

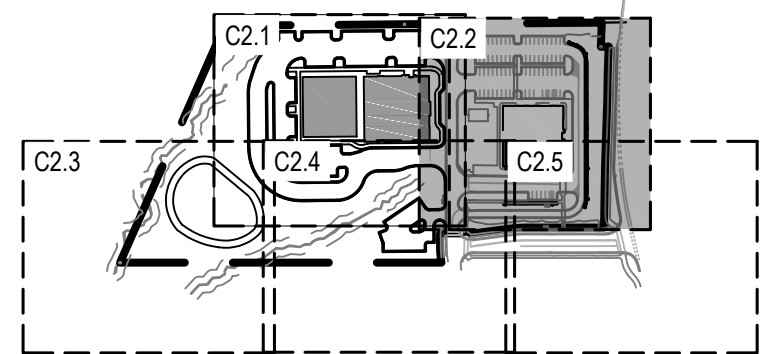
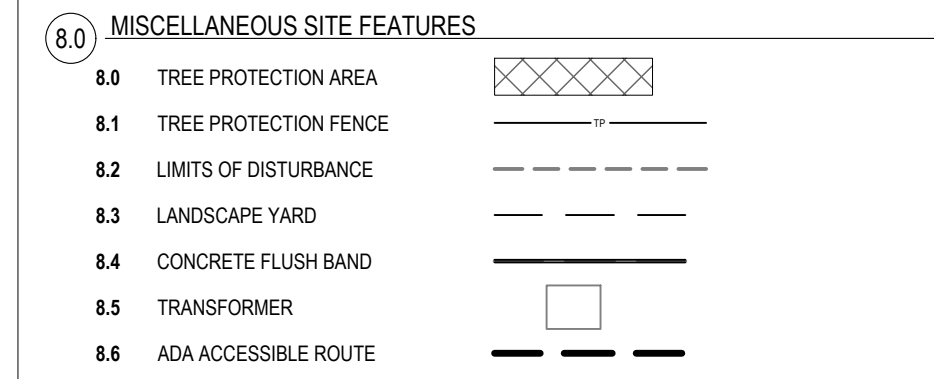
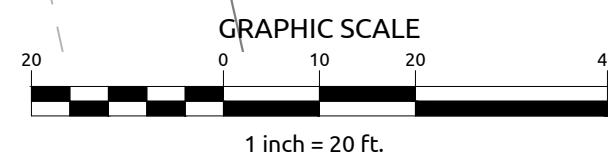
- E-D - PRIVATE DRAINAGE EASEMENT (B.M. 2019, PG. 2170)
- E.A - VARIABLE WIDTH PRIVATE STORMWATER ACCESS AND MAINTENANCE EASEMENT (B.M. 2019, PG. 2171)
- E-S - 20' PUBLIC SEWER UTILITY EASEMENT (B.M. 2019, PG. 2170)
- E-W - 20' PUBLIC WATER UTILITY EASEMENT (B.M. 2019, PG. 2170)

PROPOSED EASEMENTS [P-]

- P-E-D - PROPOSED DRAINAGE EASEMENT
- P-E-A - PROPOSED VARIABLE WIDTH STORMWATER ACCESS AND AMINTENANCE EASEMENT
- P-E-S - 20' PUBLIC PROPOSED SEWER UTILITY EASEMENT
- P-E-W - 20' PROPOSED PUBLIC WATER UTILITY EASEMENT

The site map shows a property layout with several easements and proposed infrastructure. The map is bounded by a dashed line. Inside the boundary, there are five labeled areas: C2.1 (top left), C2.2 (top right), C2.3 (bottom left), C2.4 (center), and C2.5 (bottom right). C2.4 is a shaded rectangular area. C2.3 contains a circular feature. C2.1 and C2.2 are connected by a horizontal line. C2.4 is connected to C2.3 by a curved line. C2.4 is connected to C2.5 by a horizontal line. A north arrow is located in the bottom left corner, pointing towards the top left. A scale bar is located in the bottom right corner, indicating a scale of 1" = 400'.

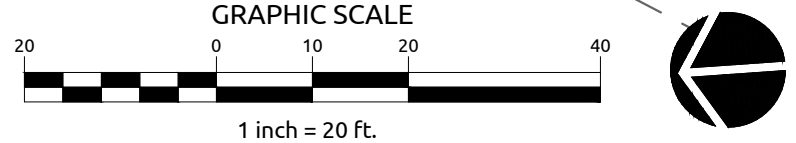


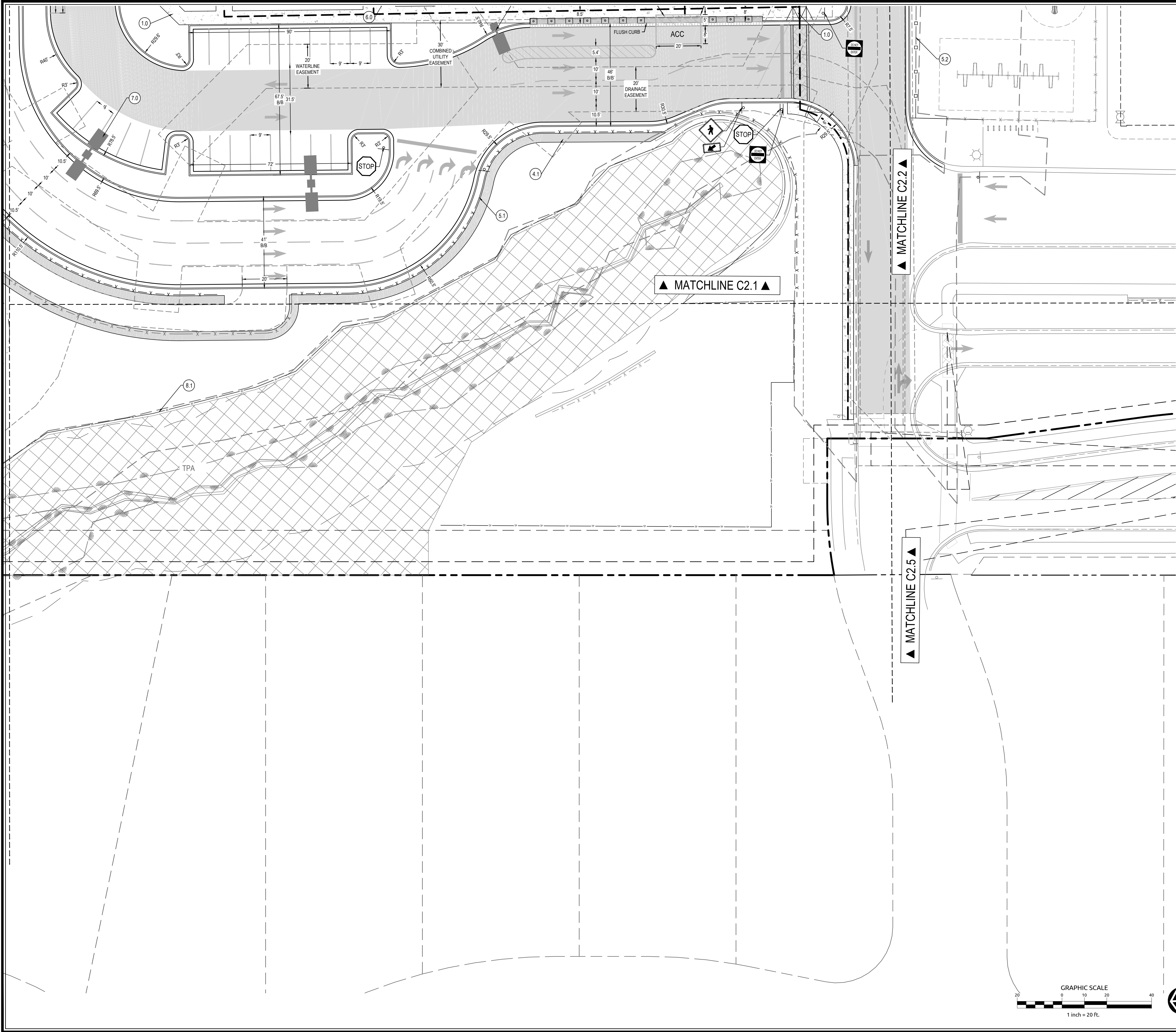


KEY MAP SCALE: 1" = 400'

DocuSigned by
Daniel B. Whatley
2/7/2022

Revisions			
1	TOWN COMMENTS 1	2021.09.24	
2	TOWN COMMENTS 2	2021.10.25	
3	TOWN COMMENTS 3	2021.11.10	
4	TOWN COMMENTS 4	2022.02.04	
5	TOWN COMMENTS 5	2022.02.07	





SITE LEGEND:	
	MATERIAL HATCH
1.0	PEDESTRIAN CONCRETE
1.1	HD VEHICULAR CONCRETE
1.2	STANDARD ASPHALT PAVEMENT
1.3	HD ASPHALT PAVEMENT
1.4	CONCRETE PAVER TYPE 1
1.5	CONCRETE PAVER TYPE 2
1.6	CONCRETE CURB & GUTTER
1.7	CONCRETE FLUSH CURB
1.8	CONCRETE CURB RAMP TYPE 1
1.9	CONCRETE CURB RAMP TYPE 2
1.10	NO PARKING AREA
1.11	FIRE LANE STRIPING
1.12	TYPICAL PAVEMENT STRIPING
1.13	TYPICAL PAVEMENT MARKINGS
1.14	TRAFFIC SIGN
2.0 JOINTING	
2.0	CONTROL JOINT
2.1	EXPANSION JOINT
3.0 STEPS / RAMPS	
3.0	STEPS TYPE 1 (CONCRETE)
3.1	CONCRETE ACCESSIBLE RAMP
4.0 SITE WALLS / EMBANKMENTS	
4.0	DUMPSITE ENCLOSURE WALL
4.1	RETAINING WALL
5.0 RAILINGS, BARRIERS, FENCING / GATES	
5.0	HANDRAIL
5.1	GUARDRAIL
5.2	BLACK ALUM. FENCING
5.3	BLACK ALUM. GATE
5.4	CONCRETE FILLED BOLLARD
5.5	REMOVABLE BOLLARD
6.0 SITE FURNISHINGS	
6.0	WASTE RECEPTACLE TYPE 1
6.1	BIKE RACK
7.0 SITE LIGHTING	
7.0	VEHICULAR AREA LIGHT POLE
8.0 MISCELLANEOUS SITE FEATURES	
8.0	TREE PROTECTION AREA
8.1	TREE PROTECTION FENCE
8.2	LIMITS OF DISTURBANCE
8.3	LANDSCAPE YARD
8.4	CONCRETE FLUSH BAND
8.5	TRANSFORMER
8.6	ADA ACCESSIBLE ROUTE

SIGN LEGEND	
	STOP SIGN R1-1 RED BACKGROUND WHITE BORDER WHITE LETTERS 30"x30"
	RESERVED PARKING PARKING SIGN R7-8A 12"x18" SEE DETAIL
	MAXIMUM PENALTY R7-8D 12"x12" SEE DETAIL
	PEDESTRIAN CROSSING W11-2 30"x30"
	DIAGONAL DOWNWARD ARROW W16-7L 12"x24"
	DO NOT ENTER R5-1 30"x30"

NOTE:
ALL SIGNAGE SHALL USE PRISMATIC SHEETING THAT MEETS MINIMUM RETROREFLECTIVITY STANDARD FOUND IN THE LATEST EDITION OF THE MUTCD AND MOUNTED ON 3/8SFT POLES

KEY MAP

SCALE: 1" = 400'

WithersRavenel

Engineers | Planners | Surveyors

115 Mackenran Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

DEVELOPMENT PLANS

FOR PROPOSED SCHOOL EXPANSION

112 HOLLY SPRINGS NEW HILL ROAD

11244 HOLLY SPRINGS NEW HILL ROAD

HOLLY SPRINGS, NC 27540

DETAILED LAYOUT PLAN

Job No. 09210285

Date 2021.07.30

Checked By WR

Drawn By WR

Designer WR

2077

2/7/2022

Revisions

1 TOWN COMMENTS 1 2021.09.24

2 TOWN COMMENTS 2 2021.10.29

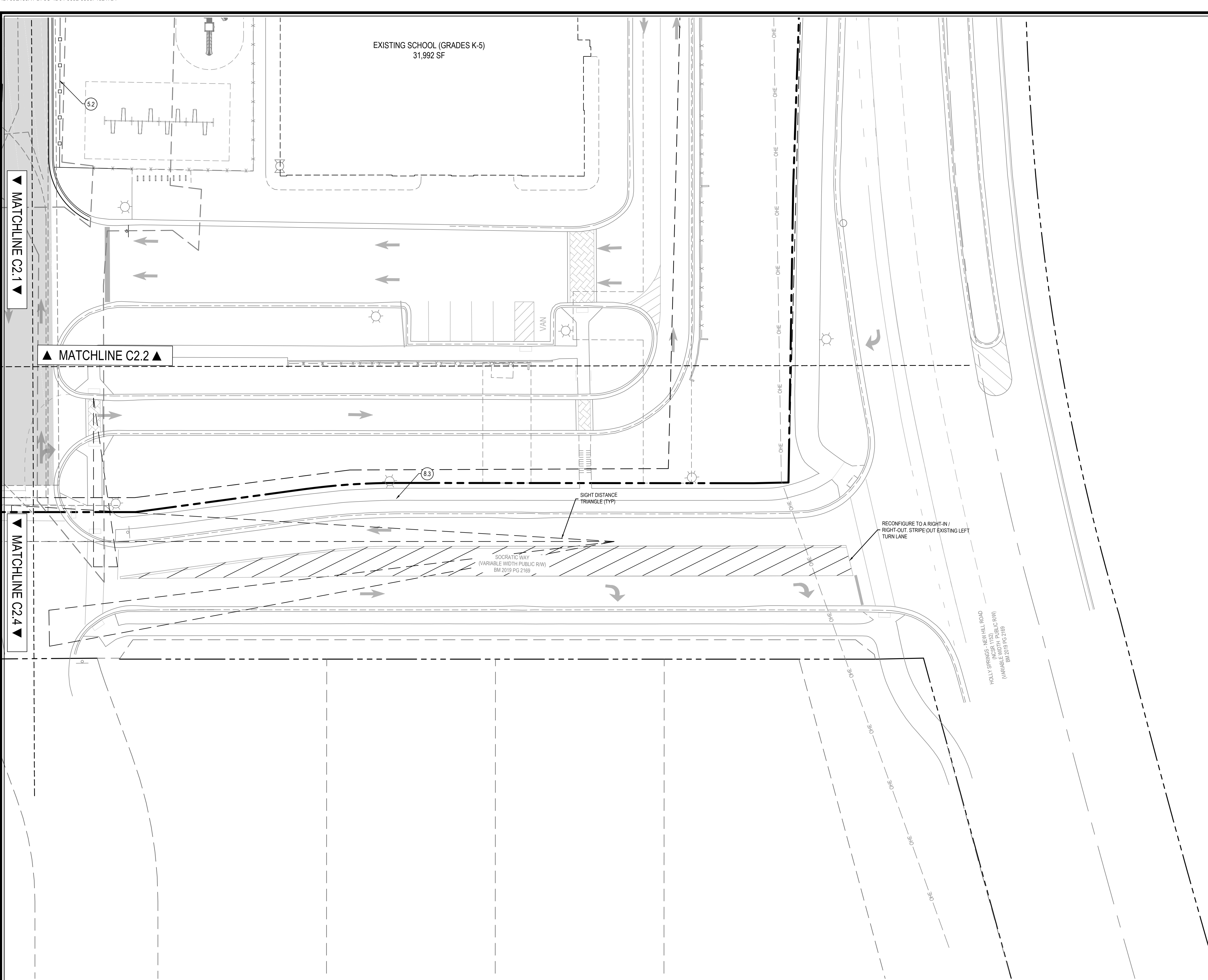
3 TOWN COMMENTS 3 2021.11.10

4 TOWN COMMENTS 4 2022.02.04

5 TOWN COMMENTS 5 2022.02.07

Sheet No.

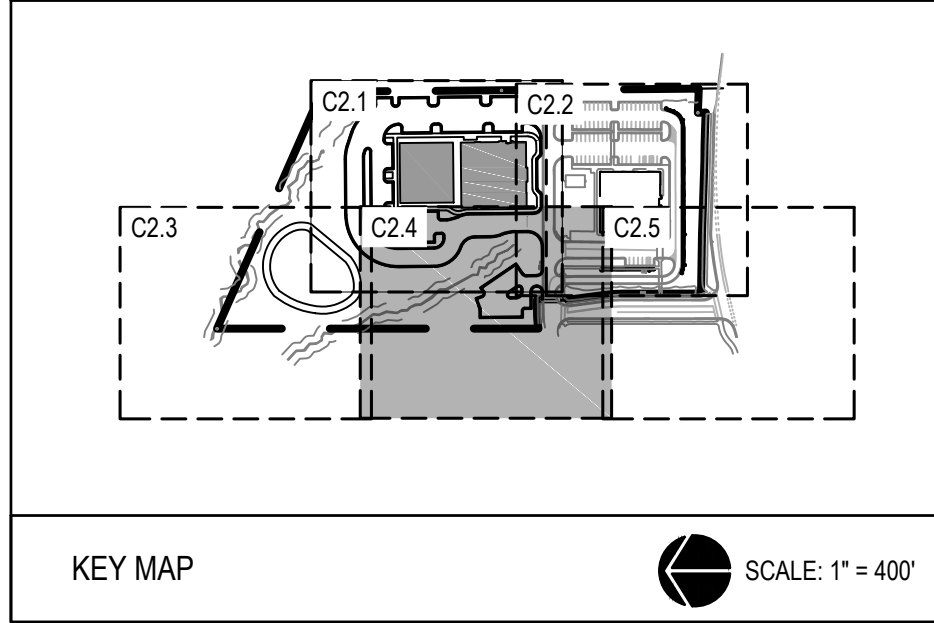
C2.4



SITE LEGEND:	
	MATERIAL HATCH
1.0 PAVEMENTS, CURBS, CURB RAMPS	
1.0 PEDESTRIAN CONCRETE	
1.1 HD VEHICULAR CONCRETE	
1.2 STANDARD ASPHALT PAVEMENT	
1.3 HD ASPHALT PAVEMENT	
1.4 CONCRETE PAVER TYPE 1	
1.5 CONCRETE PAVER TYPE 2	
1.6 CONCRETE CURB & GUTTER	
1.7 CONCRETE FLUSH CURB	
1.8 CONCRETE CURB RAMP TYPE 1	
1.9 CONCRETE CURB RAMP TYPE 2	
1.10 NO PARKING AREA	
1.11 FIRE LANE STRIPING	
1.12 TYPICAL PAVEMENT STRIPING	
1.13 TYPICAL PAVEMENT MARKINGS	
1.14 TRAFFIC SIGN	
2.0 JOINTING	
2.0 CONTROL JOINT	
2.1 EXPANSION JOINT	
3.0 STEPS / RAMPS	
3.0 STEPS TYPE 1 (CONCRETE)	
3.1 CONCRETE ACCESSIBLE RAMP	
4.0 SITE WALLS / EMBANKMENTS	
4.0 DUMPSTER ENCLOSURE WALL	
4.1 RETAINING WALL	
5.0 RAILINGS, BARRIERS, FENCING / GATES	
5.0 HANDRAIL	
5.1 GUARDRAIL	
5.2 BLACK ALUM. FENCING	
5.3 BLACK ALUM. GATE	
5.4 CONCRETE FILLED BOLLARD	
5.5 REMOVABLE BOLLARD	
6.0 SITE FURNISHINGS	
6.0 WASTE RECEPTACLE TYPE 1	
6.1 BIKE RACK	
7.0 SITE LIGHTING	
7.0 VEHICULAR AREA LIGHT POLE	
8.0 MISCELLANEOUS SITE FEATURES	
8.0 TREE PROTECTION AREA	
8.1 TREE PROTECTION FENCE	
8.2 LIMITS OF DISTURBANCE	
8.3 LANDSCAPE YARD	
8.4 CONCRETE FLUSH BAND	
8.5 TRANSFORMER	
8.6 ADA ACCESSIBLE ROUTE	

SIGN LEGEND	
	STOP SIGN R1-1 RED BACKGROUND WHITE BORDER WHITE LETTERS 30"x30"
	RESERVED PARKING PARKING SIGN R7-8A 12"x18" SEE DETAIL
	MAXIMUM PENALTY PENALTY SIGN R7-8D 9"x12" SEE DETAIL
	PEDESTRIAN CROSSING W11-2 30"x30"
	DIAGONAL DOWNWARD ARROW W16-7L 12"x24"
	DO NOT ENTER R5-1 30"x30"

NOTE:
ALL SIGNAGE SHALL USE PRISMATIC SHEETING THAT MEETS MINIMUM RETROREFLECTIVITY STANDARD FOUND IN THE LATEST EDITION OF THE MUTCD AND MOUNTED ON 3LBS/FT POLES



WithersRavenel

Engineers | Planners | Surveyors

115 MacKenzie Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0882 | www.withersravenel.com

DEVELOPMENT PLANS

FOR PROPOSED SCHOOL EXPANSION

112 HOLLY SPRINGS NEW HILL ROAD

11244 HOLLY SPRINGS NEW HILL ROAD

HOLLY SPRINGS, NC 27540

DETAILED LAYOUT PLAN

Job No. 09210285

Date 2021.07.30

Checked By WR

Drawn By WR

Designer WR

2077

2/7/2022

Revisions

1 TOWN COMMENTS 1 2021.09.24

2 TOWN COMMENTS 2 2021.10.29

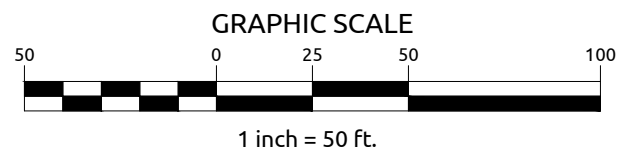
3 TOWN COMMENTS 3 2021.11.10

4 TOWN COMMENTS 4 2022.02.04

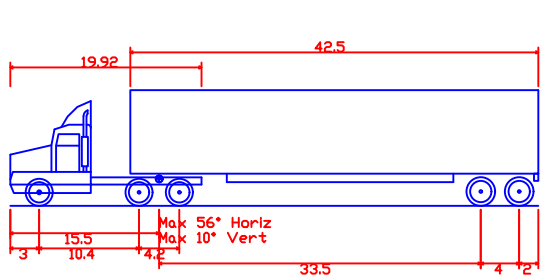
5 TOWN COMMENTS 5 2022.02.07

Sheet No.

C2.5



1. ALL FIRE LANE ACCESS ROADWAYS ARE DIMENSIONED ON SITE PLANS.
2. HEAVY DUTY ASPHALT AND FIRE LANE PAVEMENT DETAILS SHOWN ON CONSTRUCTION DETAILS.
3. ALL FIRE LANE AND HYDRANT STRIPING LOCATIONS AND DETAILS ARE SHOWN ON THE PAVEMENT MARKING AND SIGMAGE PLAN.
4. BUILDING USES AND DIMENSIONS CAN BE FOUND ON ARCHITECTURAL SHEETS.
5. FIRE DEPARTMENT CONNECTION CAN BE FOUND ON THE UTILITY PLAN.
6. SEE ARCHITECTURAL SHEETS FOR RISER ROOM DETAILS.



WB-50 - Intermediate Semi-Trailer	
Overall Length	55.000ft
Overall Width	8.500ft
Overall Body Height	12.052ft
Min Body Ground Clearance	1.334ft
Max Track Width	8.500ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	17.90°

115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

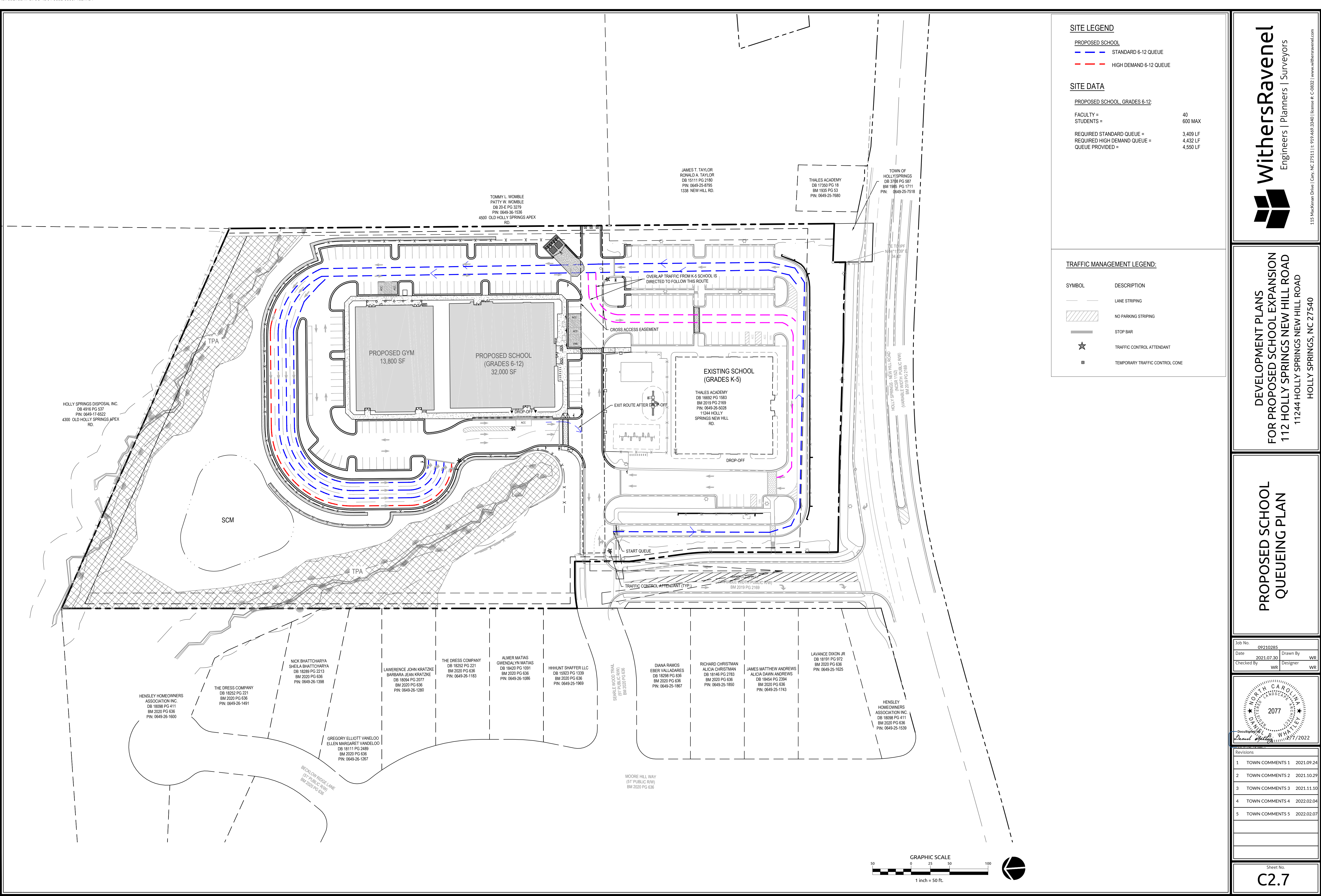
DEVELOPMENT PLANS
FOR PROPOSED SCHOOL EXPANSION
112 HOLLY SPRINGS NEW HILL ROAD
11244 HOLLY SPRINGS NEW HILL ROAD

FIRE TRUCK TURNING AND ADA ACCESS PLAN

DocuSign Envelope ID: 8A8A8A8A-8A8A-8A8A-8A8A-8A8A8A8A8A8A

Daniel B. Whittle

C2.6



WithersRavenel

Engineers | Planners | Surveyors

115 MacKenzie Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0882 | www.withersravenel.com

DEVELOPMENT PLANS
FOR PROPOSED SCHOOL EXPANSION
112 HOLLY SPRINGS NEW HILL ROAD
11244 HOLLY SPRINGS NEW HILL ROAD
HOLLY SPRINGS, NC 27540

PROPOSED SCHOOL
QUEUEING PLAN

Job No. 09210285
Date 2021.07.30
Checked By WR
Drawn By WR
Designer WR

2077

2/7/2022

Revisions

1

TOWN COMMENTS 1

2021.09.24

2

TOWN COMMENTS 2

2021.10.29

3

TOWN COMMENTS 3

2021.11.10

4

TOWN COMMENTS 4

2022.02.04

5

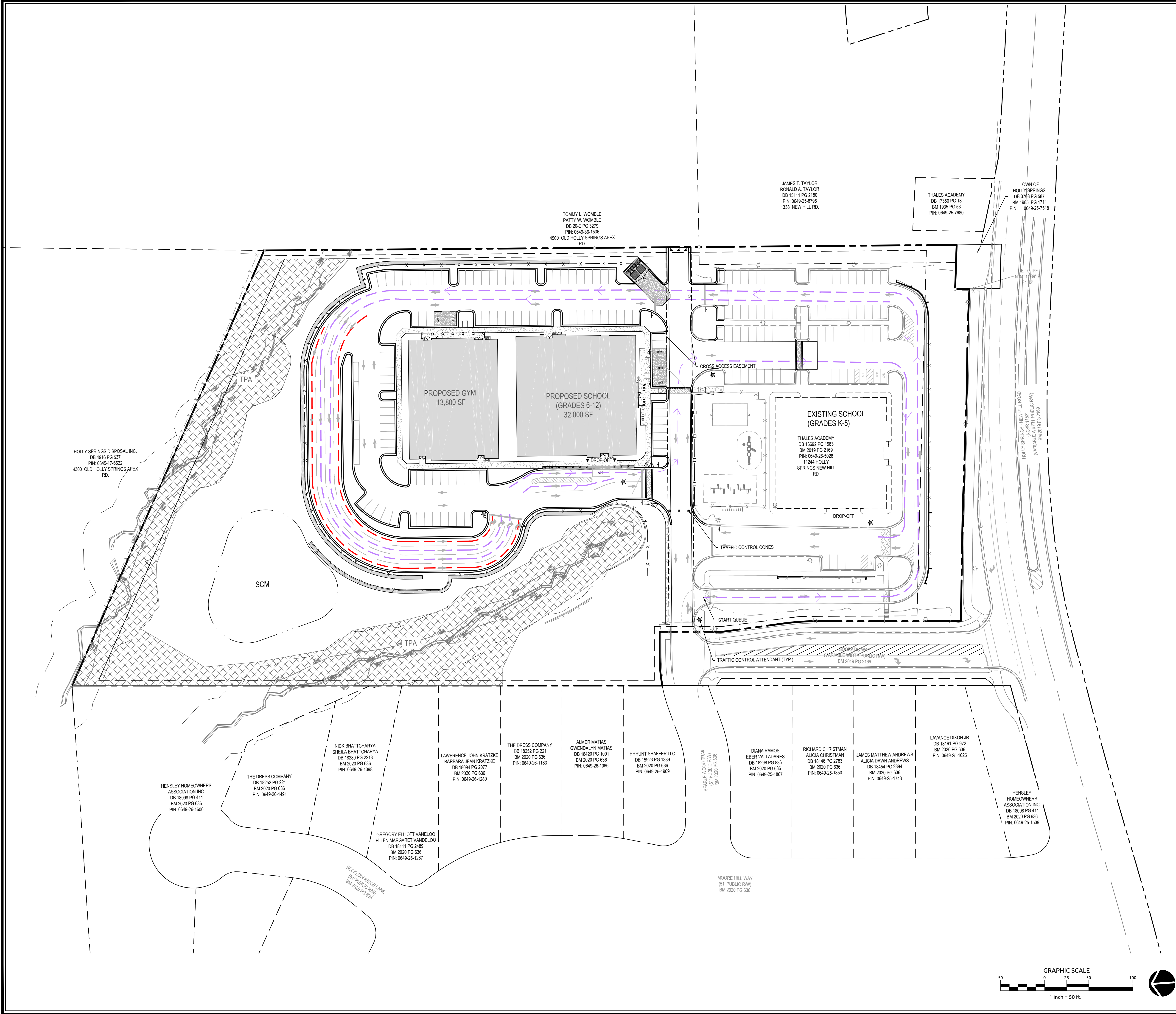
TOWN COMMENTS 5

2022.02.07

Sheet No.

C2.7

Page 104 of 609



SITE LEGEND

- EXISTING SCHOOL
- STANDARD, K-5 QUEUE
- HIGH DEMAND, K-5 QUEUE

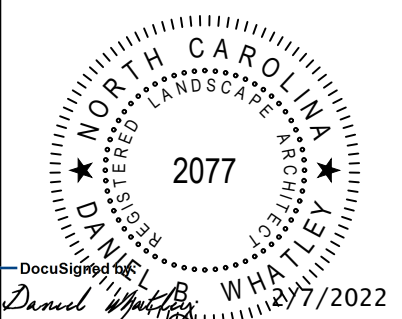
SITE DATA

EXISTING SCHOOL, GRADES K-5:	
FACULTY =	40
STUDENTS =	600
REQUIRED AVERAGE QUEUE =	3,266 LF
REQUIRED HIGH DEMAND QUEUE =	4,247 LF
QUEUE PROVIDED =	4,382 LF

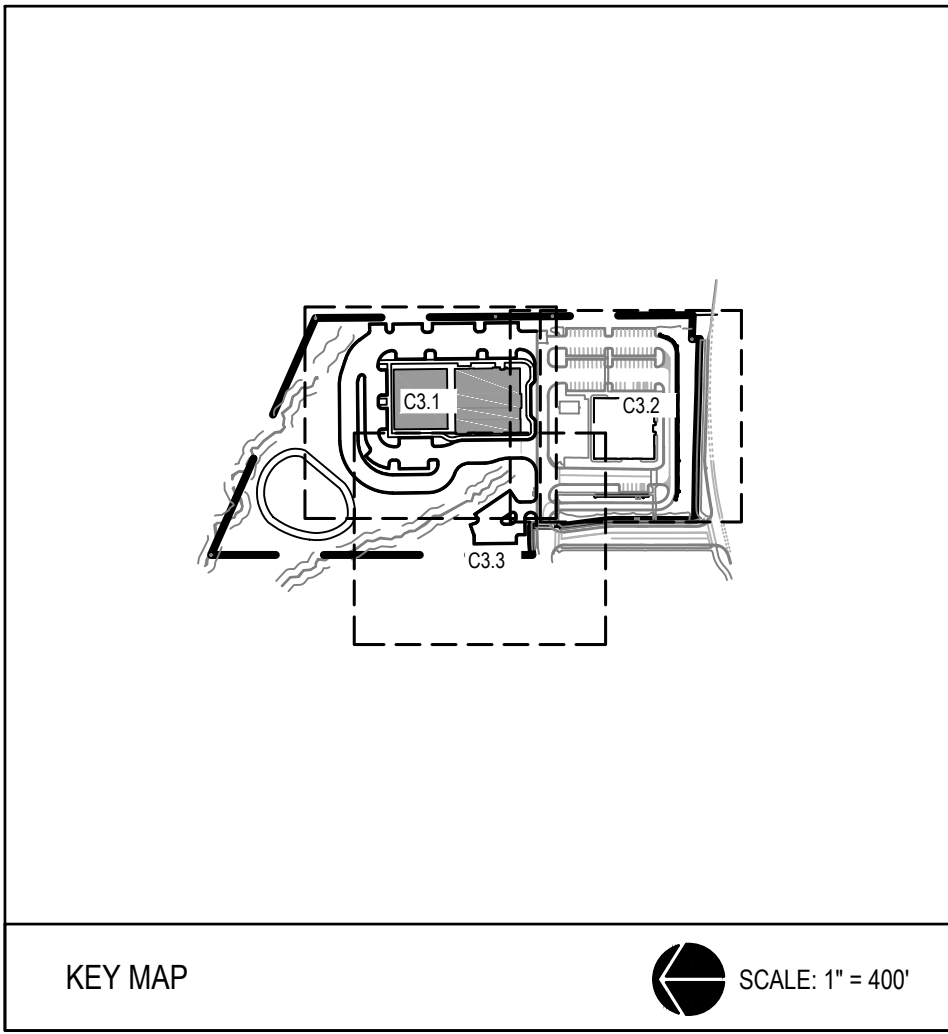
TRAFFIC MANAGEMENT LEGEND:

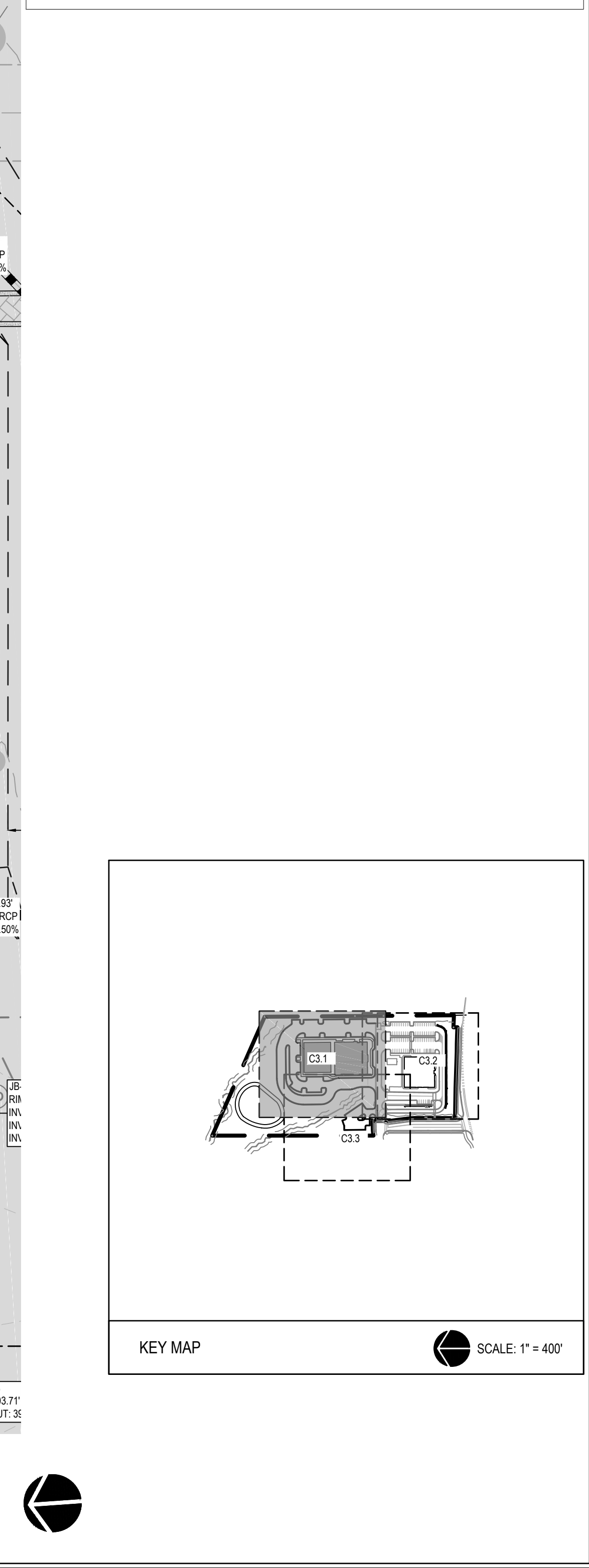
SYMBOL	DESCRIPTION
	LANE STRIPING
	NO PARKING STRIPING
	STOP BAR
	TRAFFIC CONTROL ATTENDANT
	TEMPORARY TRAFFIC CONTROL CONE

Job No.	09210285
Date	2021.07.30
Checked By	WR
Designer	WR

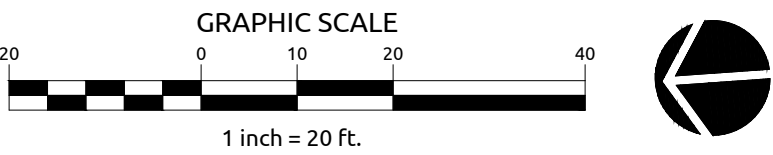


Revisions		
1	TOWN COMMENTS 1	2021.09.24
2	TOWN COMMENTS 2	2021.10.29
3	TOWN COMMENTS 3	2021.11.10
4	TOWN COMMENTS 4	2022.02.04
5	TOWN COMMENTS 5	2022.02.07

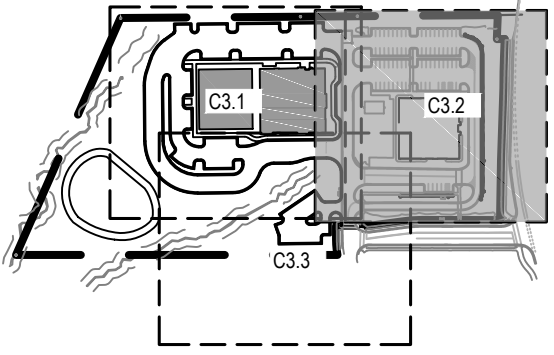




Page 107 of 60



SYMBOL	DESCRIPTION
	EXISTING CONTOUR MINOR
	EXISTING CONTOUR MAJOR
	PROPOSED CONTOUR MINOR
	PROPOSED CONTOUR MAJOR
	PROPOSED CURB INLET
	PROPOSED CATCH BASIN
	PROPOSED STORM PIPE
	PROPOSED FLARED END SECTION
	PROPOSED RETAINING WALL
 SF	PROPOSED SILT FENCE
 TP	PROPOSED TREE PROTECTION FENCE



KEY MAP SCALE: 1" = 400'

HOLLY SPRINGS, NC 27540

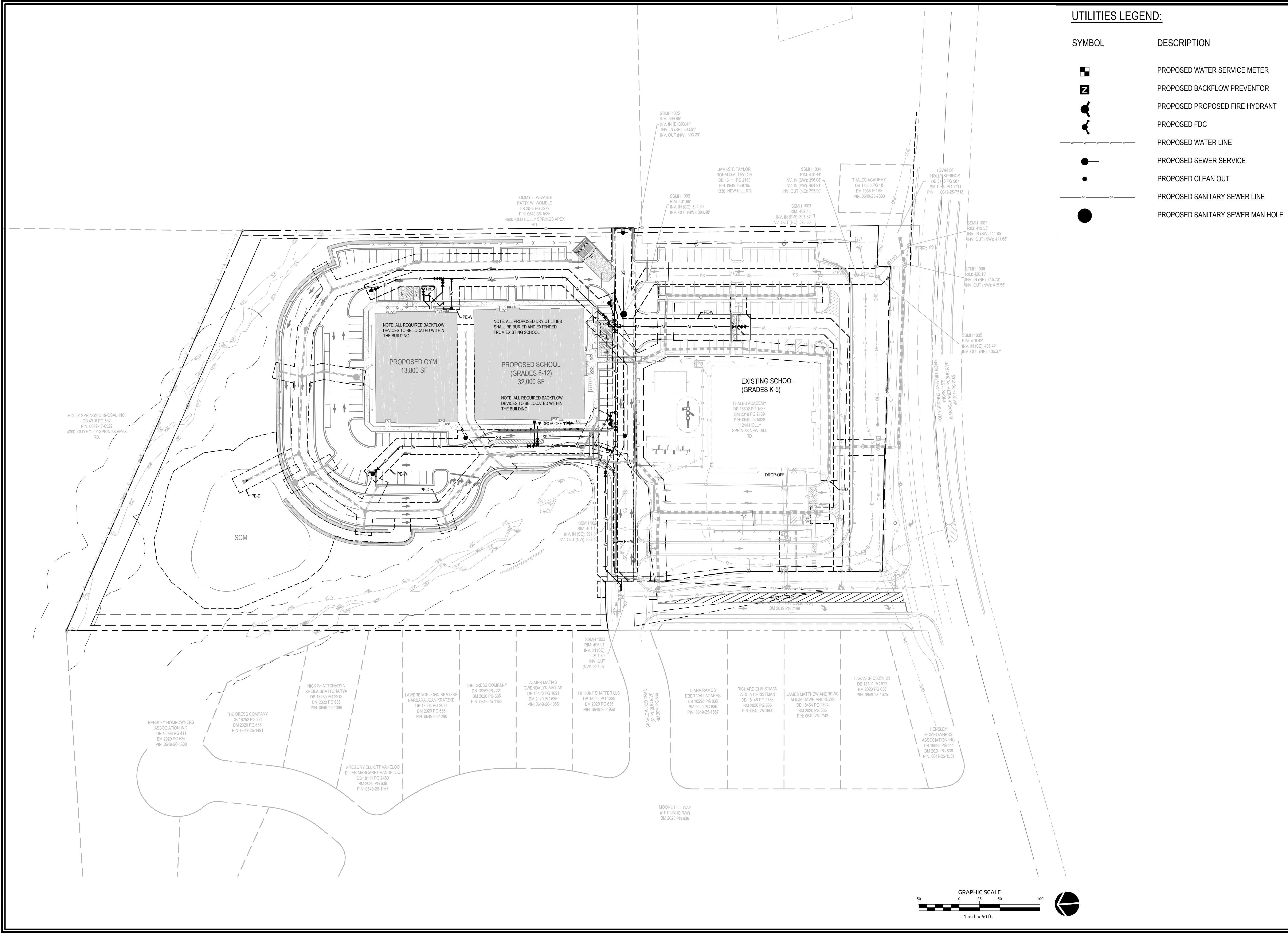
DETAILED GRADING AND DRAINAGE PLAN

Seal of the Professional Engineer, State of North Carolina. The seal is circular with a blue border. Inside the border, the text "NORTH CAROLINA" is at the top, "PROFESSIONAL ENGINEER" is in the middle, and "DAVE D. BARTONE" is at the bottom. The license number "031365" is in the center, and the expiration date "12/7/2022" is on the right. The text "Seal of the Professional Engineer, State of North Carolina" is written around the border.

Sheet No.

C3.2

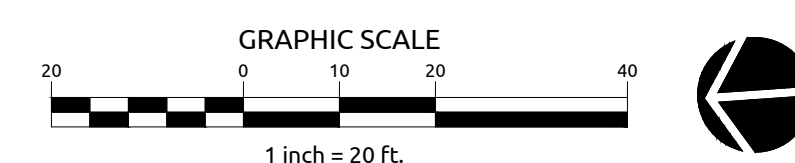
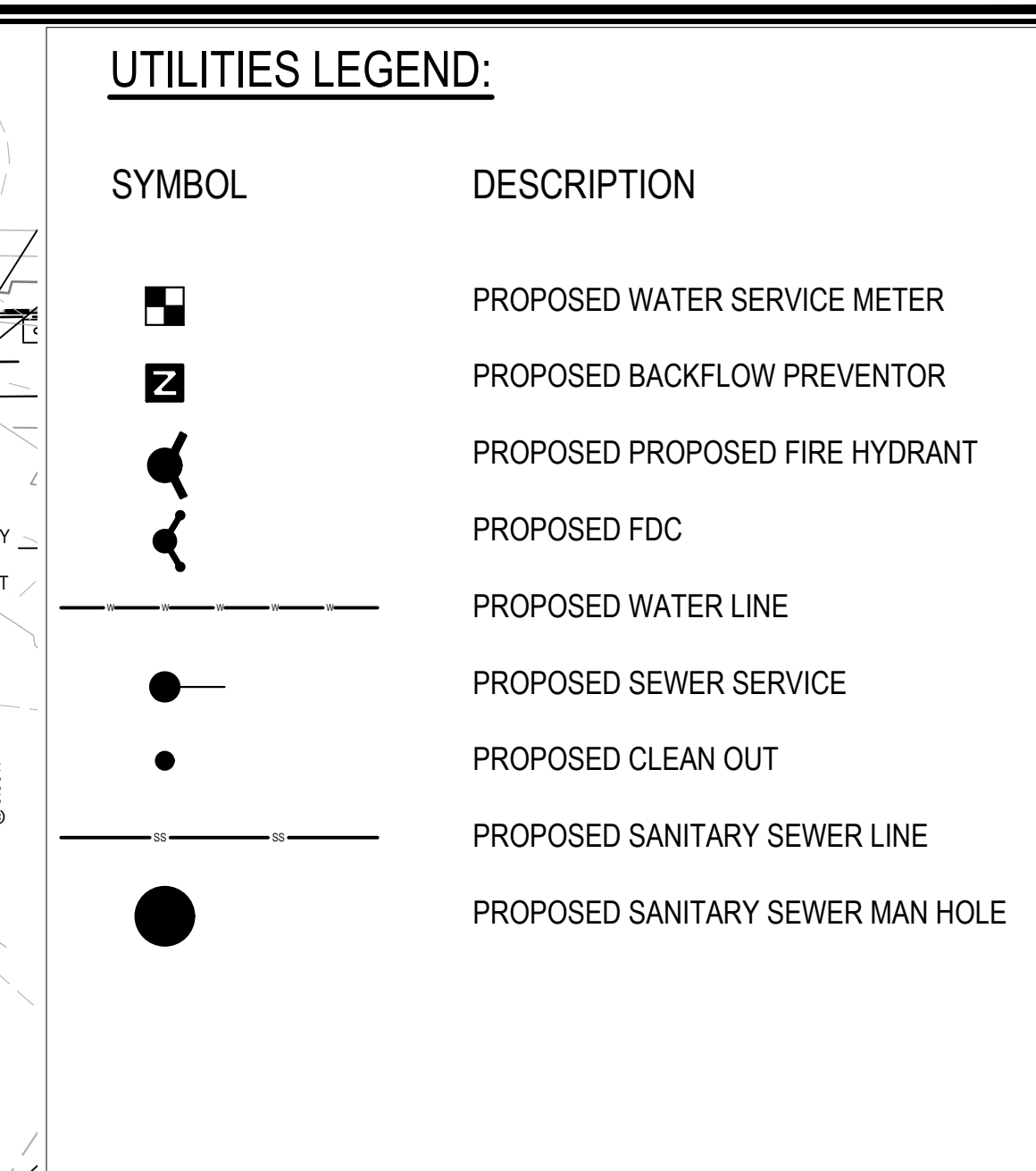
u:\21\01\0280\10385-11445 holly springs CAD\drawing\set\title plan\CA4 Utility Plan.dwg Monday, February 7, 2022 4:31:22 PM - LAMSON



Job No.	09210285
Date	2021.07.30
Checked By	WR
Drawn By	WR
Designer	WR

Revisions
1 TOWN COMMENTS 1 2021.09.24
2 TOWN COMMENTS 2 2021.10.29
3 TOWN COMMENTS 3 2021.11.10
4 TOWN COMMENTS 4 2022.02.04
5 TOWN COMMENTS 5 2022.02.07

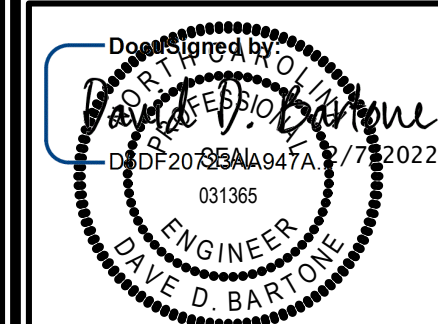
Sheet No.
C4.0



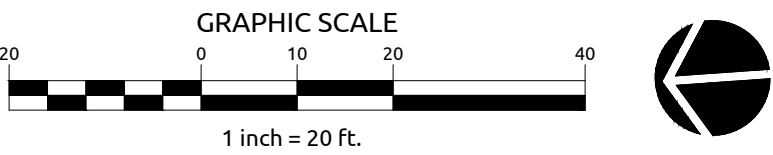
DEVELOPMENT PLANS
FOR PROPOSED SCHOOL EXPANSION
112 HOLLY SPRINGS NEW HILL ROAD
11244 HOLLY SPRINGS NEW HILL ROAD
HOLLY SPRINGS, NC 27540

DETAILED UTILITY PLAN

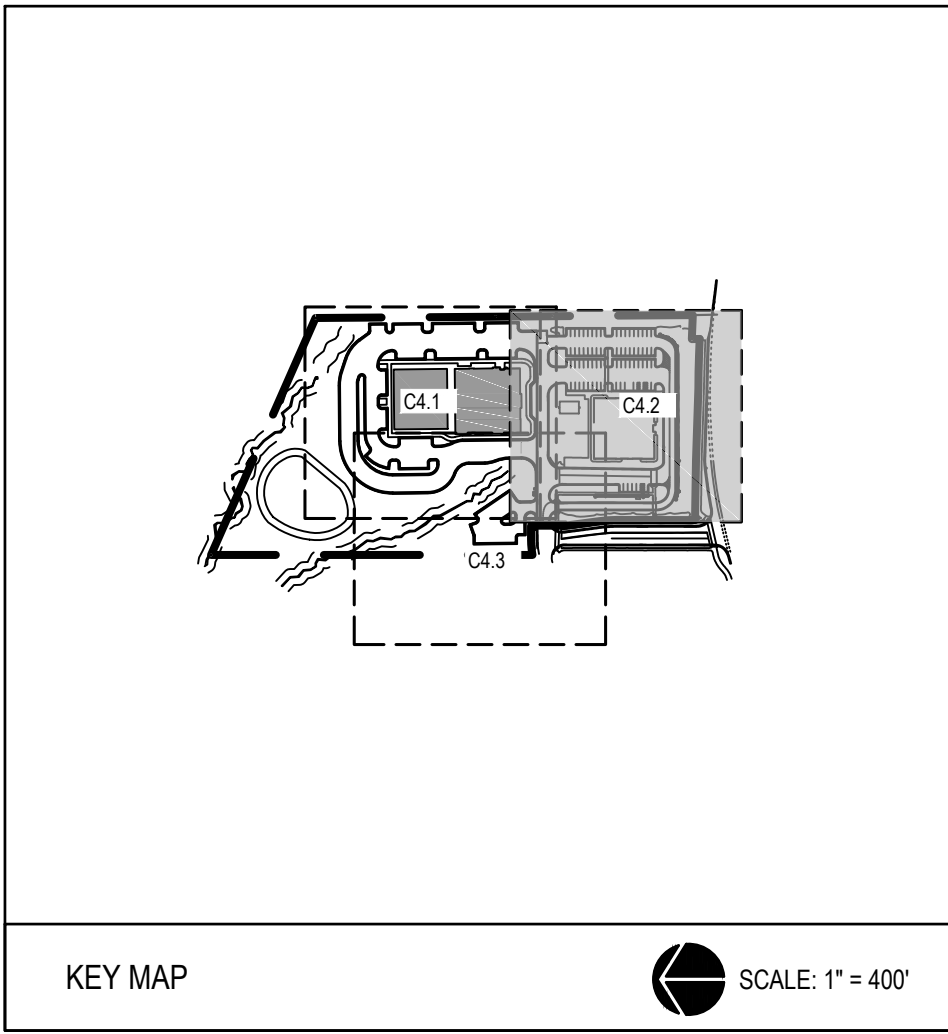
Job No.		09210285	
Date	2021.07.30	Drawn By	WR
Checked By	WR	Designer	WR



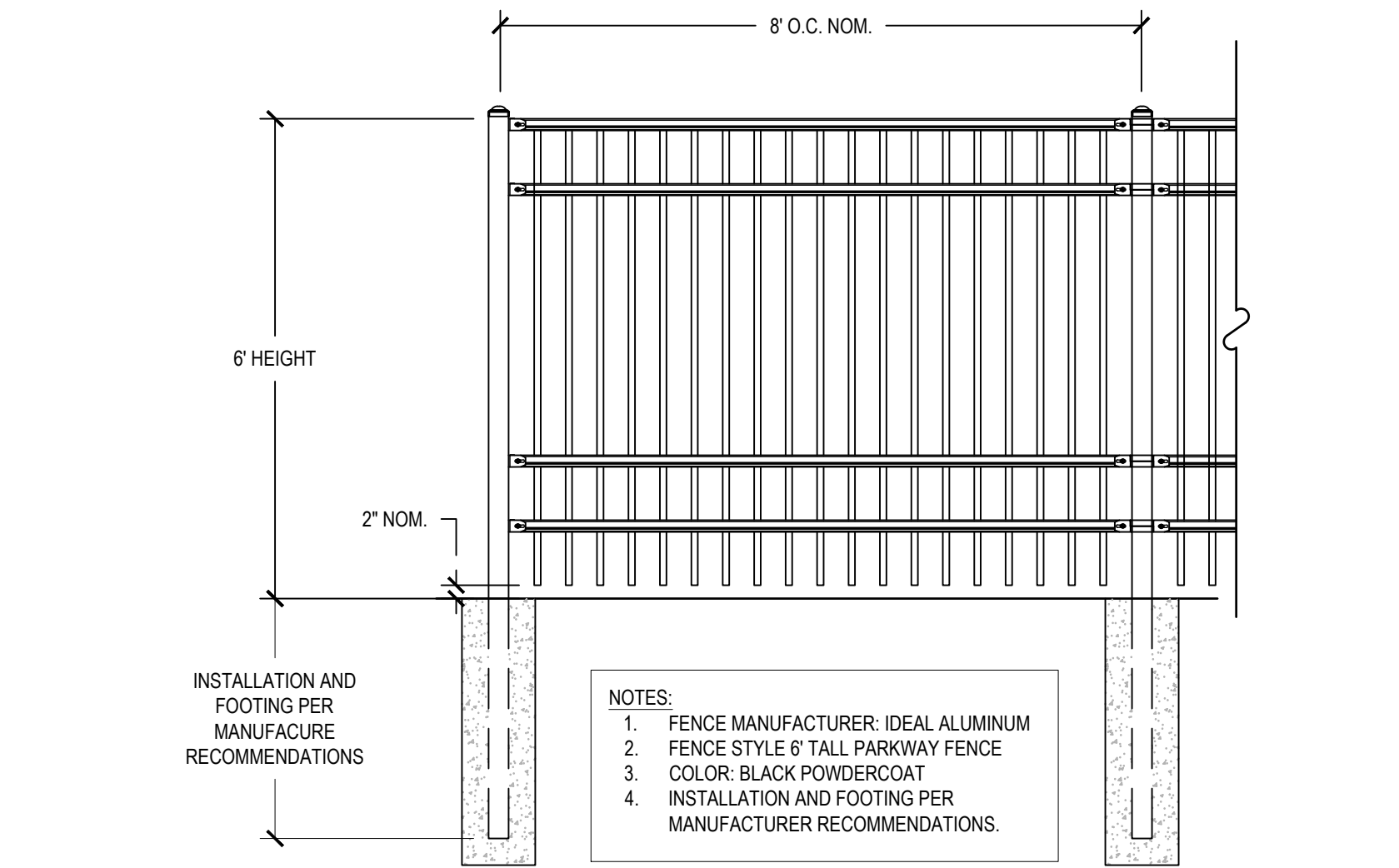
Revisions		
1	TOWN COMMENTS 1	2021.09.2
2	TOWN COMMENTS 2	2021.10.2
3	TOWN COMMENTS 3	2021.11.1
4	TOWN COMMENTS 4	2022.02.0
5	TOWN COMMENTS 5	2022.02.0



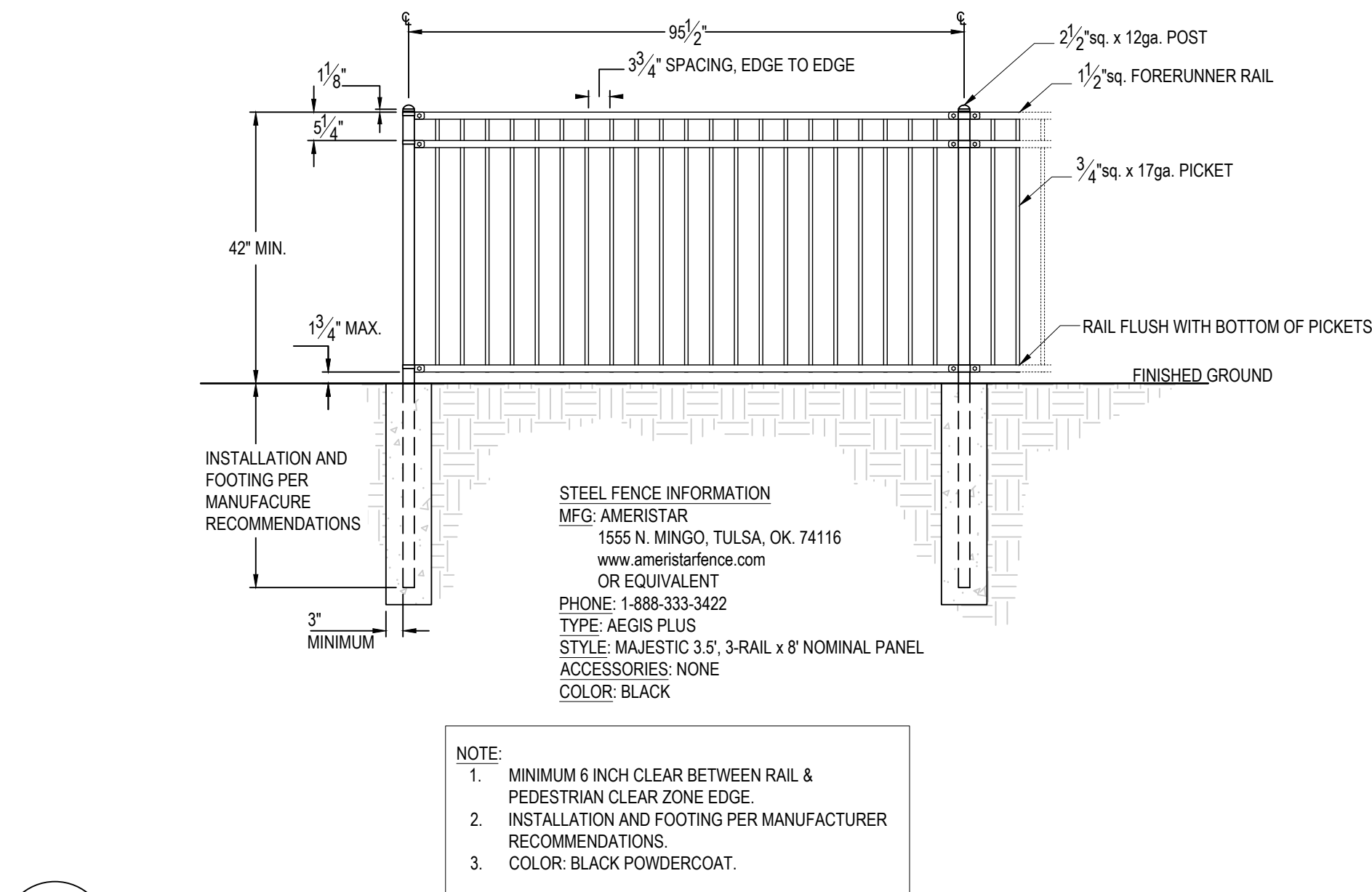
SYMBOL	DESCRIPTION
	PROPOSED WATER SERVICE METER
	PROPOSED BACKFLOW PREVENTOR
	PROPOSED PROPOSED FIRE HYDRANT
	PROPOSED FDC
	PROPOSED WATER LINE
	PROPOSED SEWER SERVICE
	PROPOSED CLEAN OUT
	PROPOSED SANITARY SEWER LINE
	PROPOSED SANITARY SEWER MAN HOLE



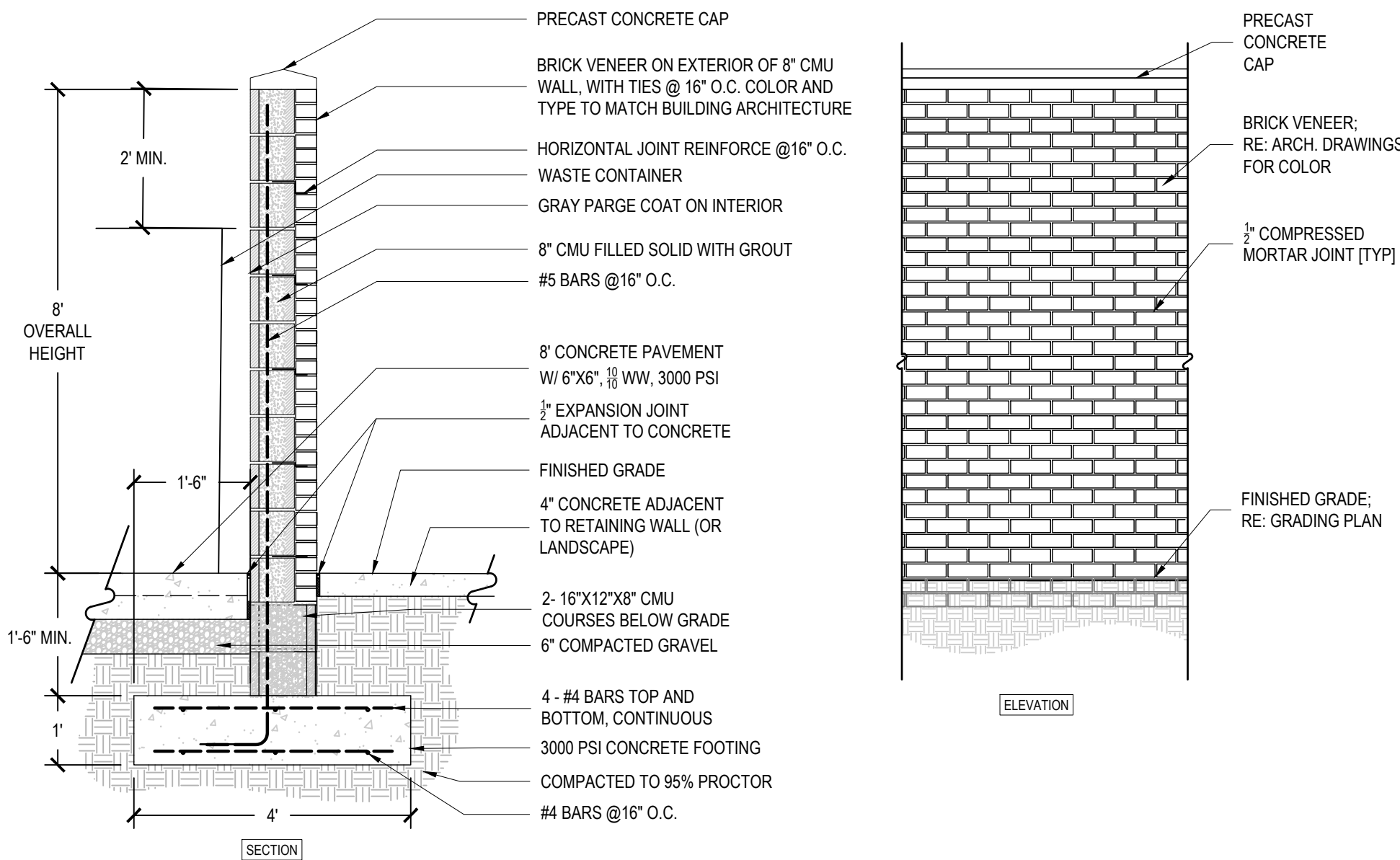
u:\21\01-0280\210280-11245 Holly Springs CAD\dwg\site\plan\C5.0 SITE DETAILS.dwg Monday, February 7, 2022 4:32:37 PM TTYOU



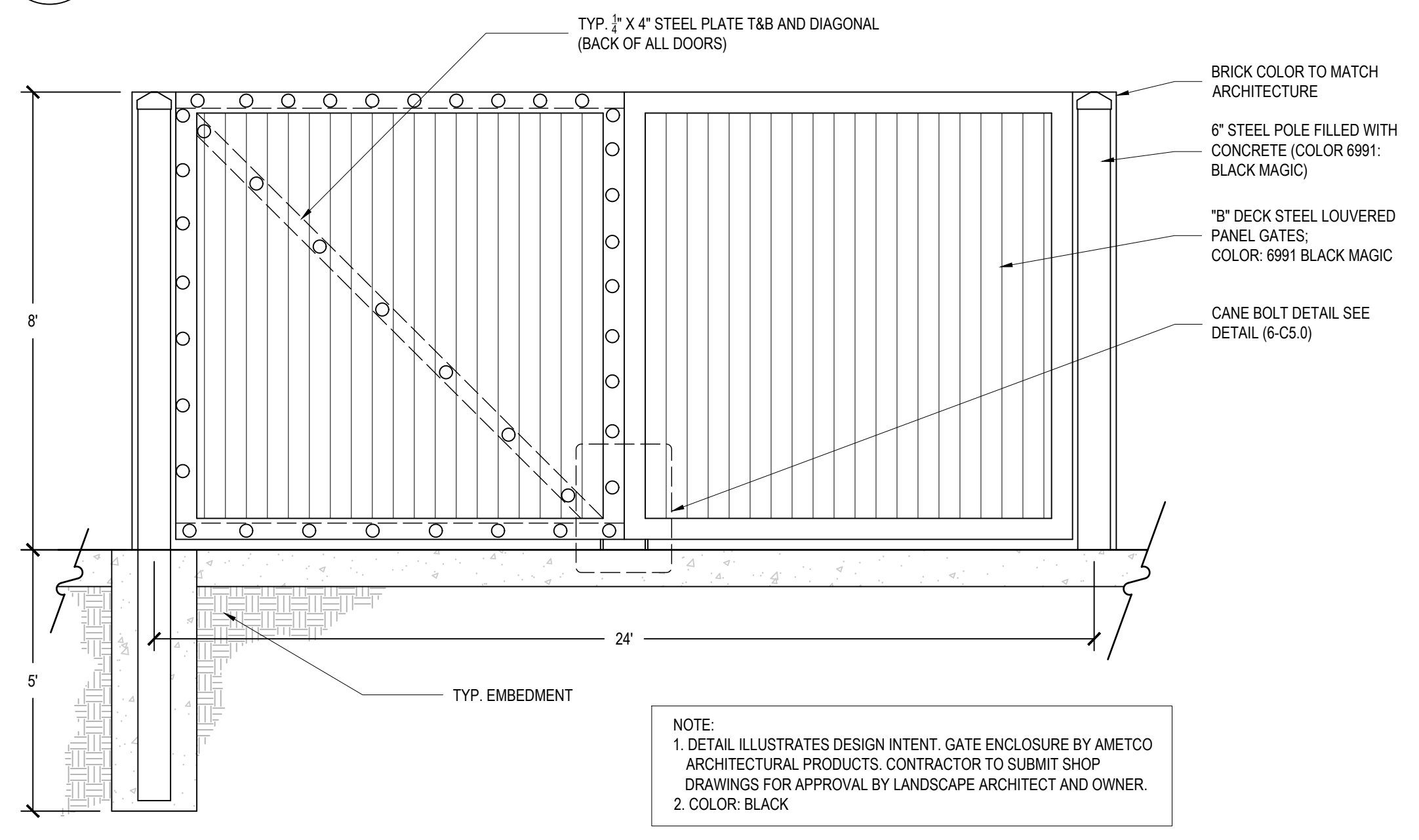
1 STEEL PLAYGROUND FENCE
C5.0
Scale: 1/2" = 1'-0"



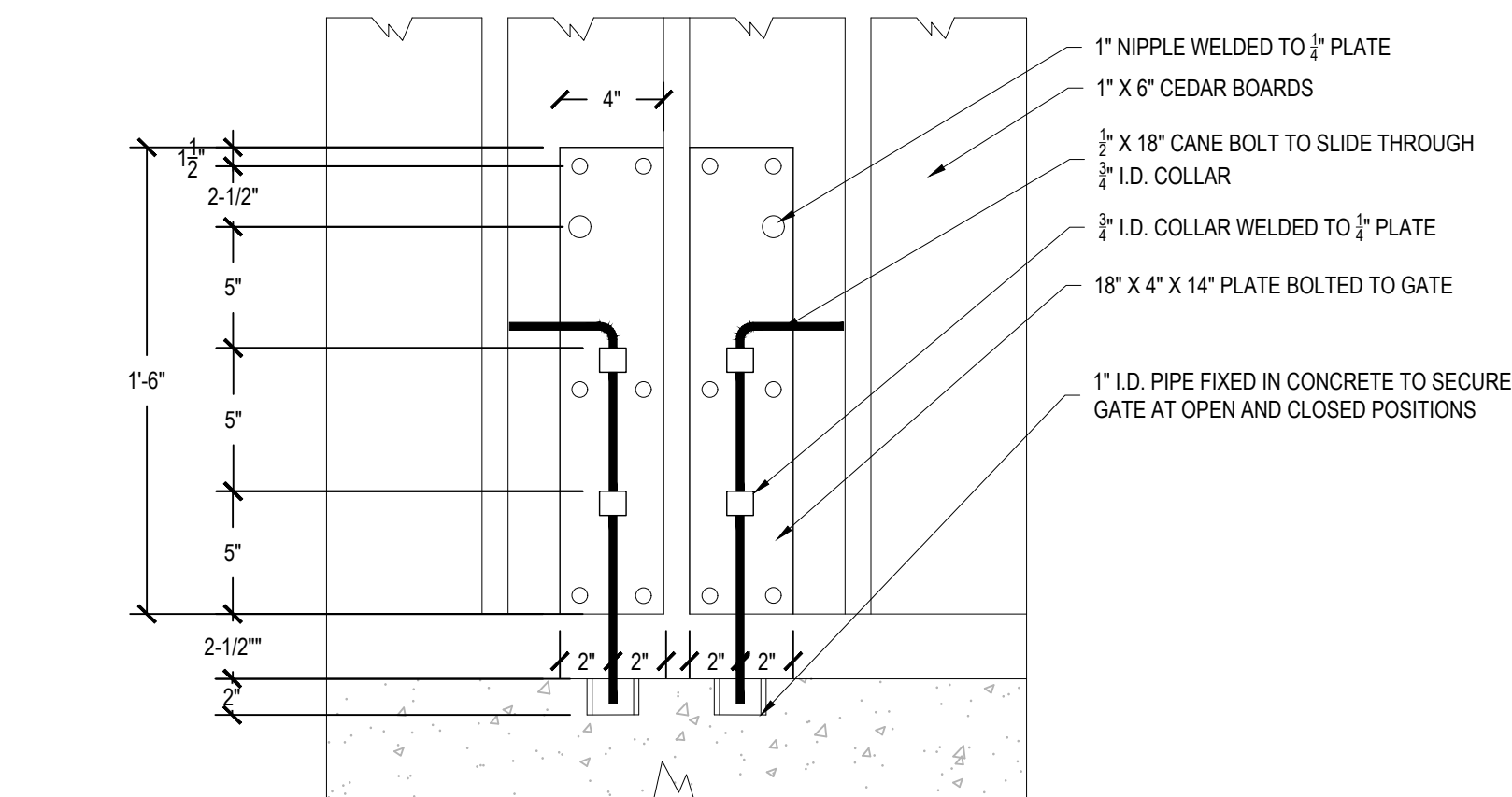
2 SAFETY RAIL
C5.0
Scale: 1/2" = 1'-0"



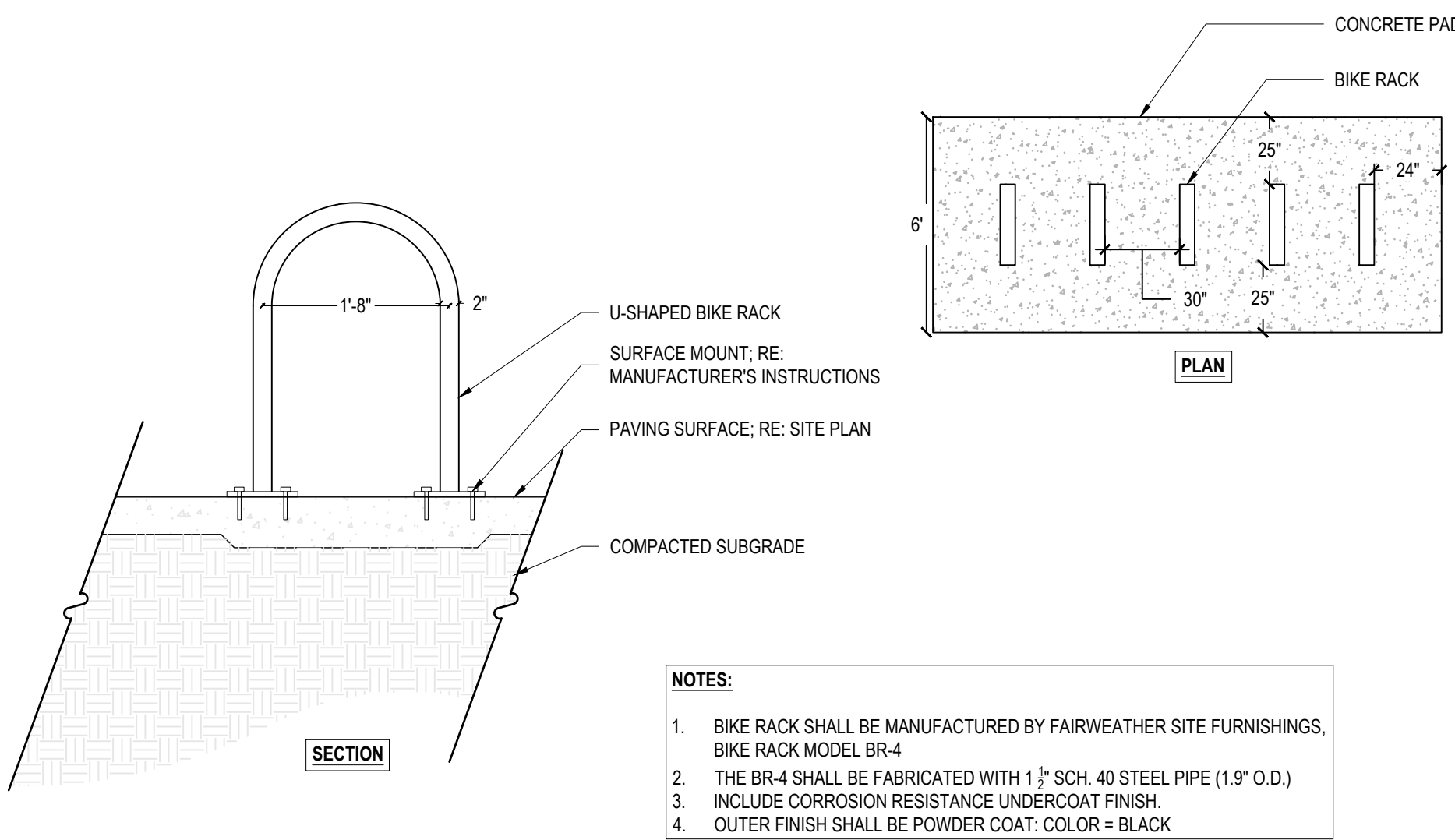
3 DUMPSTER ENCLOSURE WALL
C5.0
Scale: 1/2" = 1'-0"



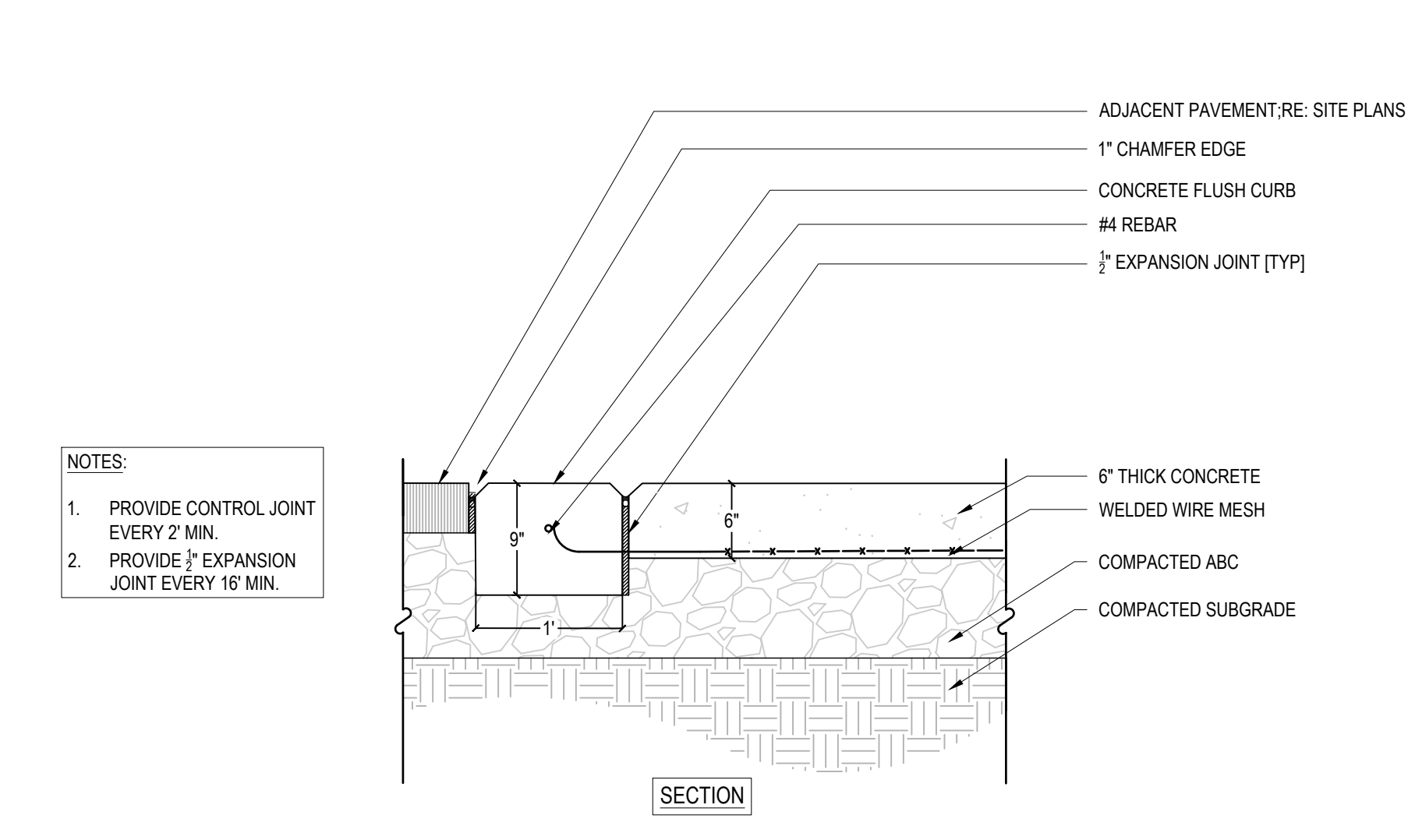
4 DUMPSTER ENCLOSURE GATE
C5.0
Scale: NTS



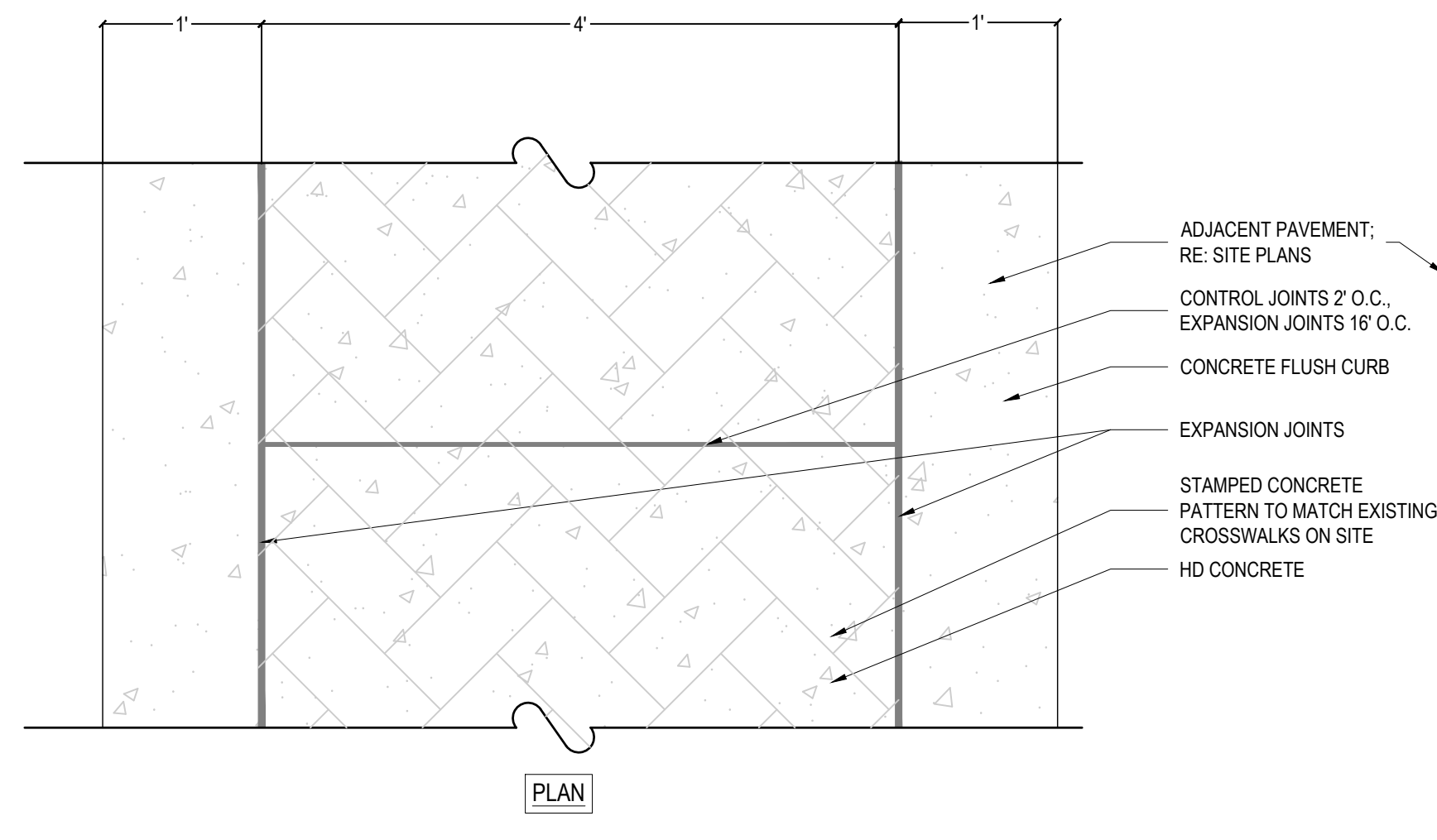
5 DUMPSTER ENCLOSURE J BOLT
C5.0
Scale: 3/4" = 1'-0"



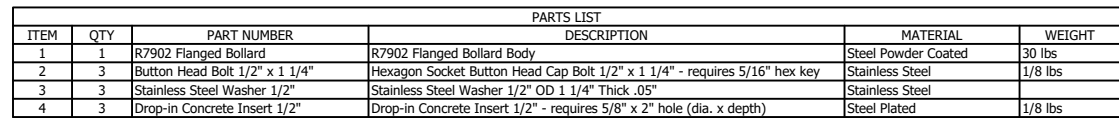
6 BIKE RACK
C5.0
Scale: 3/4" = 1'-0"



7 PEDESTRIAN CROSSWALK
C5.0
Scale: 1" = 1'-0"



SECTION



NOTE: THIS ITEM TO BE PURCHASED DIRECTLY BY OWNER. CONTRACTOR TO INSTALL.

TRASH RECEPTACLE:
ANOVA RENDEZVOUS 32 GAL.
(COLOR - BLACK)

ANCHOR BOLT CAST IN PLACE PER
MANUFACTURER RECOMMENDATIONS

FINISH GRADE

$\frac{1}{2}$ " EXPANSION JOINT

CONCRETE PAVEMENT THICKENS
BENEATH RECEPTACLE

COMPACTED AGGREGATE SUBBASE

8"

4"

6" DIAMETER STEEL PIPE, FILL SOLID WITH CONCRETE

PAINT BLACK

HEAVY DUTY CONCRETE INSIDE DUMPSTER ENCLOSURE, REFER CIVIL SPECIFICATIONS

6" OF STONE

COMPACTED SUBGRADE

3'-6"

7'

3'-6"

6"

1'-6"

EQ. CL. EQ.

NOTES:

1. REFER TO PLANS FOR EXACT LOCATION AND NUMBER OF BOLLARDS.
2. COLOR:
 - 2.1. BOLLARDS INSIDE DUMPSTER ENCLOSURE WALLS TO BE PAINTED YELLOW.
 - 2.2. BOLLARDS OUTSIDE DUMPSTER ENCLOSURE WALLS TO BE PAINTED BLACK TO MATCH DUMPSTER ENCLOSURE DOORS.

The image contains two technical drawings of a bollard assembly. The left drawing is a 'SECTION VIEW' showing the bollard installed in a concrete curb. The curb is 8 inches high and 1 foot 4 inches wide at the base. The bollard has a 36-inch height above the curb. A locking mechanism is shown at the top of the bollard sleeve. The sleeve is 1 foot 5 inches long and is set 1/4 inch above the concrete curb. The sleeve is filled with #57 stone and is integrated with the concrete footing as one pour. The sleeve is 2 inches in diameter. The right drawing is a 'PERSPECTIVE VIEW' showing the bollard assembly. It includes a reflective tape at the top of the sleeve, the bollard itself, and the bollard ground sleeve.

SECTION VIEW

- LOCKING MECHANISM
- BOLLARD CENTERED IN CONCRETE CURB
- TOP OF GROUND SLEEVE SET 1/4" ABOVE CONCRETE CURB
- 36" HEIGHT
- 8"
- 8" CONCRETE CURB
- CONCRETE FOOTING TO BE INTEGRATED WITH CONCRETE CURB AS ONE POUR
- 1'-5"
- 2'-4" MIN.
- BOLLARD SLEEVE
- #57 STONE
- 1'-4"

PERSPECTIVE VIEW

- REFLECTIVE TAPE
- BOLLARD
- BOLLARD GROUND SLEEVE



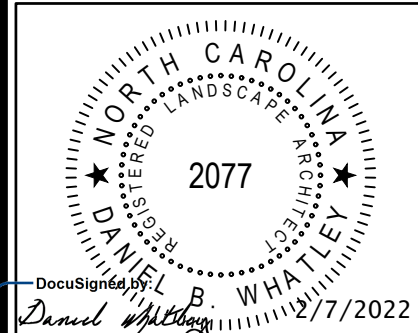
WithersRavenel
Engineers | Planners | Surveyors

115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

DEVELOPMENT PLANS
FOR PROPOSED SCHOOL EXPANSION
112 HOLLY SPRINGS NEW HILL ROAD
11244 HOLLY SPRINGS NEW HILL ROAD
HOLLY SPRINGS, NC 27540

SITE DETAILS

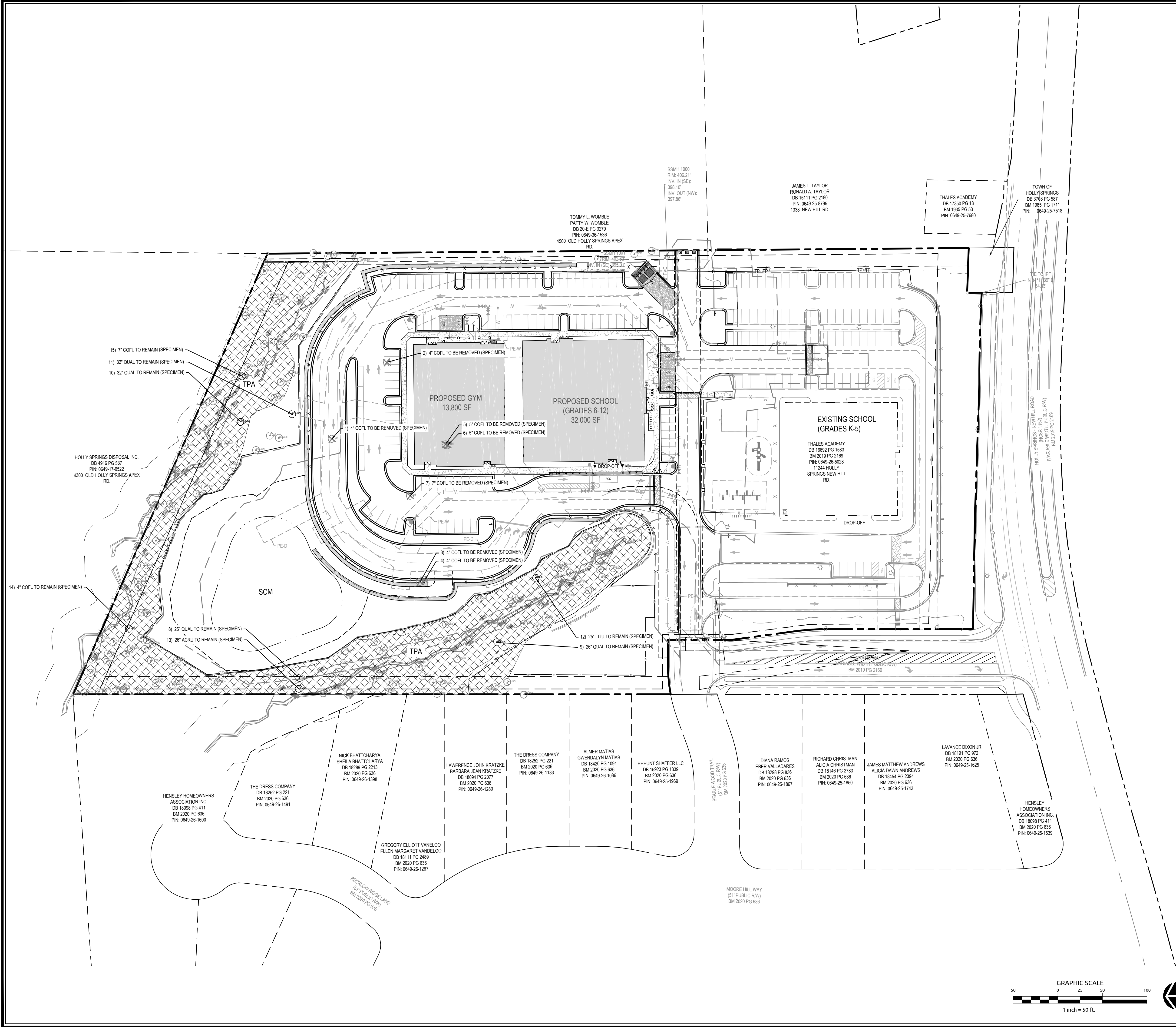
Job No. 09210285	
Date 2021.07.30	Drawn By W
Checked By WR	Designer W



Revisions			
1	TOWN COMMENTS 1	2021.09.2	
2	TOWN COMMENTS 2	2021.10.2	
3	TOWN COMMENTS 3	2021.11.1	
4	TOWN COMMENTS 4	2022.02.0	
5	TOWN COMMENTS 5	2022.02.0	

Sheet No.

C5.1



SPECIMEN TREE LIST:			
NUMBER	SPECIES / DBH	REMOVE	SPECIMEN TREE CANDIDATE
1)	COFL 4" DBH	YES	YES
2)	COFL 4" DBH	YES	YES
3)	COFL 4" DBH	YES	YES
4)	COFL 4" DBH	YES	YES
5)	COFL 5" DBH	YES	YES
6)	COFL 5" DBH	YES	YES
7)	COFL 7" DBH	YES	YES
8)	QUAL 25" DBH	NO	YES
9)	QUAL 28" DBH	NO	YES
10)	QUAL 32" DBH	NO	YES
11)	QUAL 32" DBH	NO	YES
12)	LITU 25" DBH	NO	YES
13)	ACRU 28" DBH	NO	YES
14)	COFL 4" DBH	NO	YES
15)	COFL 7" DBH	NO	YES

TREE PRESERVATION LEGEND:		
	MATERIAL HATCH	DETAIL REF / SHEET
8.0 MISCELLANEOUS SITE FEATURES		
8.1 TREE PROTECTION AREA		
8.2 TREE PROTECTION FENCE	TP	3 - L3.0

EXISTING TREE LISTING	TREE PRESERVATION CALCULATIONS:
- Acru - Calo - Coil - Divi - List - Litu - Nysy - Pila - Qual - Query - Quin - Qugh - Qunu - Ulnu	NET AREA OF SITE = 9.74 AC TREE PRESERVATION AREA REQUIRED = 0.98 AC (10%) TREE PRESERVATION AREA PROVIDED = 1.49 AC (15.3%) TPA IN SETBACKS = 0.37 AC (3.8%) TPA OUTSIDE OF SETBACKS = 1.12 AC (11.5%) PERCENT OF PRESERVED CANOPY WITHIN PROTECTED ENVIRONMENTAL AREAS = 51,076 / 64,912 = 78.7%

- TREE PRESERVATION NOTES:
- FOR AERIAL IMAGERY AND PLOT SAMPLING REFER TO TREE PRESERVATION AREA REPORT BY LEAF & LIMB, CERTIFIED ARBORIST.
 - TREE PROTECTION AREAS TO REMAIN UNDISTURBED THROUGHOUT THE FULL CONSTRUCTION PHASE OF THE SITE.
 - TREE PROTECTION FENCE TO BE INSPECTED WEEKLY AND REPAIRED AS NEEDED BY THE GENERAL CONTRACTOR.
 - TREE PROTECTION FENCE TO BE REMOVED AFTER CONSTRUCTION.

WithersRavenel

Engineers | Planners | Surveyors

DEVELOPMENT PLANS
FOR PROPOSED SCHOOL EXPANSION
112 HOLLY SPRINGS NEW HILL ROAD
11244 HOLLY SPRINGS NEW HILL ROAD
HOLLY SPRINGS, NC 27540

TREE PRESERVATION
PLAN

Job No.	09210285
Date	2021.07.30
Checked By	WR
Designer	WR

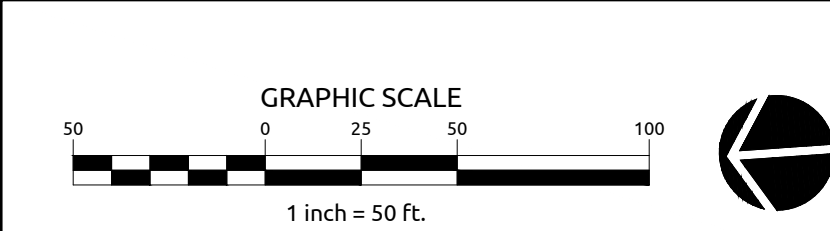
2077

2/7/2022

Revisions		
1	TOWN COMMENTS 1	2021.09.24
2	TOWN COMMENTS 2	2021.10.29
3	TOWN COMMENTS 3	2021.11.10
4	TOWN COMMENTS 4	2022.02.04
5	TOWN COMMENTS 5	2022.02.07

Sheet No.

L1.0



MATURE MIXED PINE/HARDWOOD

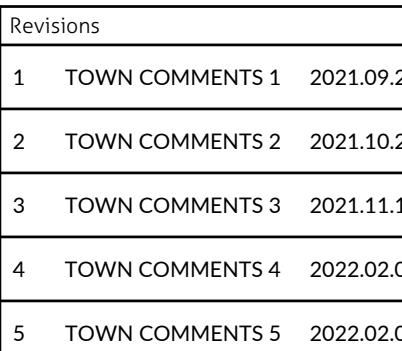
Engineers | Planners | Surveyors

115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

DEVELOPMENT PLANS
FOR PROPOSED SCHOOL EXPANSION
112 HOLLY SPRINGS NEW HILL ROAD
11244 HOLLY SPRINGS NEW HILL ROAD

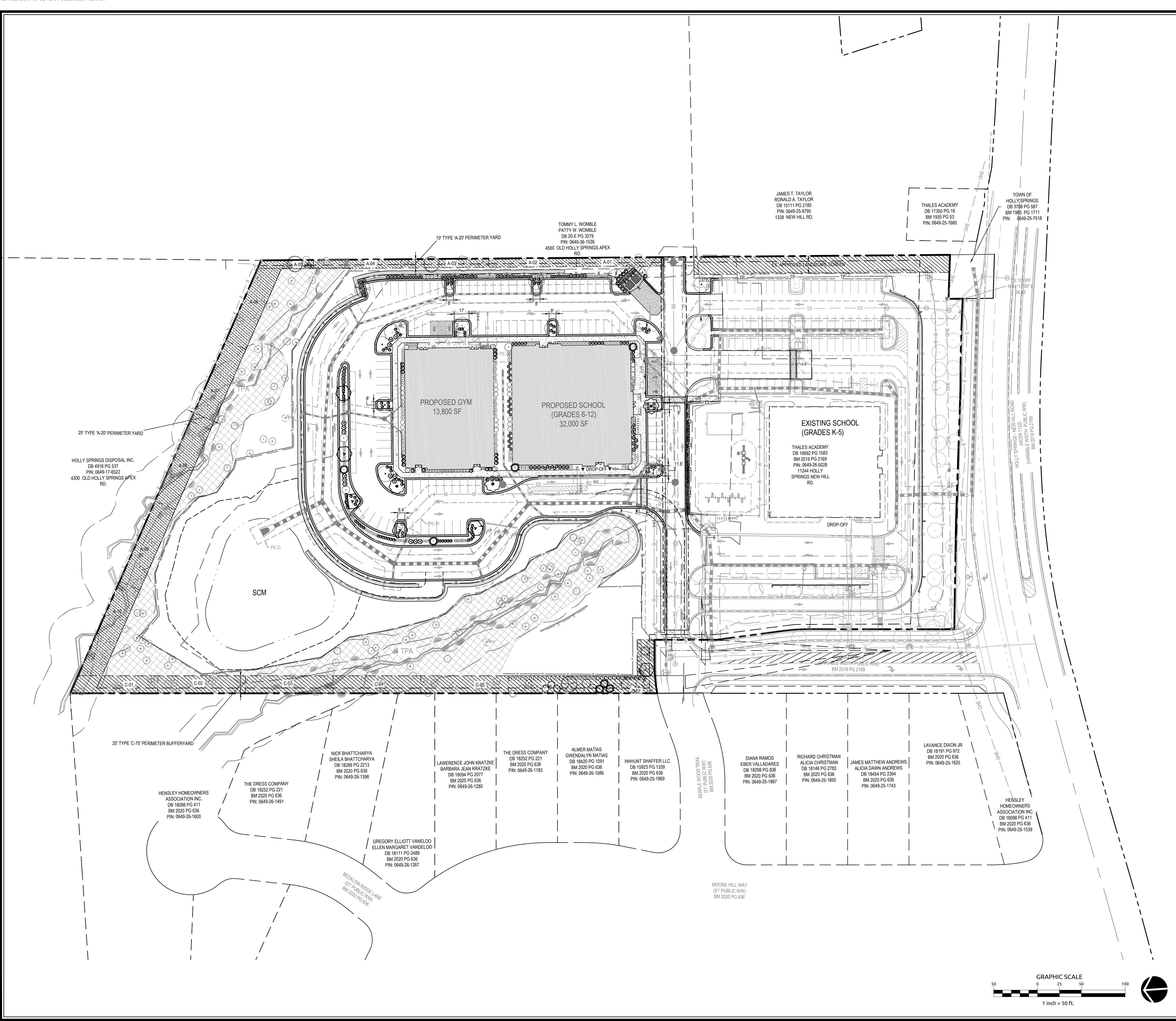
EXISTING
HARDWOOD
CANOPY MAP

W



Sheet No.

L1.1



PLANT SYMBOL KEY:

LARGE DECIDUOUS TREES:

- ABJ - ACER BUERGERIANUM
- GBA - GINKGO BILOBA 'AUTUMN GOLD'
- QLY - QUERCUS LYRATA
- QNU - QUERCUS NUTTALLII
- UAP - ULMUS AMERICANA 'PRINCETON'
- QNI - QUERCUS NIGRA
- MGL - METASEQUOIA GLYPTOSTROBODES
- CJA - CRYPTOMERIA JAPONICA
- CDE - CEDRUS DEODARA
- QLA - QUERCUS LAURIFOLIA

SMALL TREES:

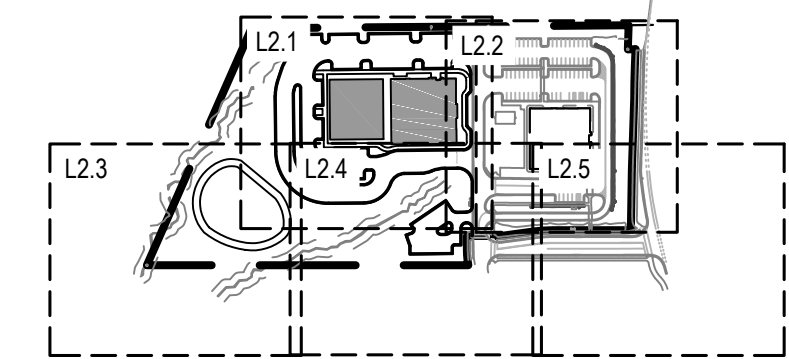
- IEC - ILEX 'EMERALD COLONNADE'
- PCA - PRUNUS CAROLIANA
- JVB - JUNIPERUS VIRGINIANA 'BRODIE'
- OFR - OSMANTHUS FRAGRANS
- MVI - MAGNOLIA VIRGINIANA
- CCA - CERCIS CANADENSIS
- PCH - PISTACIA CHINENSIS
- CBE - CARPINUS BETULUS

SHRUBS AND SOD:

- AGR - ABELIA X GRANDIFLORA
- AZA - AZALEA AUTUMN MAJESTY'
- BMW - BUXUS MICROPHYLLA 'WINTERGREEN'
- CSA - CAMELLIA SASANQUA
- CHD - CEPHALOTAXUS HARRINGTONIA 'PROSTRATA'
- DCG - DISTYLUM MYRICOIDES 'CINNAMON GIRL'
- DML - DISTYLUM LINEBACKER
- LCD - LAGERSTROEMIA 'CHERRY DAZZLE'
- HPL - HYDRANGEA PANICULATA 'LITTLE LAMB'
- IVB - ILEX VOMITORIA 'BORDEAUX'
- SLP - SPIRAEA 'ANTHONY WATERER'
- ICN - ILEX CORNUTA 'NEEDELEPOINT'
- VAC - VIBURNUM AWABUKI 'CHINDO'
- FIN - FORSYTHIA X INTERMEDIA
- LAWN

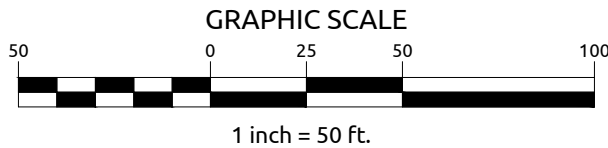
LANDSCAPE SCREEN LEGEND:

- TYPE 'A-20' LANDSCAPE SCREEN
- TYPE 'C-75' LANDSCAPE SCREEN

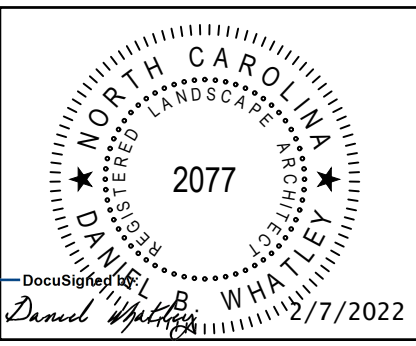


KEY MAP

SCALE: 1" = 400'



Job No.	09210285
Date	2021.07.30
Checked By	WR
Drawn By	WR
Designer	WR



Revisions		
1	TOWN COMMENTS 1	2021.09.24
2	TOWN COMMENTS 2	2021.10.29
3	TOWN COMMENTS 3	2021.11.10
4	TOWN COMMENTS 4	2022.02.04
5	TOWN COMMENTS 5	2022.02.07

1. ALL STREET TREES SHALL BE LOCATED A MINIMUM OF 25' FROM THE BASE OF ALL STREET LIGHT POLES.
2. TREES SHALL BE NURSERY GROWN, TYPICAL OF THEIR SPECIES OR VARIETY, FRESHLY DUG NORMALLY SHAPED, HEAVY AND WELL BRANCHED, WITH FULL FOLIAGE. ALL TREES SHALL HAVE HEALTHY, WELL DEVELOPED SYSTEMS. TREES MUST BE SELF SUPPORTING, WITH STRAIGHT TRUNKS AND WITH LEADERS. INTACT. ALL WOUNDS PRESENT AT THE TIME OF DIGGING MUST EXHIBIT CALLUSING, WITH THE BARK AT THE EDGES OF ANY SUCH WOUND TIGHT AND INTACT. NO ABRASIONS OR UNHEALED CUTS ARE ALLOWED ON THE TRUNKS OF TREES. ALL TREES FURNISHED SHALL BE FREE OF ANY INSECT INFESTATIONS.
3. ALL TREES TO BE PLANTED SHALL MEET TREE REQUIREMENTS MUST BE SEASONALLY MATCHED SPECIMENS. THE DEVELOPER SHALL PROVIDE WRITTEN CERTIFICATION THAT THE PLANT MATERIAL MEETS THIS QUALITY REQUIREMENT AT THE TIME OF INSTALLATION.
4. IN ORDER TO MAINTAIN A HIGH QUALITY OF URBAN STREETSCAPE, EACH RESIDENTIAL STREET MUST CONTAIN A LEAST (2) SPECIES OF TREES WITH A SIMILAR CANOPY. NO MORE THAN 50% OF A SINGLE SPECIES SHALL BE USED ON EACH SIDEWALK OR CURB.
5. CENTERED IN THE PUBLIC RIGHT-OF-WAY WITHIN THE UTILITY STRIP BETWEEN THE SIDEWALK AND CURB OR CENTERED BETWEEN RIGHT-OF-WAY LINE AND CURB IF NO SIDEWALK IS PRESENT.
6. WHERE NOTE #5 IS DEEMED NOT FEASIBLE AND PRACTICAL, THE DIRECTOR SHALL HAVE THE AUTHORITY TO MODIFY AND APPROVE ACCEPTABLE ALTERNATIVES TO STREET TREE REQUIREMENTS.
7. STREET TREES MUST BE INSTALLED PRIOR TO THE CERTIFICATE OF UDO COMPLIANCE FOR THE DWELLING ON THE LOT WHERE THE TREE IS LOCATED.
8. AT THE TIME OF INSTALLATION THE NURSERY TAGS MUST REMAIN ON THE STREET TREES AND WRITTEN STATEMENT MUST BE SUBMITTED TO THE DEPARTMENT OF PLANNING & ZONING TO CERTIFY THE CORRECT SPECIES OF TREES HAVE BEEN INSTALLED.
9. ALL REPLACEMENT AND MAINTENANCE SHALL BE IN ACCORDANCE WITH TOWN POLICY STATEMENT #039.
10. NO SPECIES OF PLANT WITHIN ITS GIVEN CATEGORY SHALL EXCEED 25% OF THE TOTAL QUANTITY OF PLANTS WITHIN THAT CATEGORY.
11. FOR ALL LANDSCAPE SCREENING EXISTING VEGETATION CAN BE USED TO SATISFY THE PUV REQUIREMENT.
12. TREE SURVEY WILL BE PROVIDED AT TIME OF PRELIMINARY PLAN OR DEVELOPMENT PLAN TO CONFIRM REQUIRED PUV HAS BEEN ACHIEVED WITH EXISTING VEGETATION.
13. FINAL DESIGN OF THE PERMIT YARDS SHALL USE THE DETAIL BUT THAT MODIFICATIONS CAN BE MADE TO ACCOMMODATE SITE FEATURES AS NECESSARY.
14. STREET TREES ARE REQUIRED AT DEVELOPMENT PLAN OR PRELIMINARY SURVEY.
15. STREET TREE SPECIES SHALL ADHERE TO THE RECOMMENDATION OF THE TOWN OF HOLLY SPRINGS PROFFERED MATERIALS LIST 12.01.
16. STREET TREE LOCATIONS SHALL BE SHOWN WITH APPROVED LIGHTING FIXTURE LOCATIONS SHALL BE POSITIONED AS TO NOT INTERFERE WITH ANY LIGHTING FIXTURES OR ANY SITE DISTANCE TRIANGLES.
17. SITE DISTANCE. ANY STREET TREE THAT FALLS WITHIN A SIGHT DISTANCE TRIANGLE SHALL BE REMOVED AS A SINGLE STEM TREE. STREET TREE MUST BE LIMBED UP TO CREATE A CLEAR ZONE BENEATH THE CANOPY FROM THE FINISHED GRADE TO A HEIGHT OF 8 FEET.
18. CONTRACTOR TO FIELD ADJUDICATE TREES SUCH THAT CONFLICTS WITH UTILITIES ARE MINIMIZED TO THE FULLEST EXTENT POSSIBLE.
19. ALL PREVIOUS CONDITIONS OF CAROLINA SPRINGS PLANNED UNIT DEVELOPMENT SHALL BE APPLIED TO ANY DEVELOPMENT UNDER ANY CONDITIONS THAT DESCRIBES FEE OR FEE-IN-LIEU TO BE PAID SHALL NOW COMPLY WITH THE CURRENT AMOUNTS DUE PURSUANT TO THE TOWN'S CURRENT ANNUAL BUDGET OR ANY UNEXPIRED DEVELOPMENT AGREEMENT.

1. ALL REQUIRED YARDS AND BUFFERYARDS SHALL BE LANDSCAPED IN COMPLIANCE WITH THE REQUIREMENTS IN TABLE 7.01 C - TYPE AND PLANT UNIT VALUE OF REQUIRED LANDSCAPING.
2. ALLOW THOROUGHFARES, TREES SHALL BE PLANTED SO AS TO CREATE THE VISUAL APPEARANCE OF STREET TREES AS FOLLOWS:
 - 2.1. DECIDUOUS TREES AS SPECIFIED IN SECTION 12.01 - PREFERRED LANDSCAPE MATERIALS OF THE TOWN OF HOLLY SPRINGS 'DEVELOPMENT PROCEDURES MANUAL' OR AS FURTHER SPECIFIED IN THE TOWN OF HOLLY SPRINGS COMPREHENSIVE PLAN THOROUGHFARE PLANTING PLAN.
 - 2.2. WHERE EXISTING ONE UTILITIES INTERFERE WITH PART OF THE LANDSCAPE AREA, THE LARGE TREE REQUIREMENT MAY BE SUBSTITUTED BY INSTALLING SMALL DECIDUOUS TREES.
3. REQUIREMENTS:
 - LARGE DECIDUOUS TREES = 2" CAL. (40' O.C. ON AVERAGE)
 - SMALL DECIDUOUS TREES = 1" CAL. (30' O.C. ON AVERAGE)
4. ALL TREES SHALL BE LOCATED A MINIMUM OF 50' FROM THE POINT OF TANGENCY OF CURB RADI AT STREET INTERSECTIONS AND OUTSIDE OF SITE DISTANCE TRIANGLES IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS 'ENGINEERING DESIGN & CONSTRUCTION STANDARDS'.
5. ALL TREES SHALL BE LOCATED 25' FROM THE BASE OF ALL LIGHT POLES.
6. ALL TREES SHALL BE LOCATED WITHIN 5' OF THE RIGHT-OF-WAY LINE ON THE PRIVATE PROPERTY SIDE.
7. AT THE TIME OF INSTALLATION, THE NURSERY TAGS MUST REMAIN ON THE TREES AND A WRITTEN STATEMENT MUST BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING TO CERTIFY THAT THE CORRECT SPECIES OF TREE(S) HAS BEEN INSTALLED.
8. TREES SHALL BE INSTALLED WITH ROOT GUARDS IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS 'ENGINEERING DESIGN & CONSTRUCTION STANDARDS'.

1. THE CONTRACTOR SHALL TAKE PROPER PRECAUTIONS NOT TO DAMAGE EXISTING PLANTS, FACILITIES AND STRUCTURES THAT ARE TO REMAIN. THE CONTRACTOR SHALL RESTORE DISTURBED AREAS TO THEIR ORIGINAL CONDITION TO THE SATISFACTION OF THE LANDSCAPE ARCHITECT AND OWNER. ADJACENT STREETS AND SIDEWALKS SHALL BE MAINTAINED IN A CLEAN CONDITION, MUD AND DUST-FREE.
2. ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH MUNICIPAL STANDARDS AND SPECIFICATIONS, AND NCDOT, STANDARDS AND SPECIFICATIONS IF APPLICABLE.
3. NO CHANGES TO ANY ASPECT OF APPROVED SITE PLAN INCLUDING BUT NOT LIMITED TO LANDSCAPING, GRADING, BUILDING ELEVATIONS, LIGHTING, OR UTILITIES SHALL BE MADE WITHOUT THE APPROVAL OF THE GOVERNING MUNICIPALITY.
4. ALL PLANTS PROVIDED BY THE CONTRACTOR SHALL MEET OR SURPASS THE SPECIFICATIONS GIVEN IN THE PLANT TABLE AND CONFORM TO THE AMERICAN STANDARD OF NURSERY STOCK, 1960-1975 IN REGARD TO SIZING, GROWING AND BABBING. PLANTING PLANTS SHALL BE FULL AND HEAVY, AND IN HEALTHY CONDITION AT THE TIME OF PLANTING. LANDSCAPE ARCHITECT SHALL REJECT ANY PLANT NOT MEETING THESE GUIDELINES AND REQUIRE REPLACEMENT.
5. ALL PLANTS ARE TO BE FULLY GUARANTEED (INCLUDING LABOR AND MATERIALS) FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM FINAL ACCEPTANCE.
6. [PLANTING SHALL FOLLOW NCDOT STANDARD SPECIFICATIONS AS OUTLINED IN SECTION 1670. PLANTING SEASON IS OCTOBER 15 - MARCH 15, UNLESS OTHERWISE NOTED OR APPROVED BY NCDOT ENGINEER.] ALL PLANTS THAT ARE UNABLE TO BE IMMEDIATELY PLANTED SHALL BE STORED IN A PROTECTED AREA OUT OF DIRECT SUN AND WIND. PLANTS SHALL BE EVENLY AND CONSISTENTLY WATERED, AS NEEDED, TO PREVENT DRYING OF ROOTS. ROOT BALLS OF B&B STOCK SHALL BE COVERED WITH AT LEAST 4 INCHES OF HARDWOOD MULCH TO MAINTAIN MOISTURE IN ROOTS.
7. THE CONTRACTOR SHALL VERIFY ALL PLANT QUANTITIES SHOWN ON PLANS AND CLARIFY ANY DISCREPANCIES WITH LANDSCAPE ARCHITECT PRIOR TO PURCHASING PLANTS. CONTRACTOR SHALL TAG ALL TREES (AS DESIGNATED IN THE MASTER PLANT LIST) AT THE NURSERY FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO PURCHASING PLANTS.
8. LANDSCAPE ARCHITECT SHALL BE NOTIFIED IN WRITING OF ANY PROPOSED PLANT SUBSTITUTIONS BY THE CONTRACTOR. NO SUBSTITUTIONS SHALL BE MADE UNDER ANY CIRCUMSTANCES WITHOUT PRIOR APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
9. ALL PLANTS AND PLANTING BEDS ARE TO BE LOCATED BY SCALED DIMENSIONS FROM BUILDINGS, CURBS, PAVEMENTS, ETC. SPECIFIC ATTENTION SHALL BE GIVEN TO ENSURE THAT PLANTS INDIVIDUALLY SHOWN ON THE PLAN ARE ACCURATELY LOCATED. LOCATION OF ALL PLANTS SHALL BE REVIEWED IN THE FIELD BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE FOR REVIEW.
10. A PRE-EMERGENT HERBICIDE SHALL BE APPLIED TO ALL NEW PLANTING BEDS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND ALLOWED TO DISSIPATE PRIOR TO INSTALLATION OF ANY PLANT MATERIAL.

1. ALL TREES THAT ARE TO REMAIN, WITHIN OR DIRECTLY ADJACENT TO THE LIMITS OF WORK, MUST BE PROTECTED WITH 6" TALL CHAIN LINK FENCE TO THE EXTENT OF THE TREE BOX OR THE DRIP LINE IN A PLANTING STRIP. THE DRIP LINE IS DEFINED AS THE GROUND AREA UNDER THE CANOPY OF THE TREE. FENCING IS TO BE INSTALLED PRIOR TO CONSTRUCTION, MAINTAINED THROUGHOUT, AND REMOVED ONLY AT THE END OF THE PROJECT.
2. NONE OF THE FOLLOWING SHALL OCCUR WITHIN THE ROOT ZONE OF A TREE WITHOUT PERMISSION OF LANDSCAPE ARCHITECT OR PROJECT ARBORIST: ALTERATION OR DISTURBANCE TO EXISTING GRADE; STAGING OR STORAGE OF CONSTRUCTION MATERIALS, EQUIPMENT, SOIL OR DEBRIS; TRENCHING; OR DISPOSAL OF ANY LIQUIDS.
3. NO HEAVY EQUIPMENT SHALL BE USED WITHIN THE DRIP LINE OF AN EXISTING TREE.
4. APPROVED EXCAVATIONS WITHIN THE DRIP LINE SHALL PROCEED WITH CARE BY USE OF HAND TOOLS OR EQUIPMENT THAT WILL NOT CAUSE INJURY TO TREE TRUNKS, BRANCHES AND ROOTS.
5. NO ROOTS GREATER THAN 2 INCHES IN DIAMETER SHALL BE CUT WITHOUT PERMISSION OF LANDSCAPE ARCHITECT OR PROJECT ARBORIST. EXPOSED ROOTS 2 INCHES AND LARGER IN DIAMETER SHALL BE WRAPPED IN BURLAP OR OTHER APPROVED MATERIAL AND KEPT MOIST AT ALL TIMES.
6. IF THERE ARE ANY TREE CONFLICTS ON THIS JOB SITE, PERMIT HOLDER MUST SUSPEND ALL WORK THAT CONTRIBUTES TO THE CONFLICT AND IMMEDIATELY CONTACT LANDSCAPE ARCHITECT OR PROJECT ARBORIST FOR DIRECTION AND CLEARANCE TO CONTINUE THE CONFLICTING WORK.
7. TREES THAT ARE PROTECTED SHALL BE THOROUGHLY WATERED AS REQUIRED TO KEEP ROOT BALLS FROM DRYING OUT, ESPECIALLY BETWEEN APRIL THROUGH SEPTEMBER.

11. ALL LANDSCAPE AREAS ARE TO BE GRADED FOR POSITIVE DRAINAGE AND TO ENSURE NO STANDING WATER. SEE GRADING PLAN FOR SPECIFIC GRADING INFORMATION.
12. ESTABLISH AND MAINTAIN TOP OF GRADE ABOVE ADJACENT CURBS, WALKWAYS AND OTHER HARDSCAPE AREAS TO ALLOW FOR INSTALLATION OF MULCH.
13. ALL PLANTING BEDS ARE TO BE COVERED WITH MULCH TO A MINIMUM DEPTH OF 3 INCHES. MULCH SHALL BE DARK BROWN, DESIGNER-GRADE, DOUBLE-SHREDDED HARDWOOD. NO PINE STRAW IS PERMITTED. CONTRACTOR TO SUBMIT A SAMPLE FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO PURCHASE AND DELIVERY TO PROJECT SITE.
14. FINISH OFF 2'-4" CLEAR ZONE AROUND TREES WITH A 3" LAYER OF MULCH, BUT DO NOT PLACE UP AGAINST OR MOUND AROUND THE ROOT FLARE.
15. MIXED GROUND COVER AND PLANTS SPECIFIED FOR MASS PLANTINGS SHALL BE PLANTED IN GROUPS OF 3:1 AND LOCATIONS ARE REQUIRED TO PROVIDE A GENERAL MIXING OF SPECIES. DO NOT PLANT IN ROWS OR REPETITIVE PATTERNS UNLESS OTHERWISE DIRECTED.
16. ALL TREES ADJACENT TO PEDESTRIAN WALKWAYS AND IN SIGHT TRIANGLES SHALL BE UNDER-TRIMMED SUFFICIENTLY TO ALLOW CLEAR SIGHT AND PEDESTRIAN ACCESS UP TO 6 FEET ABOVE SIDEWALK ELEVATION. ALL PRUNING SHALL BE PERFORMED BY A CERTIFIED ARBORIST, AND ADHERE TO THE ANSI A300 PRUNING STANDARD. PRUNING CUTS ARE TO BE DELIBERATE AND TARGETED ONLY TO THE NECESSARY BRANCHES IN ORDER TO SATISFY SIGHT AND CLEARANCE REQUIREMENTS WHILE MAINTAINING THE INTEGRITY OF THE TREES.
17. CONTRACTOR IS RESPONSIBLE FOR FULLY MAINTAINING ALL PLANTING (INCLUDING, BUT NOT LIMITED TO WATERING, MULCHING, SPRAYING, FERTILIZING, ETC.) OF THE PLANTING AREAS UNTIL FINAL ACCEPTANCE.
18. ANY PLANT WHICH DIES, TURNS BROWN OR DEFOLIATES PRIOR TO FINAL ACCEPTANCE OF THE WORK SHALL BE PROMPTLY REMOVED FROM THE SITE AND REPLACED WITH MATERIAL OF THE SAME SPECIES, IN ACCORDANCE WITH THE APPROPRIATE PLANTING SPECIES, QUANTITY AND SIZE TO MEET PLANT SPECIFICATIONS.
19. UTILITIES SHOWN ON THE LANDSCAPE DRAWINGS ARE FOR REFERENCE ONLY. SEE UTILITY DRAWINGS FOR EXISTING AND PROPOSED UTILITY LOCATIONS. THE CONTRACTOR MUST LOCATE AND VERIFY ALL SUCH INFORMATION, INCLUDING INFORMATION NOT SHOWN ON THE PLANS, BY CONTACTING THE INDIVIDUAL UTILITY COMPANY & INVESTIGATING THE SITE TO DETERMINE THE EXACT LOCATION OF UTILITY LINES AND STRUCTURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, AT HIS OWN EXPENSE, AND TO THE SATISFACTION OF THE PROJECT OWNER AND THE UTILITY OWNER, DAMAGE TO ANY UTILITY CAUSED BY HIS WORK. HE SHALL IMMEDIATELY NOTIFY THE OWNER AND THE UTILITY OWNER OF ANY DAMAGE TO ANY UTILITY BY HIS OPERATION.
20. THE SITE SHALL BE STABILIZED AND SEEDED PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY (CO).
21. ALL ABOVE-GROUND HVAC EQUIPMENT AND UTILITY DEVICES (TO INCLUDE, BUT NOT LIMITED TO TELEPHONE AND CABLE PEDESTALS, ELECTRICAL TRANSFORMERS, BACKFLOW-DISC HOBOTX, ETC) SHALL BE SCREENED FROM OFF-SITE VIEW BY EVERGREEN SHRUBS, FENCE, OR WALL.

1. PERFORM SOIL TESTS FROM EVENLY SPACED SAMPLES IN ORDER TO CALIBRATE FERTILIZER AND LIME NEEDS.
2. RIP AND LOOSEN SUBGRADE OF PLANTED AREAS TO A MINIMUM OF DEPTH OF 18" REMOVE STONES AND ANY OTHER DEBRIS OVER $\frac{1}{2}$ " IN ANY DIMENSION. LIMIT PREPARATION TO AREAS WHICH WILL BE PLANTED PROMPTLY AFTER PREPARATION.
 - INCORPORATE 6 INCHES OF BLENDED SOIL INTO THE AREAS TO BE PLANTED. PLACE $\frac{1}{2}$ " DEPTH OF SOIL OVER THE AREA AND WORK IT INTO THE TOP OF THE LOOSENED SUBGRADE TO CREATE A TRANSITION LAYER AND THEN PLACE ANOTHER $\frac{1}{2}$ " DEPTH OF 50/50 SOIL.
3. SPREAD AMENDMENTS BASED ON SOIL SAMPLE RESULTS INCLUDING SLOW RELEASE NITROGEN AND TRIPLE SUPERPHOSPHATE FERTILIZER, LIME, AND ORGANIC MATTER.
4. IN HEAVY CLAY SOILS WITH LOW CEC PROVIDE A WEAK ACID OR A COMPARABLE PRODUCT TO INCREASE CATION EXCHANGE CAPACITY OF THE SOIL.
 - IN HEAVY CLAY SOILS ADD 1 INCH OF STALITE AND INCORPORATE INTO THE TOP 4 INCHES OF SOIL.
5. GRADE AREAS TO A SMOOTH AND EVEN SURFACE WITH LOOSE, UNIFORMLY FINE TEXTURE. RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS, AS REQUIRED. LIMIT FINE GRADING TO AREAS THAT CAN BE PLANTED IMMEDIATELY. LIMIT FOOT TRAFFIC.

1. PERFORM SOIL TESTS FROM EVENLY SPACED SAMPLES IN ORDER TO CALIBRATE FERTILIZER AND LIME NEEDS.
2. RIP AND LOOSEN SUBGRADE OF LAWN AREAS TO A MINIMUM OF DEPTH OF 6". REMOVE STONES AND ANY OTHER DEBRIS OVER 1 1/2" IN ANY DIMENSION. LIMIT PREPARATION TO AREAS WHICH WILL BE PLANTED PROMPTLY AFTER PREPARATION.
3. PLACE 3" DEPTH OF SCREENED TOP SOIL OVER THE LAWN AREA AND WORK IT INTO THE TOP OF THE LOOSENED SUBGRADE TO CREATE A TRANSITION LAYER. AND THEN PLACE ANOTHER 3" DEPTH OF SCREENED TOP SOIL.
4. SPREAD AMENDMENTS BASED ON SOIL SAMPLE RESULTS INCLUDING FERTILIZER, LIME, AND ORGANIC MATTER.
5. IN HEAVY CLAY SOILS WITH LOW CEC PROVIDE HUMIC ACID OR A COMPARABLE PRODUCT TO INCREASE CATION EXCHANGE CAPACITY OF THE SOIL.
6. ALLOW FOR SOIL THICKNESS WHEN FINE GRADING.
7. GRADE LAWN AREAS TO A SMOOTH AND EVEN SURFACE WITH LOOSE, UNIFORMLY FINE TEXTURE, ROLL, RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS, AS REQUIRED. LIMIT FINE GRADING TO AREAS THAT CAN BE PLANTED IMMEDIATELY. LIMIT FOOT TRAFFIC.
8. MOISTEN PREPARED LAWN AREAS BEFORE PLANTING IF SOIL IS DRY. WATER THOROUGHLY AND ALLOW SURFACE TO DRY BEFORE PLANTING LAWNS. AVOID CREATING MUDDY CONDITIONS.
9. INSTALL FRESH CUT "TUFF" BERMUDA SOD IN LAWN AREAS SPECIFIED IN THE LANDSCAPE PLAN TO BE SODDED.
10. SOD TO BE INSTALLED IN STRAIGHT LINES WITH SHOVED JOINTS BETWEEN EACH PIECE. GAPS SHALL BE 3/4" OR LESS.
11. SOD ON SLOPE TO BE INSTALLED PERPENDICULAR TO THE SLOPE.
12. WATER SOD THOROUGHLY WITH A FINE SPRAY IMMEDIATELY AFTER PLANTING.
13. WATER NEWLY SODDED AREAS AND KEEP MOIST UNTIL NEW GRASS IS ESTABLISHED.

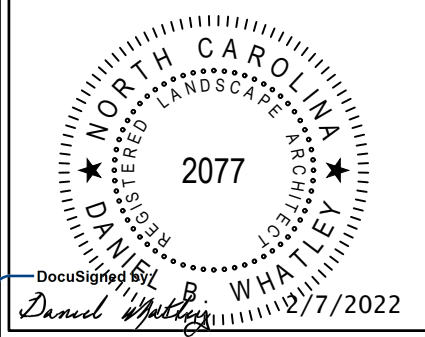
14. PERFORM SOIL TESTS FROM EVENLY SPACED SAMPLES IN ORDER TO CALIBRATE FERTILIZER AND LIME NEEDS.
15. RAKE SEED LIGHTLY INTO TOP 2" OF SOIL, ROLL LIGHTLY AND WATER WITH FINE SPRAY. PROTECT SEEDED AREAS BY LIGHTLY SPREADING WHEAT STRAW MULCH, SPREAD BY HAND, BLOWER OR OTHER SUITABLE EQUIPMENT TO FORM A CONTINUOUS BLANKET IN LOOSE THICKNESS OVER SEEDED AREAS.
17. ANCHOR STRAW MULCH BY CRIMPING INTO SOIL WITH SUITABLE MECHANICAL EQUIPMENT.
18. ANCHOR STRAW MULCH WITH NETTING FOR SLOPES.
19. WATER SEED THOROUGHLY WITH A FINE SPRAY IMMEDIATELY AFTER PLANTING.
20. WATER NEWLY SEEDED AREAS AND KEEP MOIST UNTIL NEW GRASS IS ESTABLISHED.

21. THE PROPERTY OWNER, INCLUDING SUBSEQUENT OR SUCCESSOR OWNER, AND THEIR AUTHORIZED AGENTS ARE JOINTLY AND SEVERALLY RESPONSIBLE FOR MAINTENANCE OF LANDSCAPING ON THE PROPERTY ON A CONTINUING BASIS FOR THE LIFE OF THE DEVELOPMENT. AN REQUIRED LANDSCAPING SHALL BE MAINTAINED THROUGHOUT THE LIFETIME OF THE PLANTINGS. SUCH MAINTENANCE SHALL INCLUDE, BUT IS NOT LIMITED TO, MOVING, EDGING, PRUNING, FERTILIZING, WATERING, WEEDING AND OTHER ACTIVITIES COMMON TO THE MAINTENANCE OF LANDSCAPING.
22. LANDSCAPED AREAS SHALL BE KEPT FREE OF TRASH, LITTER, WEEDS AND OTHER MATERIALS OR PLANTS NOT A PART OF THE LANDSCAPING.
23. REQUIRED LANDSCAPING SHALL BE MAINTAINED IN PERPETUITY. AFTER INITIAL INSTALLATION, THE OWNER OF THE PROPERTY UPON WHICH THE LANDSCAPING IS INSTALLED SHALL MAINTAIN ALL REQUIRED PLANTINGS IN A HEALTHY, VIGOROUS AND ATTRACTIVE STATE.
24. ALL REQUIRED PLANT MATERIAL SHALL BE MAINTAINED IN A HEALTHY, GROWING CONDITION AS IS APPROPRIATE FOR THE SEASON. PLANT MATERIALS WHICH EXHIBIT EVIDENCE OF INSECT PESTS, DISEASE AND/OR DAMAGE SHALL BE APPROPRIATELY TREATED. DEAD PLANTS SHALL BE PROMPTLY REMOVED AND REPLACED WITHIN THE NEXT PLANTING SEASON AFTER REMOVAL. IF REPLACEMENT IS NECESSARY, ALL PLANTS AND OTHER NON-LIVING LANDSCAPE MATERIALS SHALL BE EQUAL IN SIZE, DENSITY AND APPEARANCE AS ORIGINALLY REQUIRED AT THE TIME OF THE APPROVAL OF THE DEVELOPMENT PERMIT.

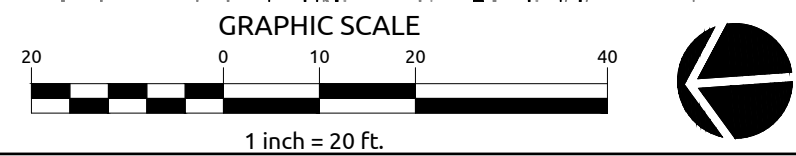
DEVELOPMENT PLANS
FOR PROPOSED SCHOOL EXPANSION
112 HOLLY SPRINGS NEW HILL ROAD
11244 HOLLY SPRINGS NEW HILL ROAD
HOLLY SPRINGS, NC 27540

LANDSCAPE GENERAL CONDITIONS

Job No. 09210285	
Date 2021.07.30	Drawn By WR
Checked By WR	Designer WR



Revisions		
1	TOWN COMMENTS 1	2021.09.24
2	TOWN COMMENTS 2	2021.10.25
3	TOWN COMMENTS 3	2021.11.10
4	TOWN COMMENTS 4	2022.02.04
5	TOWN COMMENTS 5	2022.02.07



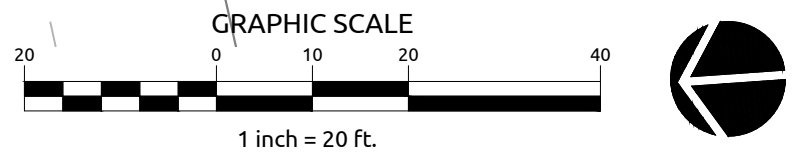
115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

HOLLY SPRINGS, NC 27540

DETAILED LANDSCAPE PLAN

Sheet No.

L2.1



EXISTING PLANTINGS ARE APPROVED AND INSTALLED PER 17-DP-04-A01.

115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

HOLLY SPRINGS, NC 27540

DETAILED LANDSCAPE PLAN

Sheet No.

L2.2



PLANT SYMBOL KEY:

LARGE DECIDUOUS TREES:

- ABU - ACER BUERGERIANUM
- GBA - GINKGO BILOBA 'AUTUMN GOLD'
- QLY - QUERCUS LYRATA
- QNU - QUERCUS NUTTALLII
- UAP - ULMUS AMERICANA 'PRINCETON'
- QNI - QUERCUS NIGRA
- MGL - METASEQUOIA GLYPTOSTROBODES
- CJA - CRYPTOMERIA JAPONICA
- CDE - CEDRUS DEODARA
- QLA - QUERCUS LAURIFOLIA

SMALL TREES:

- IEC - ILEX X 'EMERALD COLONNADE'
- PCA - PRUNUS CAROLIANA
- JVB - JUNIPERUS VIRGINIANA 'BRODIE'
- OFR - OSMANTHUS FRAGRANS
- MVI - MAGNOLIA VIRGINIANA
- CCA - CERIS CANADENSIS
- PCH - PISTACIA CHINENSIS
- CBE - CARPINUS BETULUS

SHRUBS AND SOD:

- AGR - ABELIA X GRANDIFLORA
- AZA - AZALEA 'AUTUMN MAJESTY'
- BMW - BUXUS MICROPHYLLA 'WINTERGREEN'
- CSA - CAMELLIA SASANKUA
- CHD - CEPHALOTAXUS HARRINGTONIA 'PROSTRATA'
- DCG - DISTYLUM MYRICOIDES 'CINNAMON GIRL'
- DML - DISTYLUM 'LINEBACKER'
- LCD - LAGERSTROEMIA 'CHERRY DAZZLE'
- HPL - HYDRANGEA PANICULATA 'LITTLE LAMB'
- IVB - ILEX VOMITORIA 'BORDEAUX'
- SLP - SPIRAEA 'ANTHONY WATERER'
- ICN - ILEX CORNUTA 'NEEDLEPOINT'
- VAC - VIBURNUM AWABUKI 'CHINDO'
- FIN - FORSYTHIA X INTERMEDIA
- LAWN

LANDSCAPE SCREEN LEGEND:

- TYPE 'A-20' LANDSCAPE SCREEN
- TYPE 'C-75' LANDSCAPE SCREEN

KEY MAP

SCALE: 1" = 40'

WithersRavenel

Engineers | Planners | Surveyors

115 MacKenen Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

DEVELOPMENT PLANS
FOR PROPOSED SCHOOL EXPANSION
112 HOLLY SPRINGS NEW HILL ROAD
11244 HOLLY SPRINGS NEW HILL ROAD
HOLLY SPRINGS, NC 27540

DETAILED LANDSCAPE
PLAN

Job No.	09210285
Date	2021.07.30
Checked By	WR
Drawn By	WR
Designer	WR

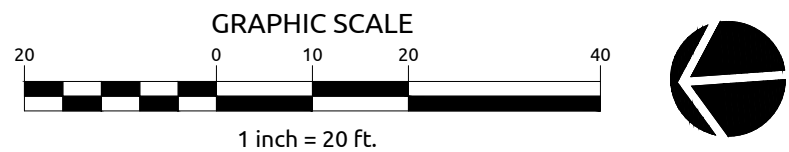
2077

2/7/2022

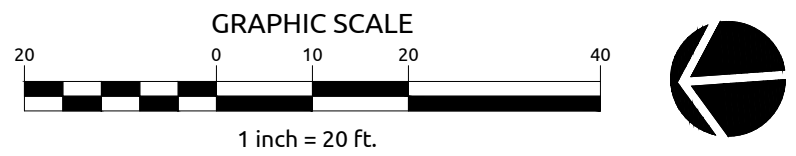
Revisions
1 TOWN COMMENTS 1 2021.09.24
2 TOWN COMMENTS 2 2021.10.29
3 TOWN COMMENTS 3 2021.11.10
4 TOWN COMMENTS 4 2022.02.04
5 TOWN COMMENTS 5 2022.02.07

Sheet No.

L2.3



L2.4



EXISTING PLANTINGS ARE APPROVED AND INSTALLED PER 17-DP-04-A01.

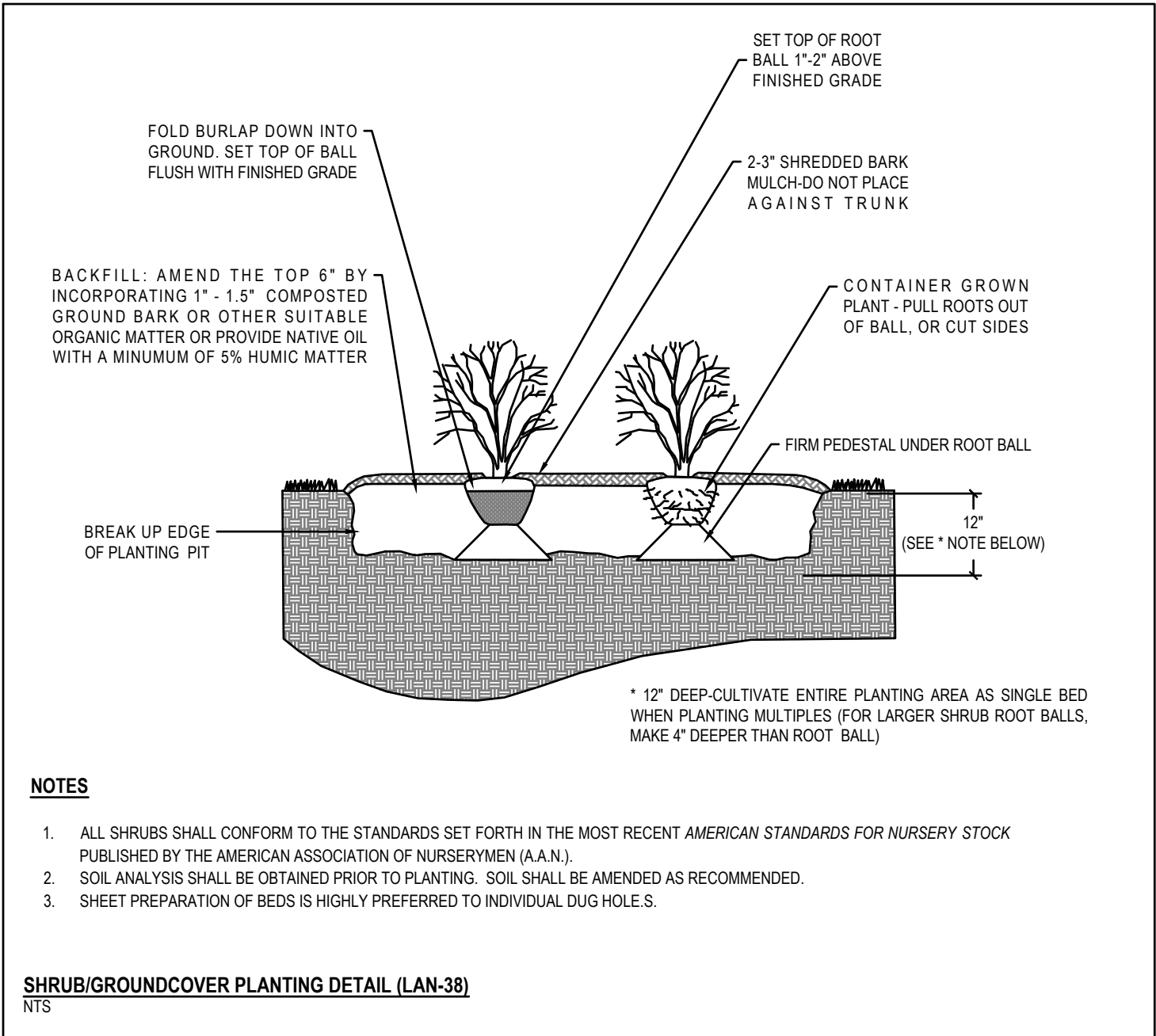
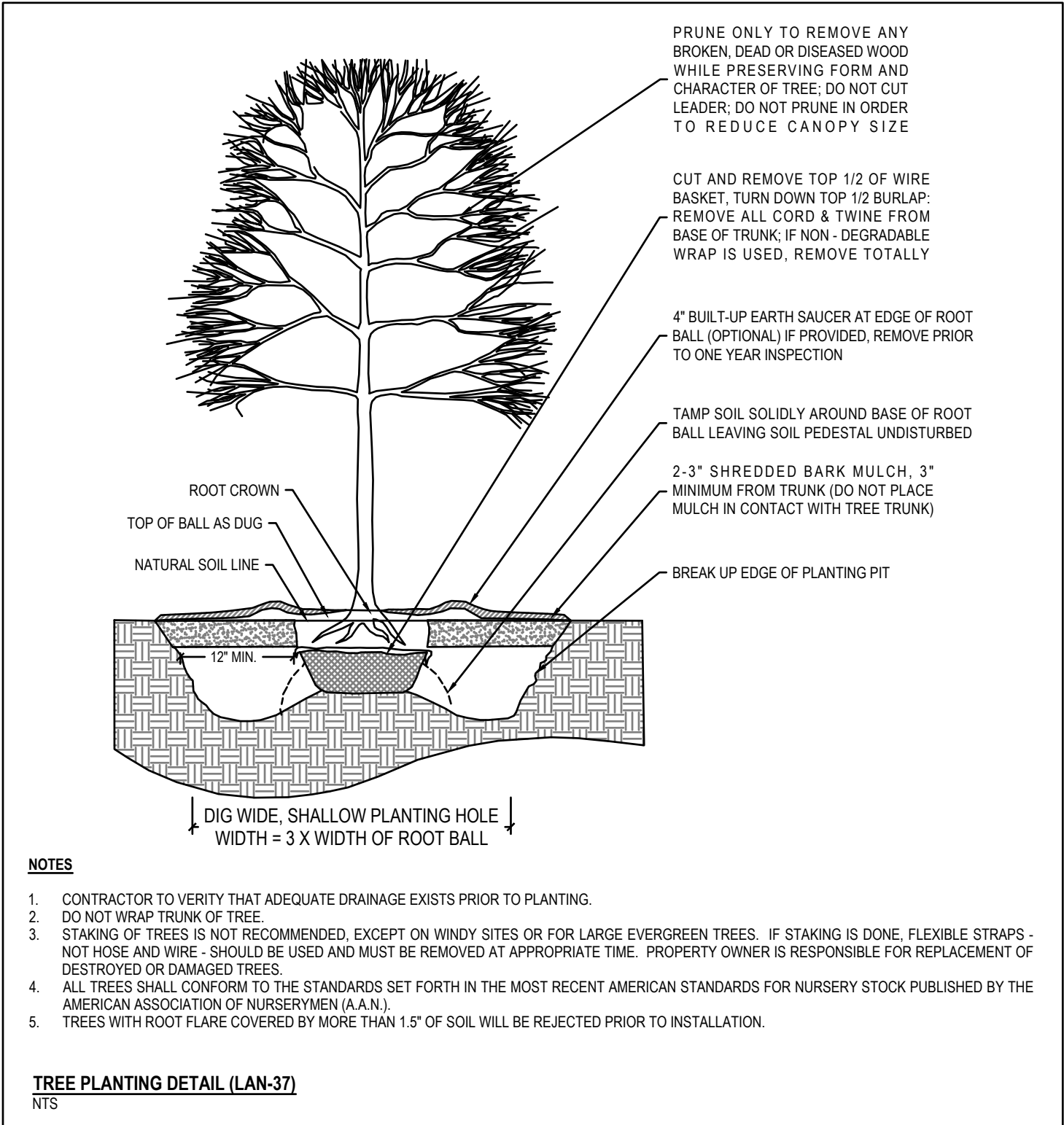
115 MacKenan Drive | Cary, NC 27511 | t: 919.469.3340 | license #: C-0832 | www.withersravenel.com

HOLLY SPRINGS, NC 27540

DETAILED LANDSCAPE PLAN

Sheet No.

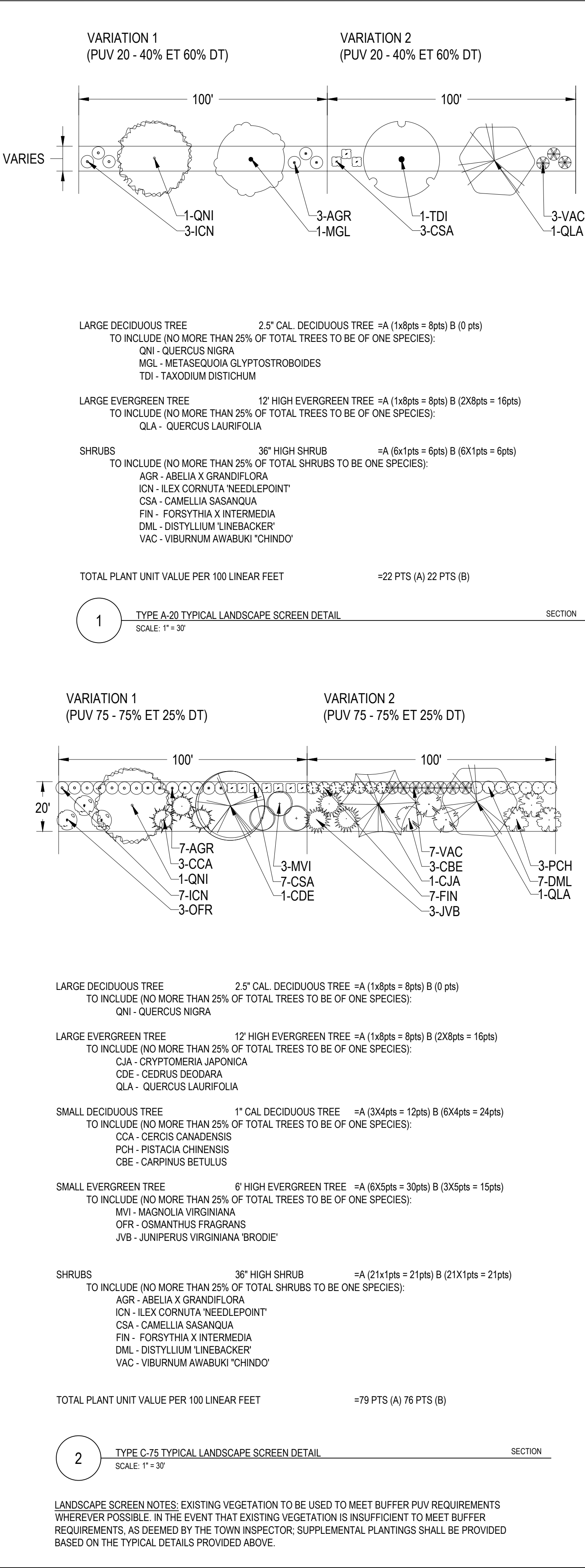
L2.5



*NUMBER OF PLANTS PER 100 S.F.				
	SPACING "D"	ROW "A"	PLANT S.F.	
ROWS "A"	6" o.c.	5.2'	4.61	
	8" o.c.	6.33'	2.60	
	10" o.c.	8.66'	1.66	
	12" o.c.	10.4'	1.15	
	15" o.c.	13.0'	0.73	
	18" o.c.	15.6'	0.51	
	24" o.c.	20.8'	0.29	
	30" o.c.	26.0'	0.18	
	36" o.c.	31.30'	0.12	
	4" o.c.	3.46'	* 7.25	
	5" o.c.	4.33'	* 4.61	
	6" o.c.	5.2'	* 3.20	
	8" o.c.	6.93'	* 1.80	
	10" o.c.	8.66'	* 1.16	

PLANT SPACING CHART

NTS



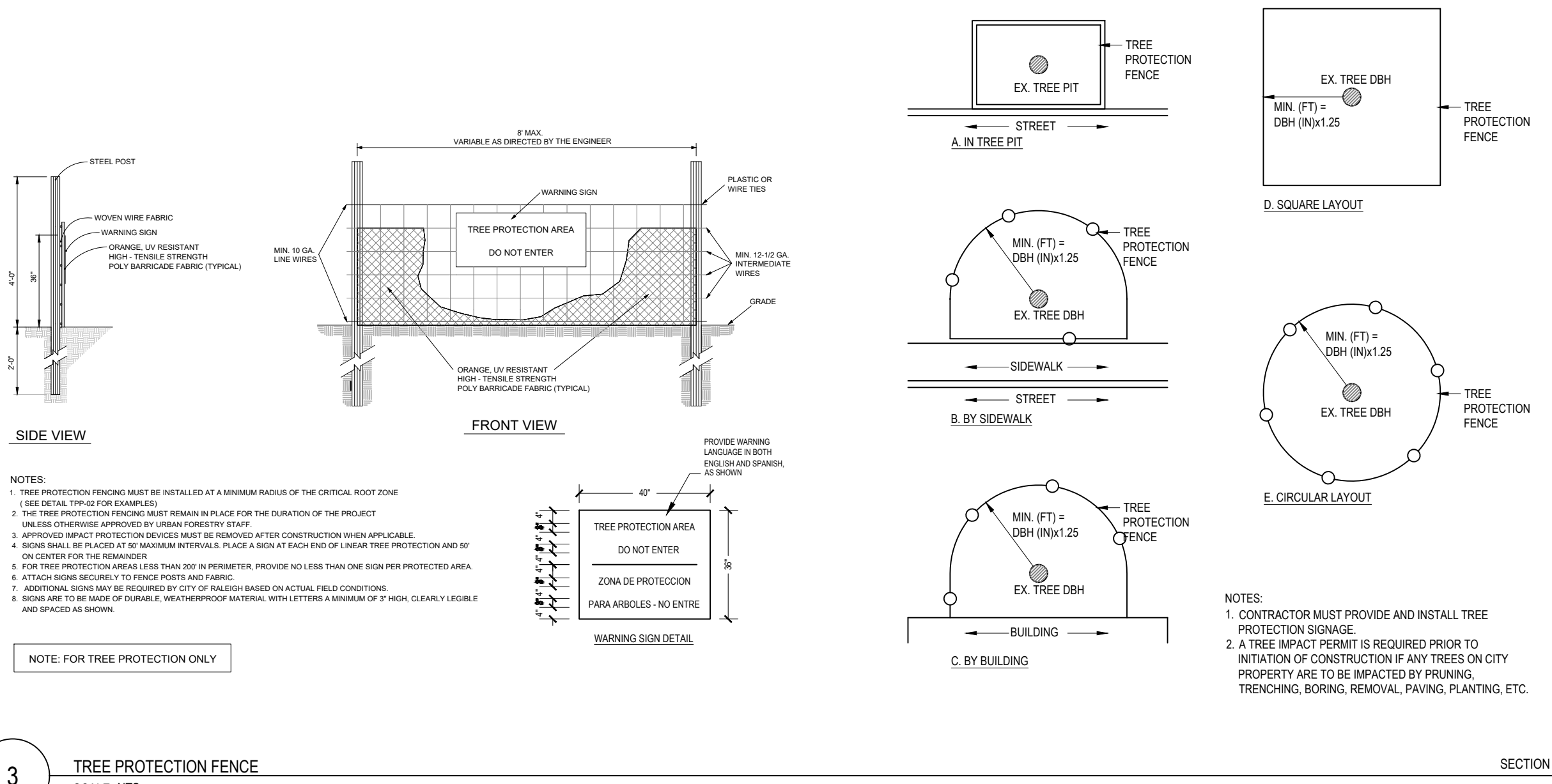
PLANT SCHEDULE								
QTY	KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES	PERCENTAGE
CANOPY TREES								
3	GBA	Ginkgo biloba 'Autumn Gold'	Madenhar Tree	B&B	2" CAL. MIN.	10' HT. MIN.	MATCHED	10.71%
5	QLY	Quercus lyrata	Overcup Oak	B&B	2" CAL. MIN.	10' HT. MIN.	MATCHED	17.86%
4	QNU	Quercus nuttallii	Nuttall Oak	B&B	2" CAL. MIN.	10' HT. MIN.	MATCHED	14.29%
5	ABU	Acer buergerianum	Trident Maple	B&B	2" CAL. MIN.	10' HT. MIN.	MATCHED	17.86%
4	UAP	Ulmus americana 'Princeton'	American Elm	B&B	2" CAL. MIN.	10' HT. MIN.	MATCHED	14.29%
1	UAP.2	Ulmus americana 'Princeton'	American Elm	B&B	3" CAL. MIN.	14' HT. MIN.	LIMBED UP CLEAR 6' HT.	3.57%
2	QNI	Quercus Nigra	Water Oak	B&B	2.5" CAL. MIN.	12' MIN. HT.	MATCHED	7.14%
1	MGL	Metasequoia glyptostroboides	Dawn Redwood	B&B	2.5" CAL. MIN.	12' MIN. HT.	MATCHED	3.57%
1	CJA	Cryptomeria japonica	Japanese Cedar	B&B	2" CAL. MIN.	12' MIN. HT.	MATCHED	3.57%
1	CDE	Cedrus deodara	Deodar Cedar	B&B	2" CAL. MIN.	12' MIN. HT.	MATCHED	3.57%
1	QLA	Quercus Laurifolia	Laurel Oak	B&B	2" CAL. MIN.	12' MIN. HT.	MATCHED	3.57%
SMALL EVERGREEN								
4	IEC	Ilex x 'Emerald Colonnade'	Emerald Colonnade Holly	B&B		10' HT. MIN.	MATCHED	12.12%
4	PCA	Prunus Carolina	Carolina Cherry Laurel	B&B		10' HT. MIN.	MATCHED	12.12%
7	JVB	Juniperus Virginia 'Brodie'	Brodie Eastern Red Cedar	B&B		10' HT. MIN.	MATCHED	21.21%
6	OFR	Osmanthus Fragrans	Sweet Osmanthus	B&B		10' HT. MIN.	MATCHED	18.18%
3	MVI	Magnolia virginiana	Sweetbay Magnolia	B&B	2" CAL. MIN.	8' MIN. HT.	MATCHED	9.09%
3	CCA	Cercis canadensis	Eastern Redbud	B&B	1" CAL. MIN.	12' MIN. HT.	MATCHED	9.09%
3	PCH	Pistacia Chinesis	Chinese Pistache	B&B	1" CAL. MIN.	12' MIN. HT.	MATCHED	9.09%
3	CBE	Carpinus Betulus	Common Hornbeam	B&B	1" CAL. MIN.	12' MIN. HT.	MATCHED	9.09%
SHRUBS AND SOD								
47	AZA	Azalea 'Autumn Majesty'	Enocme Azalea spp.	CONT.	3 GAL. MIN.	24" H. MIN.		8.87%
71	DHD	Cephaelis harringtonia 'Prostate'	Spreading Japanese Plum Yew	CONT.	3 GAL. MIN.	24" H. MIN.		13.40%
55	DCG	Distylium 'Cinnamon Girl'	Dwarf Distylium	CONT.	3 GAL. MIN.	24" H. MIN.		8.56%
15	HPL	Hydrangea paniculata 'Lide Lami'	Hydrangea	CONT.	3 GAL. MIN.	24" H. MIN.		2.34%
29	LCD	Lagerstroemia 'Cherry Dazzle'	Shrub Grape Myrtle	CONT.	3 GAL. MIN.	24" H. MIN.		4.52%
66	SLP	Spiraea 'Lide Princess'	Dwarf Spirea	CONT.	3 GAL. MIN.	24" H. MIN.		10.30%
62	CSA	Camellia sasanqua 'Shishi Gashira'	Shishi Gashira Camellia	CONT.	3 GAL. MIN.	24" H. MIN.		8.11%
69	AGR	Abelia x Grandiflora	Glossy Abelia	CONT.	3 GAL. MIN.	24" H. MIN.		10.76%
84	IVB	Ilex Vomitoria 'Bordeaux'	Yapoon Holly	CONT.	3 GAL. MIN.	24" H. MIN.		9.98%
34	BMW	Buxus Microphylla 'Wintergreen'	Korean boxwood	CONT.	3 GAL. MIN.	24" H. MIN.		5.30%
28	DML	Distylium 'Linebacker'	Distylium Linebacker	CONT.	3 GAL. MIN.	24" H. MIN.		4.37%
10	ICN	Ilex cornuta 'Needlepoint'	Needlepoint Holly	CONT.	3 GAL. MIN.	36" HT. MIN.	MATCHED	
10	VAC	Viburnum awabuki 'Chindo'	Chindo Viburnum	CONT.	3 GAL. MIN.	36" HT. MIN.	MATCHED	
7	FIN	Forsythia x intermedia	Forsythia	CONT.	3 GAL. MIN.	36" HT. MIN.	MATCHED	
995	SQFT	Cynodon dactylon	Tif Tuf Bermuda	SOD				

LANDSCAPE SCREENING PLANT SCHEDULE						
KEY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	HEIGHT	NOTES
BUFFER PLANTS						
LARGE DECIDUOUS TREES						
MGL	Metasequoia glyptostroboides	Dawn Redwood	B&B	2.5" CAL. MIN.	12' MIN. HT.	MATCHED
TDI	Taxodium distichum	Bald Cypress	B&B	2.5" CAL. MIN.	12' MIN. HT.	MATCHED
QNI	Quercus Nigra	Water Oak	B&B	2.5" CAL. MIN.	12' MIN. HT.	MATCHED
LARGE EVERGREEN TREES						
CDE	Cedrus deodara	Deodar Cedar	B&B	2" CAL. MIN.	12' MIN. HT.	MATCHED
QLA	Quercus Laurifolia	Laurel Oak	B&B	2" CAL. MIN.	12' MIN. HT.	MATCHED
CJA	Cryptomeria japonica	Japanese Cedar	B&B	2" CAL. MIN.	12' MIN. HT.	MATCHED
SMALL DECIDUOUS TREES						
CCA	Cercis canadensis	Eastern Redbud	B&B	1" CAL. MIN.	12' MIN. HT.	MATCHED
PCH	Pistacia Chinesis	Chinese Pistache	B&B	1" CAL. MIN.	12' MIN. HT.	MATCHED
CBE	Carpinus Betulus	Common Hornbeam	B&B	1" CAL. MIN.	12' MIN. HT.	MATCHED
SMALL EVERGREEN TREES						
JVB	Juniperus virginiana 'Brodie'	Eastern Red Cedar	B&B	2" CAL. MIN.	6' MIN. HT.	GATHERING SPACE
MVI	Magnolia virginiana	Sweetbay Magnolia	B&B	2" CAL. MIN.	6' MIN. HT.	MATCHED
OFR	Osmanthus fragrans	Tea Olive	B&B	2" CAL. MIN.	6' MIN. HT.	MATCHED
SHRUBS						
AGR	Abelia x grandiflora	Glossy Abelia	CONT.		36" HT. MIN.	MATCHED
ICN	Ilex cornuta 'Needlepoint'	Needlepoint Holly	CONT.		36" HT. MIN.	MATCHED
DML	Distylium 'Linebacker'	Distylium	CONT.		36" HT. MIN.	MATCHED
FIN	Forsythia x intermedia	Forsythia	CONT.		36" HT. MIN.	MATCHED
CSA	Camellia sasanqua	Camellia	CONT.		36" HT. MIN.	MATCHED
VAC	Viburnum awabuki 'Chindo'	Chindo Viburnum	CONT.		36" HT. MIN.	MATCHED

NOTE:

"THE MAINTENANCE OF ALL REQUIRED LANDSCAPING BY KEEPING LAWNS MOWED, ALL PLANTS MAINTAINED DISEASE FREE, ALL PLANTING BEDS GROOMED AND KEPT WEED FREE (EXCEPT IN AREAS OF PRESERVED EXISTING NATURAL VEGETATION (I.E. THICKETS), AND KEPT FREE FROM TRASH, DEBRIS AND OTHER OBJECTIONABLE MATERIALS."

"THE REPLACEMENT SHALL OCCUR DURING THE NEXT PLANTING SEASON; AND THE REPLACEMENT OF ANY TREE IN A TREE SAVE AREA, WHICH IS REMOVED OR DIES AFTER THE DATE OF APPROVAL OF A PRESERVATION LANDSCAPE PLAN. SUCH REPLACEMENT SHALL OCCUR DURING THE NEXT PLANTING SEASON."



GYM FOUNDATION LANDSCAPING CALCULATIONS							
FOUNDATION LANDSCAPING REQUIREMENTS:							
AREA: 2 X LENGTH OF FOUNDATION WALL MINIMUM REQUIRED							
PLANT UNIT VALUE: 20 PUV PER 100 FEET OF FOUNDATION WALL MINIMUM REQUIRED							
SEGMENT	LENGTH (LF)	TOTAL PUV REQUIRED	PLANT QTY	QUALIFYING PLANT DESCRIPTION	PLANT PUV	% PUV	TOTAL PUV PROVIDED
GYM NORTH FACADE	135.2	27	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	30
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			0	Small Evergreen @ 6' (5 points each)	0	0%	
			30	Shrubs @ 36" (1 point each)	30	100%	
GYM EAST FACADE	101.3	20	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	20
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			2	Small Evergreen @ 6' (5 points each)	10	50%	
			10	Shrubs @ 36" (1 point each)	10	50%	
GYM SOUTH FACADE	135.2	27	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	34
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			0	Small Evergreen @ 6' (5 points each)	0	0%	
			34	Shrubs @ 36" (1 point each)	34	100%	
GYM WEST FAÇADE	101.3	20	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	30
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			2	Small Evergreen @ 6' (5 points each)	10	33%	
			20	Shrubs @ 36" (1 point each)	20	67%	

PARKING AREA LANDSCAPING CALCULATIONS			
PARKING AREA LANDSCAPING REQUIREMENTS:			
INTERIOR REQUIREMENTS: 1 ISLAND PER 10 SPACES; 1 TREE AND 4 SHRUBS PER ISLAND REQUIRED.			
INTERIOR REQUIREMENTS	ISLAND QUANTITY	TREES PROVIDED	SHRUBS PROVIDED
PARKING LOT - NEW SCHOOL	17	68	81
PARKING LOT - EXISTING SCHOOL	1	1	4
PERIMETER REQUIREMENTS: SHRUBS INSTALLED 3' O.C. -OR- WALL/BERM EXCEEDING 35 PUV -OR- GRADE SEPARATION BY 25% SLOPE (30% MAY BE ORNAMENTAL GRASSES, PER THE APPROVED PUD			
PERIMETER REQUIREMENTS	PERIMETER LENGTH	SHRUBS/GRASSES REQUIRED	SHRUBS/GRASSES PROVIDED
PARKING LOT - NEW SCHOOL	450	150	185

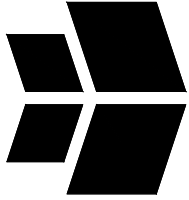
SCHOOL FOUNDATION LANDSCAPING CALCULATIONS							
FOUNDATION LANDSCAPING REQUIREMENTS:							
AREA: 2 X LENGTH OF FOUNDATION WALL MINIMUM REQUIRED							
PLANT UNIT VALUE: 20 PUV PER 100 FEET OF FOUNDATION WALL MINIMUM REQUIRED							
SEGMENT	LENGTH (LF)	TOTAL PUV REQUIRED	PLANT QTY	QUALIFYING PLANT DESCRIPTION	PLANT PUV	% PUV	TOTAL PUV PROVIDED
SCHOOL NORTH FACADE	136	27	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	38
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			1	Small Evergreen @ 6' (5 points each)	5	13%	
			33	Shrubs @ 36" (1 point each)	33	87%	
SCHOOL EAST FACADE	136	27	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	32
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			0	Small Evergreen @ 6' (5 points each)	0	0%	
			32	Shrubs @ 36" (1 point each)	32	100%	
SCHOOL SOUTH FAÇADE	136	27	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	32
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			1	Small Evergreen @ 6' (5 points each)	5	16%	
			27	Shrubs @ 36" (1 point each)	27	84%	
SCHOOL WEST FACADE	143	27	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	29
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			2	Small Evergreen @ 6' (5 points each)	10	34%	
			19	Shrubs @ 36" (1 point each)	19	66%	

DUMPSTER ENCLOSURE FOUNDATION LANDSCAPING CALCULATIONS							
FOUNDATION LANDSCAPING REQUIREMENTS:							
AREA: 2 X LENGTH OF FOUNDATION WALL MINIMUM REQUIRED							
PLANT UNIT VALUE: 20 PUV PER 100 FEET OF FOUNDATION WALL MINIMUM REQUIRED							
SEGMENT	LENGTH (LF)	TOTAL PUV REQUIRED	PLANT QTY	QUALIFYING PLANT DESCRIPTION	PLANT PUV	% PUV	TOTAL PUV PROVIDED
DUMPSTER ENCLOSURE NORTHWEST FACADE	18.5	4	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	4
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			0	Small Evergreen @ 6' (5 points each)	0	0%	
			4	Shrubs @ 36" (1 point each)	4	100%	
DUMPSTER ENCLOSURE NORTHEAST FACADE	24	5	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	9
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			1	Small Evergreen @ 6' (5 points each)	5	56%	
			4	Shrubs @ 36" (1 point each)	4	44%	
DUMPSTER ENCLOSURE SOUTHEAST FACADE	18.5	4	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	11
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			2	Small Evergreen @ 6' (5 points each)	10	91%	
			1	Shrubs @ 36" (1 point each)	1	9%	
DUMPSTER ENCLOSURE SOUTHWEST FACADE	24	5	REQUIRED 5 PUV AGGREGATED ON SOUTHEAST SIDE				0

EX. SCHOOL PLAYGROUND FOUNDATION LANDSCAPING CALCULATIONS							
FOUNDATION LANDSCAPING REQUIREMENTS:							
AREA: 2 X LENGTH OF FOUNDATION WALL MINIMUM REQUIRED							
PLANT UNIT VALUE: 20 PUV PER 100 FEET OF FOUNDATION WALL MINIMUM REQUIRED							
SEGMENT	LENGTH (LF)	TOTAL PUV REQUIRED	PLANT QTY	QUALIFYING PLANT DESCRIPTION	PLANT PUV	% PUV	TOTAL PUV PROVIDED
PLAYGROUND FENCE NORTH FACADE	128.7	26	0	Large Deciduous @ 2" Caliper (6 points each)	0	0%	30
			0	Large Evergreen @ 12' (8 points each)	0	0%	
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	
			0	Small Evergreen @ 6' (5 points each)	0	0%	
			39	Shrubs @ 36" (1 point each)	39	129%	
EX. PLAYGROUND FENCE EAST FACADE	80	16	EXISTING LANDSCAPE				
EX. PLAYGROUND FENCE SOUTH FACADE	128.7	26	EXISTING LANDSCAPE				
EX. PLAYGROUND FENCE WEST FACADE	80	16	EXISTING LANDSCAPE				

WithersRavenel

Engineers | Planners | Surveyors



DEVELOPMENT PLANS
FOR PROPOSED SCHOOL EXPANSION
112 HOLLY SPRINGS NEW HILL ROAD
11244 HOLLY SPRINGS NEW HILL ROAD
HOLLY SPRINGS, NC 27540

LANDSCAPE
DETAILS

Job No. 09210285
Date 2021.07.30
Checked By WR

Drawn By WR
Designer WR

2077

Seal of the State of North Carolina

2/7/2022

DocuSign

Daniel Whitley

Revisions

1	TOWN COMMENTS 1	2021.09.24
2	TOWN COMMENTS 2	2021.10.29
3	TOWN COMMENTS 3	2021.11.10
4	TOWN COMMENTS 4	2022.02.04
5	TOWN COMMENTS 5	2022.02.07

Sheet No.

L3.1

Page 126 of 609

LANDSCAPE SCREEN CALCULATIONS								
SEGMENT	BUFFER TYPE	REQUIRED PUV PER 100 LF	PLANT QTY	QUALIFYING PLANT DESCRIPTION	PLANT PUV	% PUV	TOTAL PUV PROVIDED	Note
[A-01]	10' A-20	20	2	Existing Large evergreen >12" Caliper (12 points each)	24	57%	42	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			1	Existing Large Deciduous >6" Caliper (18 points each)	18	43%		
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12" (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6" (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
			0					
[A-02]	10' A-20	20	1	Existing Large evergreen >12" Caliper (12 points each)	12	40%	30	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			1	Existing Large Deciduous >6" Caliper (18 points each)	18	60%		
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12" (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6" (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
			0					
[A-03]	10' A-20	20	1	Large Deciduous @ 2.5" Caliper (8 points each)	8	36%	22	PUV IS ACHIEVED WITH PROPOSED VEGETATION; REFER TO LANDSCAPE PLAN
			1	Large Evergreen @ 12" (8 points each)	8	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6" (5 points each)	0	0%		
			6	Shrubs @ 36" (1 point each)	6	27%		
[A-04]	10' A-20	20	3	Existing Large Deciduous >6" Caliper (18 points each)	54	100%	54	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12" (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6" (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
[A-05]	10' A-20	20	1	Existing Large evergreen >12" Caliper (12 points each)	12	46%	26	PUV IS ACHIEVED WITH EXISTING AND PROPOSED VEGETATION ; REFER TO TCA AND LANDSCAPE PLAN
			1	Large Deciduous @ 2.5" Caliper (8 points each)	8	0%		
			0	Large Evergreen @ 12" (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6" (5 points each)	0	0%		
			6	Shrubs @ 36" (1 point each)	6	23%		

NOTES:

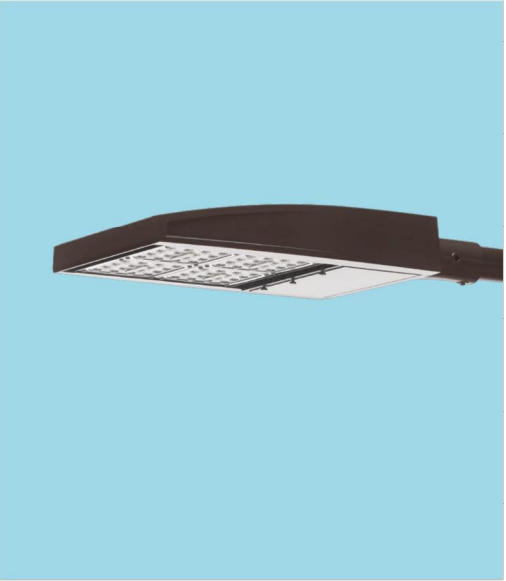
1. IN LANDSCAPE SCREENS THAT APPLY EXISTING VEGETATION TO THE PUV REQUIREMENTS: THE EXISTING VEGETATION CREDITS MUST MEET 80% OR GREATER OF THE REQUIRED PUV.
2. IF 80% OF THE REQUIRED PUV IS MET PER 100' INCREMENT, NO SUPPLEMENTAL PLANTING IS REQUIRED.
3. EXISTING VEGETATION PUV WAS DETERMINED USING TREE DATA POINTS COLLECTED WITH GPS BY A CERTIFIED ARBORIST AND UDO TABLE 7.01-D 'TREE PRESERVATION CREDITS'
4. AT THE TIME OF PLANTING IF EXISTING VEGETATION IS DEEMED INSUFFICIENT IN A SPECIFIC INCREMENT, SUPPLEMENTAL PLANTINGS MAY BE PROVIDED BASED ON THE TYPICAL DETAILS PROVIDED ON SHEET L3.1.

LANDSCAPE SCREEN CALCULATIONS								
SEGMENT	BUFFER TYPE	REQUIRED PUV PER 100 LF	PLANT QTY	QUALIFYING PLANT DESCRIPTION	PLANT PUV	% PUV	TOTAL PUV PROVIDED	Note
[A-06]	25' A-20	20	4	Existing Large evergreen >12" Caliper (12 points each)	48	100%	48	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12" (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6" (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
			2	Existing Large evergreen >12" Caliper (12 points each)	24	40%		
			2	Existing Large Deciduous >6" Caliper (18 points each)	36	60%		
[A-07]	25' A-20	20	0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%	60	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			0	Large Evergreen @ 12" (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6" (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
			4	Existing Large Deciduous >6" Caliper (18 points each)	72	100%		
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12" (8 points each)	0	0%		
[A-08]	25' A-20	20	0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	72	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			0	Small Evergreen @ 6" (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
			6	Existing Large Deciduous >6" Caliper (18 points each)	108	100%		
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12" (8 points each)	0	0%		
[A-09]	25' A-20	20	0	Small Deciduous @ 1" Caliper (4 points each)	0	0%	108	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			0	Small Evergreen @ 6" (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
			6	Existing Large Deciduous >6" Caliper (18 points each)	108	100%		
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12" (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6" (5 points each)	0	0%		
[A-10]	25' A-20	20	3	Existing Large evergreen >12" Caliper (12 points each)	36	22%	162	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			7	Existing Large Deciduous >6" Caliper (18 points each)	126	78%		
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12" (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6" (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
			0					

LANDSCAPE SCREEN CALCULATIONS								
SEGMENT	BUFFER TYPE	REQUIRED PUV PER 100 LF	PLANT QTY	QUALIFYING PLANT DESCRIPTION	PLANT PUV	% PUV	TOTAL PUV PROVIDED	Note
[C-01]	20' C-75	75	5	Existing Large evergreen >12" Caliper (12 points each)	60	51%	118	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			3	Existing Large Deciduous >6" Caliper (18 points each)	54	46%		
			1	Existing Small Deciduous @ 1-3" Caliper (4 points each)	4	3%		
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12' (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6' (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
[C-02]	20' C-75	75	3	Existing Large evergreen >12" Caliper (12 points each)	36	40%	90	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			3	Existing Large Deciduous >6" Caliper (18 points each)	54	60%		
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12' (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6' (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
[C-03]	20' C-75	75	5	Existing Large Deciduous >6" Caliper (18 points each)	90	100%	90	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12' (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6' (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
[C-04]	20' C-75	75	1	Existing Large evergreen >12" Caliper (12 points each)	12	12%	102	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			5	Existing Large Deciduous >6" Caliper (18 points each)	90	88%		
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12' (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6' (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
[C-05]	20' C-75	75	1	Existing Large evergreen >12" Caliper (12 points each)	12	10%	120	80% + PUV IS ACHIEVED WITH EXISTING VEGETATION; REFER TO TCA PLAN
			6	Existing Large Deciduous >6" Caliper (18 points each)	108	90%		
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			0	Large Evergreen @ 12' (8 points each)	0	0%		
			0	Small Deciduous @ 1" Caliper (4 points each)	0	0%		
			0	Small Evergreen @ 6' (5 points each)	0	0%		
			0	Shrubs @ 36" (1 point each)	0	0%		
[C-06]	20' C-75	75	1	Existing Large Deciduous >6" Caliper (18 points each)	18	20%	89	PUV IS ACHIEVED WITH EXISTING AND PROPOSED VEGETATION; REFER TO TCA AND LANDSCAPE PLAN
			0	Large Deciduous @ 2.5" Caliper (8 points each)	0	0%		
			1	Large Evergreen @ 12' (8 points each)	8	9%		
			3	Small Deciduous @ 1" Caliper (4 points each)	12	13%		
			6	Small Evergreen @ 6' (5 points each)	30	34%		
			21	Shrubs @ 36" (1 point each)	21	24%		
[C-07]	20' C-75	75	1	Large Deciduous @ 2.5" Caliper (8 points each)	8	10%	79	PUV IS ACHIEVED WITH PROPOSED VEGETATION; REFER TO LANDSCAPE PLAN
			1	Large Evergreen @ 12' (8 points each)	8	10%		
			3	Small Deciduous @ 1" Caliper (4 points each)	12	15%		
			6	Small Evergreen @ 6' (5 points each)	30	38%		
			21	Shrubs @ 36" (1 point each)	21	27%		

Outdoor Lighting

Shoebox LED



The energy-efficient Shoebox LED combines a decorative, contemporary style with versatility and ample lighting effect that is perfect for streets, parking lots, commercial buildings and residential communities. The Shoebox LED provides excellent color rendition along with a controlled light pattern that reduces glare and keeps the light directed only where you want it. Available in black, dark bronze, gray or white with one to four fixtures per pole.

LED	150, 220, 420, 530 watts
<i>(Light Emitting Diode)</i>	
Mounting heights	25', 30', 35'
Colors	Black Bronze Gray White
Poles	Fiberglass (1 or 2 fixtures per pole) Decorative tapered metal Decorative square metal

Note: 35' pole available in black or bronze only.

For additional information, visit us at duke-energy.com/OutdoorLighting or call us toll free at 866.769.6417.



DUKE ENERGY
PROGRESS

BUILDING A SMARTER ENERGY FUTURE™

Outdoor Lighting

Shoebox LED

Light source: LED (white)
Replacement for: LED Wattage 150 – 250-watt HPS and metal halide;
LED Wattage 205 – up to 400-watt metal halide;
LED Wattage 530 – 1,000-watt metal halide.

Warm-up and restrike time: Instant on (no warm-up or restrike time)

Wattage	BUG Rating	Light Pattern	Lumens	Color Temp
LED 150	B5-U0-G3	IESNA Type V (circular)	19580	
LED 150	B3-U0-G4	IESNA Type IV (forward throw)	18459	
LED 150	B2-U0-G3	IESNA Type III (oval)	19006	
LED 220	B5-U0-G3	IESNA Type V (circular)	25870	
LED 220	B3-U0-G4	IESNA Type IV (forward throw)	24390	
LED 220	B2-U0-G4	IESNA Type III (oval)	25114	4,000K
LED 420	B5-U0-G5	IESNA Type V (circular)	48514	
LED 420	B3-U0-G5	IESNA Type IV (forward throw)	43765	
LED 530	B5-U0-G5	IESNA Type V (circular)	60296	
LED 530	B3-U0-G5	IESNA Type IV (forward throw)	54395	

** These are approximate replacement suggestions; actual conditions could be different.*

Poles available:

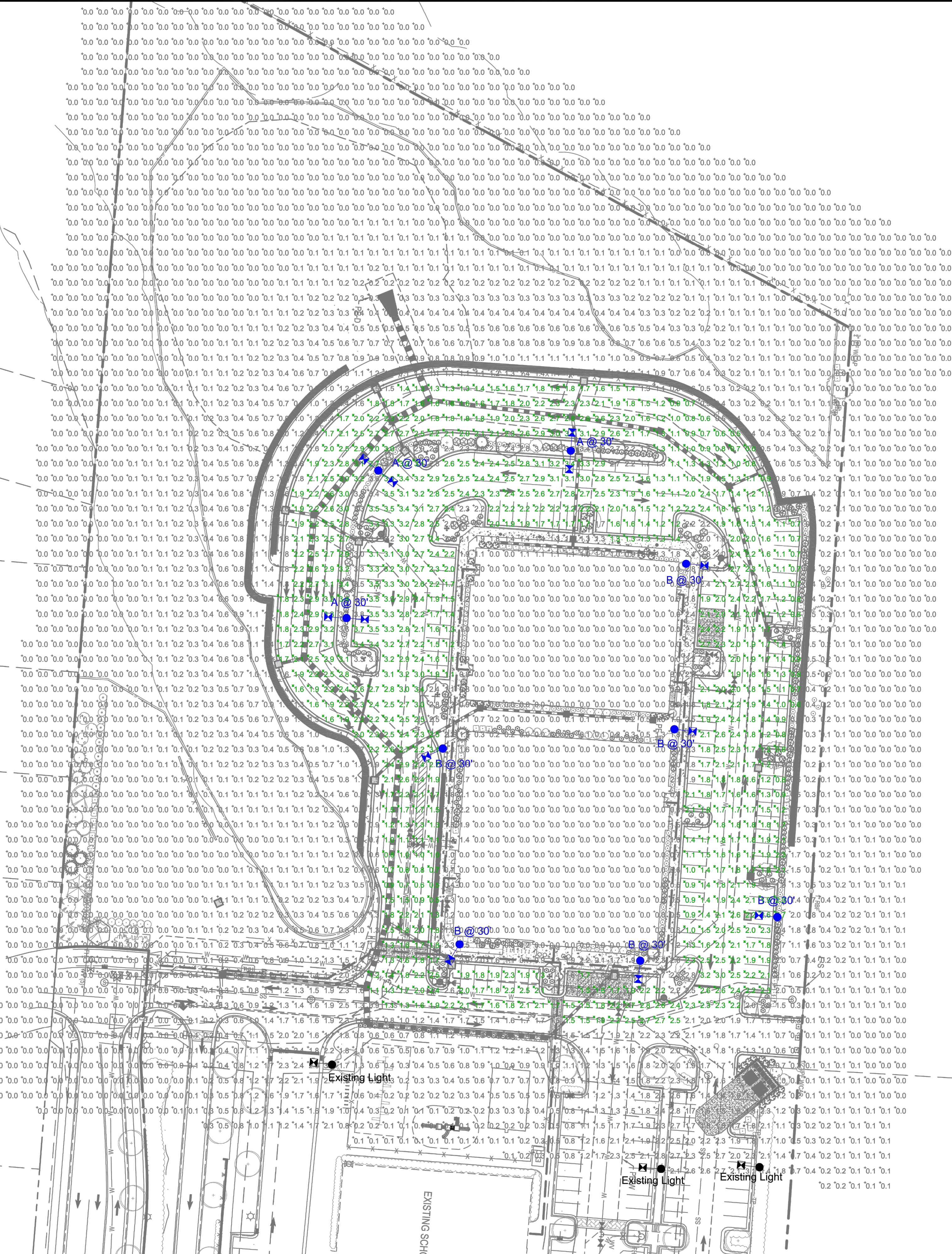
Name	Mounting height	Color
Round tapered decorative metal*	35'	Black Bronze
Decorative square metal*	25' and 30'	Black Bronze Gray White
Fiberglass	30'	Black (1 or 2 fixtures per pole) Gray (1 or 2 fixtures per pole)

Features

Little or no installation cost	Frees up capital for other projects
Design services by lighting professionals included	Meets industry standards and lighting ordinances
Maintenance included	Eliminates high and unexpected repair bills
Electricity included	Less expensive than metered service
Warranty included	Worry-free
One low monthly cost on your electric bill	Convenience and savings for you
Turnkey operation	Provides hassle-free installation and service
Backed by over 40 years of experience	A name you can trust today ... and tomorrow

**2" raised foundation available when required on metal poles only.*

©2019 Duke Energy Corporation 138519 12/19



3.08 A.1.c.(2)(b) - DEFINED WALL BAY: 30' - 0" MAX
3.08 A.1.c.(2)(g)(i) ROOFLINE VARY IN HEIGHT - NO
CONTINUOUS PLANE FOR > 50'

WALL OPENINGS - SOUTH ELEVATION

FIRE SEPARATION DISTANCE: >30'
DEGREE OF OPENING PROTECTION: UP, S
ALLOWABLE OPENINGS: NO LIMIT

BUILDING "CAP" - 3.08 A.1.c.(2)(a)(iii)
7% MINIMUM REQ'D
5' - 4" CAP HEIGHT / 37' - 4" (HIGHEST PARAPET HEIGHT)
= 14.2% OF VERTICAL HEIGHT PROVIDED

3.08 A.1.c.(2)(c)(ii) 4: GLASS WINDOWS AT UPPER LEVEL
15% MIN. REQ'D (ALL USES)
(10 WINDOWS) * 58.7 SF PER WINDOW = 587 SF
+ 21' - 4" GLASS ENTRANCE ASSEMBLY = 213 SF
= 800 SF GLAZED AREA / 1632 SF UPPER LEVEL WALL AREA
= 49% GLAZED AREA PROVIDED AT UPPER LEVEL

3.08 A.1.c.(2)(d) - "HUMAN SCALE DESIGN ELEMENTS"
MIN. (2) CONTINUOUS OR REPEATING DETAILS 12"
OR LESS WITHIN FIRST 15'

3.08 A.1.c.(2)(c)(i) 3: GLASS WINDOWS AND DOORS AT
GROUND LEVEL
20% MIN. REQ'D (OFFICE AND INSTITUTIONAL USES)
(10 WINDOWS) * 58.7 SF PER WINDOW = 587 SF
+ 21' - 4" GLASS ENTRANCE ASSEMBLY = 213 SF
= 800 SF GLAZED AREA / 1360 SF GROUND LEVEL WALL
AREA TO 10' AFF
= 58.8% GLAZED AREA PROVIDED AT GROUND LEVEL

BUILDING "BASE" - 3.08 A.1.c.(2)(a)(ii)
9% MINIMUM REQ'D
4' - 0" BASE HEIGHT / 37' - 4" (HIGHEST PARAPET HEIGHT)
= 10.7% OF VERTICAL HEIGHT PROVIDED

PRIMARY FACADE - HIGH PEDESTRIAN TRAFFIC

① SOUTH ELEVATION
3/16" = 1'-0"

WALL OPENINGS - NORTH ELEVATION

FIRE SEPARATION DISTANCE: 10' - 6"
DEGREE OF OPENING PROTECTION: UP, S
ALLOWABLE OPENINGS: 45%
ACTUAL OPENINGS:
(30 WINDOWS)*58.7SF = 1761 SF OPENINGS
/ 4529 SF WALL AREA = 39%

3.08 A.1.c.(1)(a)(i): PRIMARY BUILDING
MATERIAL: "BRIGHT" BRICK

ARCHED BRICK SOLDIER COURSE AT
TOP OF WINDOW (TYP)

DOUBLE BRICK SOLDIER
COURSE (TYP)

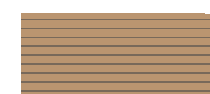
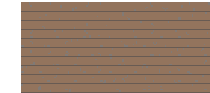
"DARK BRONZE" PRE-FINISHED METAL
GUTTER/ DOWNSPOUTS (TYP)

NOTE:
SEE ELEVATION 1/ A-1.01 FOR NOTING
OF TYPICAL/ SIMILAR CONDITIONS.

3.08 A.1.b: "OTHER FACADE" - ORIENTED TOWARD PARCEL ZONED IT (AND >105' FROM PARALLEL)
DESIGN IN COMPLIANCE WITH 3.08.A.1.d(1): "COLORS SHALL BE CONSISTENT WITH THE PRIMARY FACADE(S)"

② NORTH ELEVATION
3/16" = 1'-0"

MATERIAL INDEX:

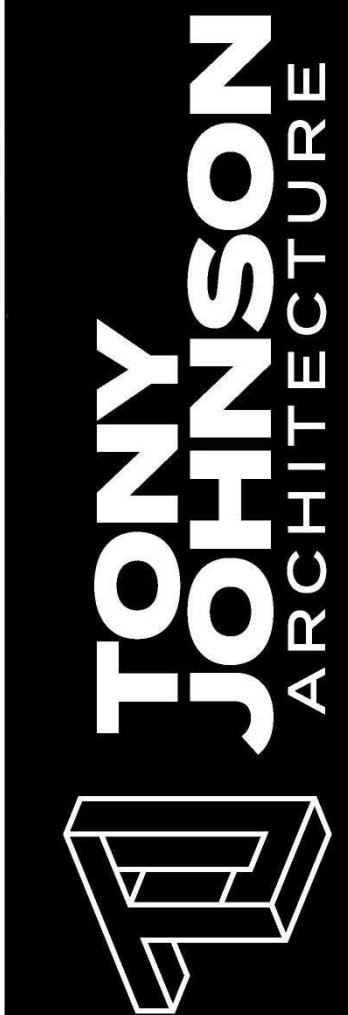
	FIELD BRICK: PINE HALL "OLD HAMPTON" O/S TUMBLE BRICK. (MORTAR: STANDARD GREY)
	ACCENT BRICK: LAWRENCEVILLE "GLEN GERY BURNT CHIMNEY" O/S (MORTAR: STANDARD GREY)
	PRECAST CONCRETE

STOREFRONT: GLAZING: COPING CAP: MAIN ROOF: PARAPET BACKSIDE: METAL ROOFING: GUTTER: DOWNSPOUTS:	DARK BRONZE ALUMINUM INSULATED, SOLARCOOL BRONZE DARK BRONZE ALUMINUM TAN ROOFING MEMBRANE DARK BRONZE STANDING SEAM DARK BRONZE DARK BRONZE
---	--



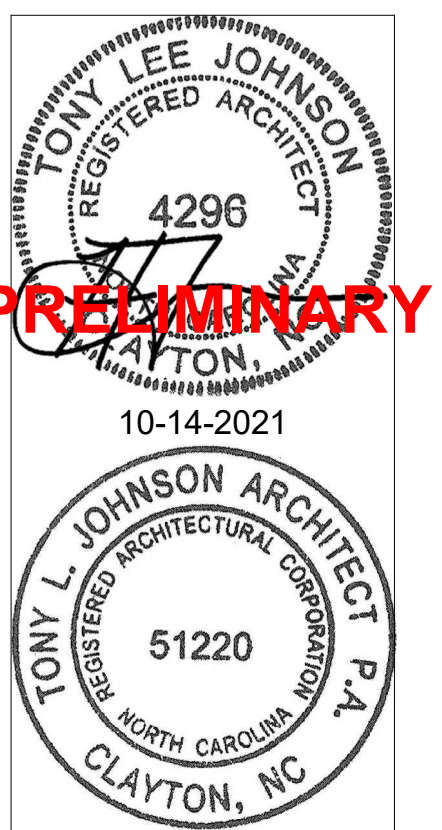
THALES ACADEMY
HIGH SCHOOL
HOLLY SPRINGS NEW HILL ROAD, HOLLY SPRINGS, NC

918-550-7717
Tony@TonyJohnsonArchitect.com
104 North Lombard St
Clayton, NC 27520
TonyJohnsonArchitect.com



ISSUE DATE: 10-14-2021
REVISION: 2021-052
PROJECT #
HIGH SCHOOL
ELEVATIONS -
SOUTH & NORTH

SHEET
A-01



THALES ACADEMY
HIGH SCHOOL
HOLLY SPRINGS NEW HILL ROAD, HOLLY SPRINGS, NC

918-550-7717
Tony@TonyJohnsonArchitect.com
104 North Lombard St
Clayton, NC 27520
TonyJohnsonArchitect.com

TONY
JOHNSON
ARCHITECTURE

ISSUE DATE	10-14-2021
REVISION	
PROJECT #	2021-052
HIGH SCHOOL ELEVATIONS - WEST & EAST	
SHEET	

A-02

10/14/2021 5:27:30 PM
C:\Users\Robin\Documents\CURRENT PROJECT BACKUPS\10-14-2021 - THALES HOLLY SPRINGS SIGHTLINE VIEWS.rvt

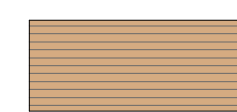


① EAST ELEVATION - UDO STUDY
3/16" = 1'-0"



② WEST ELEVATION - UDO STUDY
3/16" = 1'-0"

MATERIAL INDEX:

	FIELD BRICK: PINE HALL "OLD HAMPTON" O/S TUMBLE BRICK (MORTAR: STANDARD GREY)
	PRECAST CONCRETE

STOREFRONT:	DARK BRONZE ALUMINUM
GLAZING:	INSULATED, SOLARCOOL BRONZE
COPING CAP:	DARK BRONZE ALUMINUM
MAIN ROOF:	TAN ROOFING MEMBRANE
PARAPET BACKSIDE:	TAN ROOFING MEMBRANE
GUTTER:	DARK BRONZE
DOWNSPOUTS:	DARK BRONZE



**THALES ACADEMY
GYMNASIUM**
HOLLY SPRINGS NEW HILL ROAD, HOLLY SPRINGS, NC

918-550-7717
Tony@TonyJohnsonArchitect.com
104 North Lombard St
Clayton, NC 27520
TonyJohnsonArchitect.com

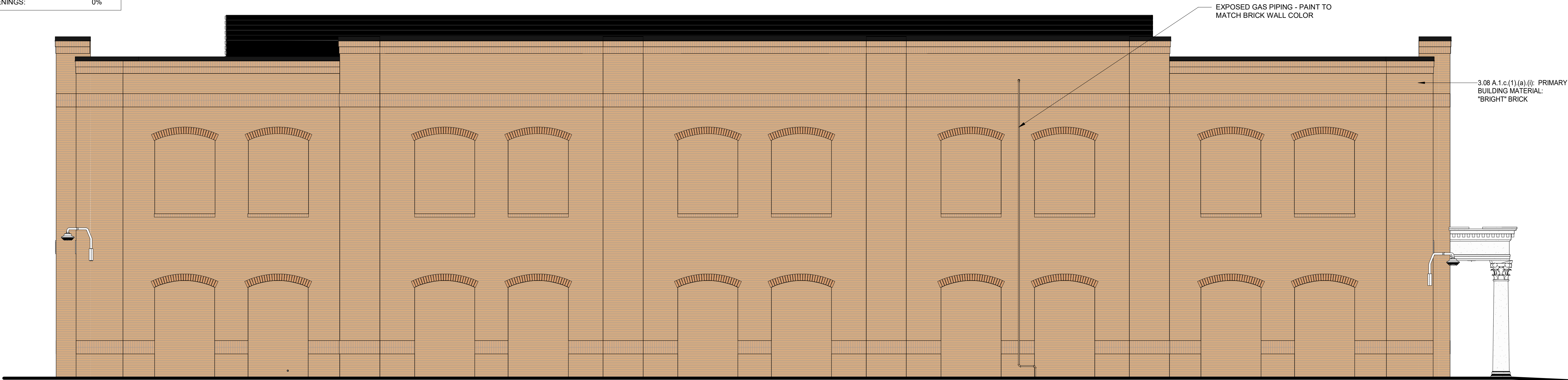


ISSUE DATE:	10-14-2021
REVISION:	
PROJECT #	2021-052
GYMNASIUM ELEVATIONS - EAST & WEST	
SHEET	

A-03

WALL OPENINGS - SOUTH ELEVATION

FIRE SEPARATION DISTANCE: >10' - 6"
DEGREE OF OPENING PROTECTION: UP, S
ALLOWABLE OPENINGS: 45%
ACTUAL OPENINGS: 0%

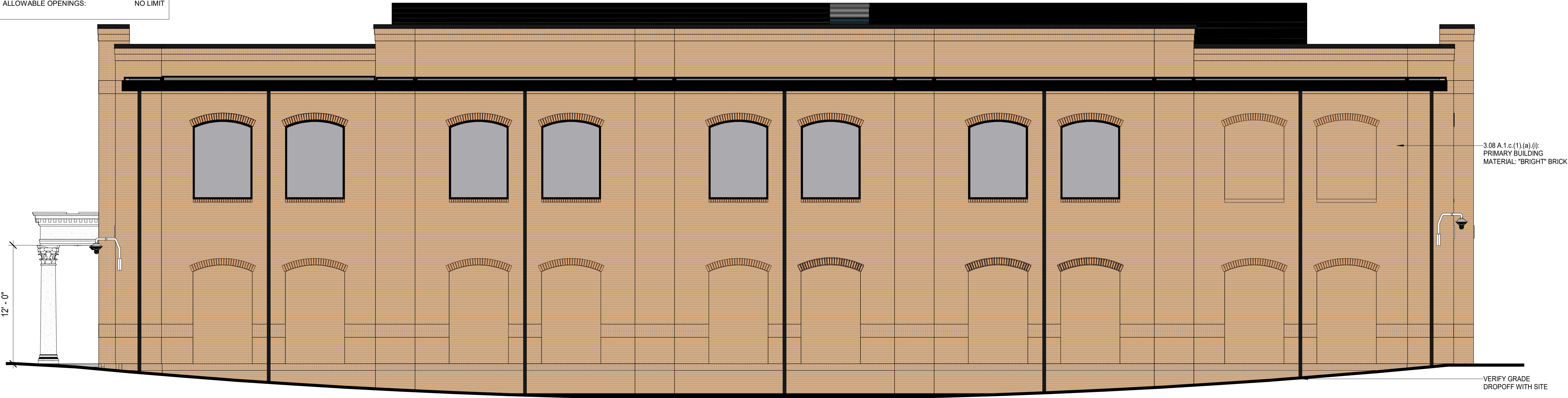


FACES HOLLY SPRINGS NEW HILL ROAD, BUT BLOCKED FROM VIEW BY ADJACENT BUILDING IN SAME DEVELOPMENT.

① SOUTH ELEVATION - UDO STUDY
3/16" = 1'-0"

WALL OPENINGS - NORTH ELEVATION

FIRE SEPARATION DISTANCE: >30'
DEGREE OF OPENING PROTECTION: UP, S
ALLOWABLE OPENINGS: NO LIMIT



3.08.A.1.b: "OTHER FACADE" - ORIENTED TOWARD PARCEL ZONED IT (AND >105° FROM PARALLEL)
DESIGN IN COMPLIANCE WITH 3.08.A.1.d(1): "COLORS SHALL BE CONSISTENT WITH THE PRIMARY FACADE(S)"

② NORTH ELEVATION - UDO STUDY
3/16" = 1'-0"

MATERIAL INDEX:

FIELD BRICK: PINE HALL "OLD HAMPTON"
O/S TUMBLE BRICK
(MORTAR: STANDARD GREY)

PRECAST CONCRETE

STOREFRONT: DARK BRONZE ALUMINUM
GLAZING: INSULATED, SOLARCOOL BRONZE
COPING CAP: DARK BRONZE ALUMINUM
MAIN ROOF: TAN ROOFING MEMBRANE
PARAPET BACKSIDE: TAN ROOFING MEMBRANE

GUTTER: DARK BRONZE
DOWNSPOUTS: DARK BRONZE



THALES ACADEMY
GYMNASIUM
HOLLY SPRINGS NEW HILL ROAD, HOLLY SPRINGS, NC

918-550-7717
Tony@TonyJohnsonArchitect.com
104 North Lombard St
Clayton, NC 27520
TonyJohnsonArchitect.com

TONY
JOHNSON
ARCHITECTURE

ISSUE DATE: 10-14-2021
REVISION:
PROJECT #: 2021-052

GYMNASIUM
ELEVATIONS -
SOUTH & NORTH

SHEET

A-04



5 SIGHTLINE #5



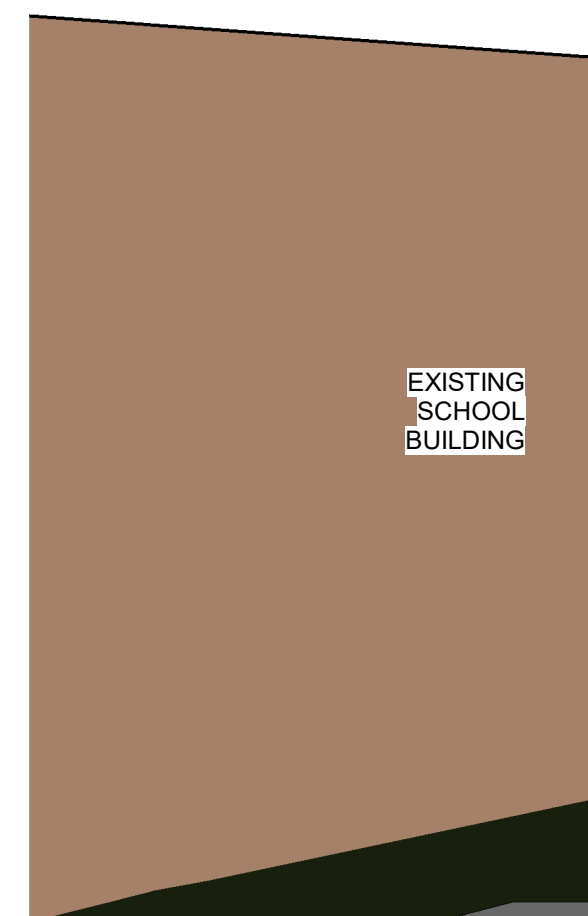
4 SIGHTLINE #4



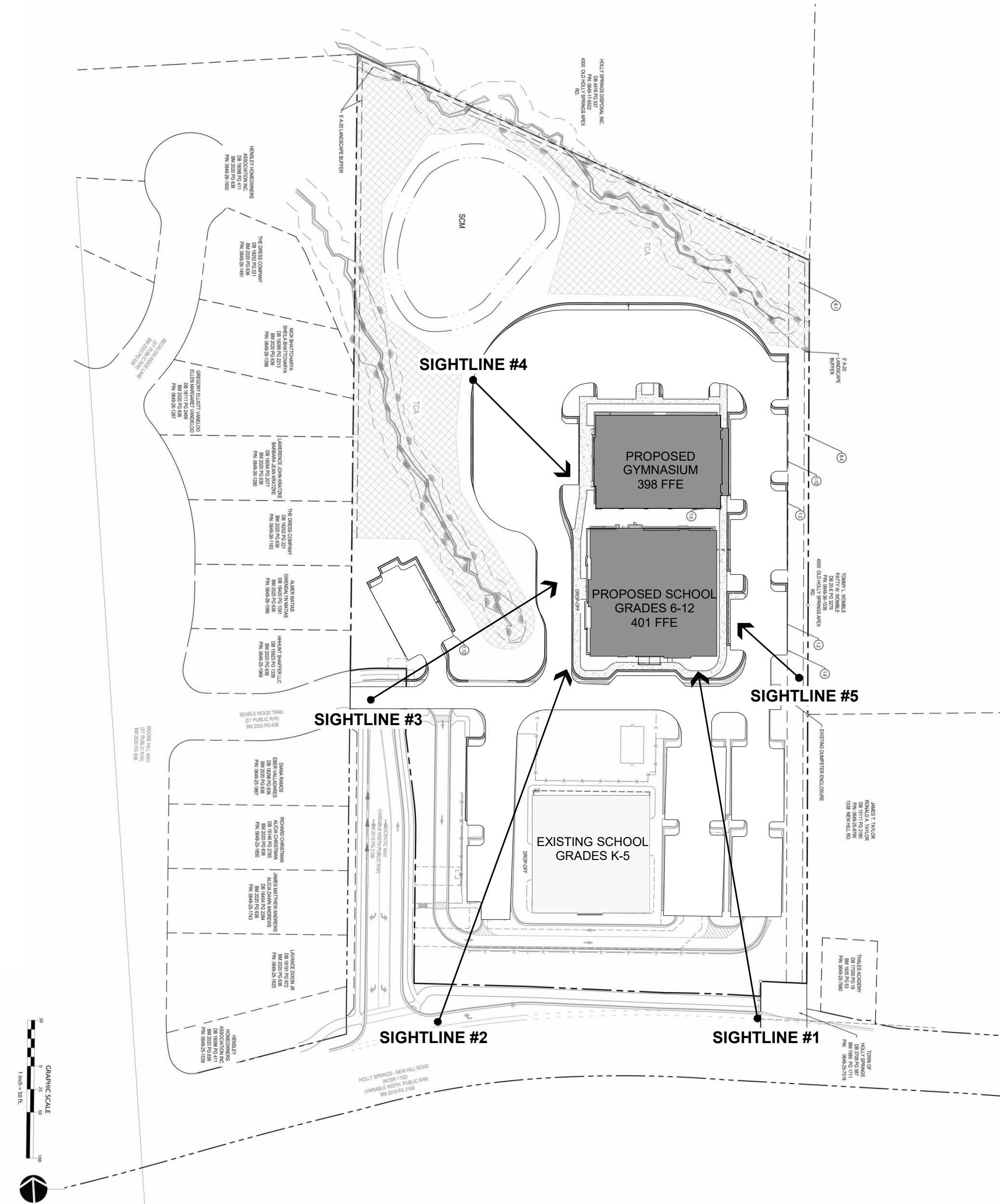
3 SIGHTLINE VIEW #3 FROM SEARL WOOD AND SOCRATIC WAY



2 SIGHTLINE VIEW #2 FROM HOLLY SPRINGS NEW HILL ROAD



1 SIGHTLINE VIEW #1 FROM HOLLY SPRINGS NEW HILL ROAD



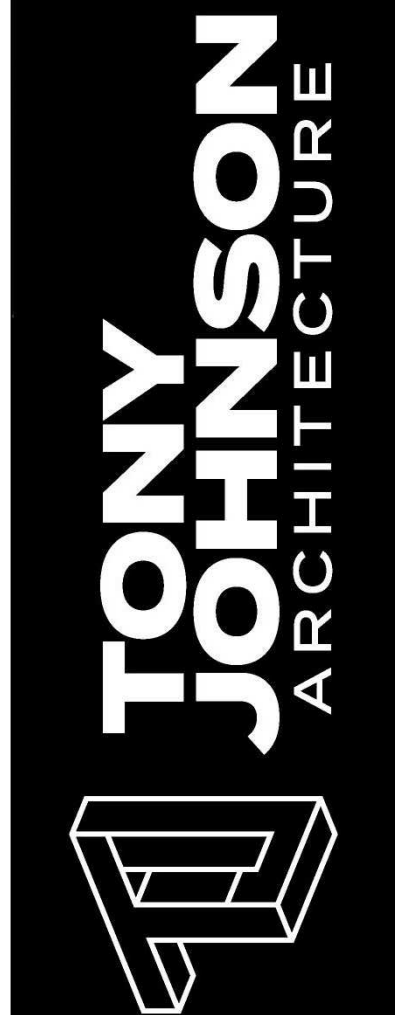
6 SITE PLAN 1" = 100'-0"

ONLY LOCATION BACK SIDE OF PARAPET IS VISIBLE
TAN TPO ROOFING RUNS UP THE BACK SIDE OF THE PARAPET TO THE CAP FLASHING



THALES ACADEMY
GYMNASIUM
HOLLY SPRINGS NEW HILL ROAD, HOLLY SPRINGS, NC

918-550-7717
Tony@TonyJohnsonArchitect.com
104 North Lombard St
Clayton, NC 27520
TonyJohnsonArchitect.com



ISSUE DATE	10-14-2021
REVISION	
PROJECT #	2021-052
SIGHTLINE VIEWS	
SHEET	

A-05



TPA Cover Report

*Arborist TCA Evaluation for
Thales Academy, Holly Springs*

Prepared For:

Withers Ravenel
137 S Wilmington St
Suite 200
Raleigh, NC 27601

Prepared By:

Leaf & Limb
511 Nowell Road
Raleigh, NC 27607

Consulting Arborist:

Basil Camu
ISA Board Certified Master Arborist SO-7383B

July 2021

Table of Contents

1. Aerial Photograph 3

2. Priority Preservation Areas 4

3. Sample Areas 5

4. Tree Protection Area 10

1. Aerial Photograph



2. Priority Preservation Areas

- **Specimen Tree Preservation**
 - This TPA was able to protect 5 specimen trees. Out of those 5 trees, 3 had the entire CRZ protected.
- **Significant Tree Stands**
 - The entire area preserved qualifies as a significant tree stand. See sample area section below for verification.

3. Sample Areas

All trees above 10" are shown in the survey given to Withers Ravenel. Trees below 10" and shrubs and vegetation are listed below:

Sample Plot 1 Vegetation:

- Moss
- Scattered clumps of grass
- Greenbrier
- Wild grape vines
- Red maples:
 - 1 ½" DBH
 - 3 1" DBH
 - 2 2" DBH
 - 1 4" DBH
 - 1 9" DBH
- Black gum:
 - 1 1" DBH
 - 1 2" DBH
- Sourwood:
 - 1 3" DBH
- Scattered seedlings less than 1" DBH: willow oak, red maple and sweetgum

Sample Plot 2 Vegetation:

- Moss
- Scattered clumps of grass
- Greenbrier
- Wild grape vines
- Scattered small privets
- Black gum:
 - 2 1" DBH
 - 2 2" DBH
- Sourwood:
 - 1 3" DBH
 - 1 4" DBH
- Sweetgum:
 - ½" DBH
- Scattered seedlings less than 1" DBH: sweetgum, red maple, white oak, sourwood and black gum.

Sample Plot 3 Vegetation:

- Moss
- Scattered clumps of grass
- Greenbrier
- Wild grape vines
- Patch of lowland blueberry
- Scattered wild evergreen ginger
- Sourwood:
 - 1 1" DBH
 - 1 5" DBH
- Sweetgum:
 - 1 1" DBH
 - 2 2" DBH
- Black gum
 - 1 1" DBH
- Red maple
 - 1 5" DBH
- Scattered seedlings less than 1" DBH include: sweetgum, sourwood, and white oak.

Sample Plot 4 Vegetation:

- Scattered lowland blueberry
- Wild grape vines
- Scattered witch hazel seedlings
- Scattered ferns
- Scattered grasses
- Greenbrier
- Sourwood:
 - 2 1" DBH
 - 1 2" DBH
- Red maple:
 - 1 3" DBH
- Tulip poplar:
 - 1 3" DBH
- Scattered Seedlings less than 1" DBH: Sweetgum, mockernut hickory, sourwood and white oak.

Sample Plot 5 Vegetation:

- Scattered lowland blueberry
- Wild grape vines

- **Post Oak**
 - 1 7" DBH
- **Mockernut Hickory**
 - 4 1" DBH
 - 1 5" DBH
- **Red Maple:**
 - 1 1" DBH
 - 1 5" DBH
- **Sweetgum:**
 - 1 1" DBH
 - 1 3" DBH
 - 1 4" DBH
 - 1 5" DBH
- **Sourwood:**
 - 1 1/2" DBH
 - 1 6" DBH
- **Red maple:**
 - 1 2" DBH
- **Southern red oak:**
 - 1 1" DBH
- **White oak:**
 - 1 1" DBH
 - 1 5" DBH
- **Scattered seedlings less than 1" DBH include:** Sweetgum, white oak, post oak, red maple, willow oak, and sourwood.

Sample plot 6 Vegetation:

- **A lot of scattered grasses**
- **Scattered lowland blueberry**
- **Scattered ferns**
- **Greenbrier**
- **Scattered Jack in the pulpit**
- **Sweetgum:**
 - 1 1" DBH
 - 1 2" DBH
- **Privet:**
 - 1 1/2" DBH
 - 2 1" DBH
- **Willow oak:**
 - 1 2" DBH
- **Sourwood:**
 - 1 1/2" DBH

- **Southern red oak:**
 - 1 2" DBH
- **Scattered seedlings less than 1" DBH include: White oak, sweetgum, sourwood and red maple.**

Sample Plot 7 Vegetation:

- **Scattered grasses**
- **Scattered lowland blueberry**
- **Greenbrier**
- **Scattered Jack in the pulpit**
- **Scattered wild grape vines**
- **Scattered ferns**
- **Sweetgum:**
 - 1 1/2" DBH
 - 2 7" DBH
- **White oak:**
 - 1 19" DBH
- **Sourwood:**
 - 1 3" DBH
 - 1 4" DBH
- **Red Maple:**
 - 2 2" DBH
 - 1 6" DBH
- **White Oak:**
 - 1 8" DBH
- **Scattered seedlings less than 1" DBH include: Sweetgum, white oak, blackjack oak and sourwood.**

Sample Plot 8 Vegetation:

- **Greenbrier**
- **Scattered lowland blueberry**
- **Scattered grasses**
- **Scattered privets**
- **Scattered wild grape vines**
- **Scattered jack in the pulpit**
- **Scattered witch hazel**
- **Sourwood:**
 - 5 1" DBH
 - 1 3" DBH
 - 1 5" DBH
 - 1 6" DBH

- **Black gum:**
 - 2 1" DBH
- **Sweetgum:**
 - 2 1" DBH
- **Red maple:**
 - 2 2" DBH
- **Loblolly pine:**
 - 1 7" DBH
- **Scattered seedlings less than 1" DBH include: White oak, sweetgum, and red maple.**

Sample Plot 9 Vegetation:

- **Scattered grasses**
- **Wild grape vines**
- **Scattered ferns**
- **Greenbrier**
- **Honeysuckle**
- **Scattered lowland blueberry**
- **Sweetgum:**
 - 1 7" DBH
- **Red maple:**
 - 1 11" DBH
- **Tulip poplar:**
 - 1 6" DBH
- **Mockernut hickory:**
 - 2 1" DBH
- **Water oak:**
 - 1 2" DBH
- **Scattered seedlings less than 1" DBH include: White oak, sweetgum, sourwood, loblolly pine, and mockernut hickory.**

4. Tree Protection Area

- Project Name: Thales Academy
 - Acreage: 9.74 ac
- **Tree Protection Required: 42,427.44 sqft**
 - Specimen Tree CRZ Area Protected: 337.5 sq ft
 - Area credited towards TPA: 1,012.5 sq ft
 - Tree Stand Area Protected: 50,812.4 sq ft
 - **Total Tree Protection Area: 51,824.9 sq ft**



THE TOWN OF

Holly Springs

Thales Academy Expansion Development Plan, Special Exception Use, and Waiver 17-DP-04-A02 / 21-SEU-02 Conditions of Approval

Motion and Conditions of Approval:

Motion to adopt Resolution #22-11 to make and accept the Findings of Fact for consideration of and to approve Special Exception Use and Waiver with the following conditions:

Special Exception Use 21-SEU-02

- 1.

Waiver (Alternate Compliance for Architectural Design Requirements)

- 1.

Motion to approve / deny / defer Development Plan 17-DP-04-A02 for Thales Academy Expansion as submitted by Withers Ravenel, Project Number 09210285, dated Revised 10/29/21, with the following conditions:

1. All previous conditions of approval for Thales Academy Development Plan apply to this plan except for any condition that describes a fee or a fee-in-lieu to be paid shall now comply with the current amounts due pursuant to the Town's current annual budget or any unexpired development agreement.
2. A UDO Permit must be submitted and approved for Sign Installation for permanent signage.
3. Invoiced fees from Special Study third party review must be paid prior to first Construction Drawing Submittal, and no later than prior to Construction Drawing Approval.
4. If build out exceeds the anticipated time frame in the approved TIA, an update of the TIA will be required prior to or with the Development Plan for the associated phase. Recommended improvements will be required to be completed prior to plat approval of that phase.

Office of the Mayor

P.O. Box 8 • 128 S. Main Street • Holly Springs, NC 27540 • www.hollyspringsnc.us

Email: dick.sears@hollyspringsnc.us

5. Thoroughfares, collectors and boulevards will require a calculated pavement design with 1st construction drawing submittal. This may result in a pavement cross section bigger than the specified minimum.
6. A Deed of Easement is required to be executed for public vehicular & public pedestrian access between the property owners at the time of plat.
7. Offsite Sewer Infrastructure Incomplete: If any off site sewer facilities are needed to serve this project and are not completed and accepted by the Town at the time of approval of this preliminary subdivision plan, then these facilities must be completed prior to construction drawing approval unless otherwise approved by the Director of Engineering. The Town is not responsible for completion of off-site sewer facilities, and will not guarantee completion of such facilities by any other party. This will become a condition of plan approval.
8. A verification letter that confirms no changes occurred to the gravity sewer network; including final sizing for lines that are stubbed upstream, will be required with first construction drawing submittal. A Final Gravity Sewer Line Sizing Report may be required with first construction drawing submittal review for all lines that are stubbed to adjacent upstream properties. Include calculations to document line sizes, adequacy of proposed sanitary sewer lines to serve all future upstream development.
9. Continue to monitor the northwest drive aisle connection, Seale Wood Trail, for additional traffic control measures during school operations. Any necessary mitigations shall be the responsibility of the developer.
10. Approval of Stormwater Management Plan is required prior to issuance of a land disturbance permit or construction drawing approval.
11. Payment of the Stormwater Fee-in-Lieu will be required prior to construction drawing approval.
12. All items listed on the Stormwater Submittal Checklist, Form #16003, must be included with the first construction drawing submittal.
13. This project will be required to meet Town's NPDES Phase II Post Construction Stormwater ordinance.
14. Stormwater sureties are required on this project. A performance surety in the form of a bond, letter of credit or cash is required in the amount of 125% estimated construction cost of the stormwater BMP prior to the preconstruction meeting and a maintenance surety in the form of a cash escrow account in the amount of 35% the actual construction cost of the SCM is required at the end of the performance monitoring period for the project.
15. All environmental permits must be obtained prior to construction drawing approval and/or issuance of a land disturbance permit for the entire project.

Office of the Mayor

P.O. Box 8 • 128 S. Main Street • Holly Springs, NC 27540 • www.hollyspringsnc.us

Email: dick.sears@hollyspringsnc.us

TOWN OF HOLLY SPRINGS
(17-DP-04-A02 & 21-SEU-02)

AFFIDAVIT OF
BRANDON HAFNER

1. I am over the age of eighteen years old, am under no disability, and have personal knowledge of all matters stated in this Affidavit.

2. I am the VP of Construction and Facilities for Thales Academy, which seeks to expand an existing private school, currently containing one school building for grades kindergarten through eighth grade, by adding a new upper school building to accommodate grades six through twelfth grade and a gymnasium, for a total maximum of 1200 students, on an approximately 9.74 acre site located at 11244 Holly Springs New Hill Road, Holly Springs, North Carolina, PIN 0649265028 (the “Site”).

3. Thales Academy anticipates a phased opening of the school expansion over several years. Thales Academy anticipates the expansion will open in 2023 and reach full occupancy by 2026.

4. The proposed school expansion, like the existing school, will operate Monday through Friday, from approximately 7:10 a.m. through 3:30 p.m. An afterschool program will also operate until approximately 6:00 p.m. for approximately fifteen percent of the school's enrollment. There will be no evening or weekend events held on the Site. There will be no sporting events held on the Site; the proposed gymnasium will be used for physical education classes and intramural sports activities. The school expansion, like the existing school, will operate on a year-round schedule, with a three-week break every quarter and a five-week break during the summer.

5. Thales Academy will institute a 45-minute staggered bell schedule between the upper and lower schools on the Site to ensure no queueing overflow onto Holly Springs New Hill Road during carpool. Additionally, a carefully designed and closely managed carpool and queuing plan will be enforced at the Site, as described in greater detail in the Traffic Impact Analysis and site plan submitted as part of the application. In addition, Thales Academy requires every parent sign a carpool policy that prohibits arrival to campus before the designated carpool times, and allows Thales Academy to ask any parent to leave if they arrive early and cause queueing issues. During carpool times, all staff members on campus assist with the direction of traffic and enforcement of the queueing plan.

6. There will be no outdoor fields or other uses or facilities that would generate loud noises or bright lighting on the Site. There are no outdoor bells, loudspeakers or intercoms on the Site.

7. Thales Academy is requesting approval for the proposed school expansion to meet the current demand for enrollment, which currently exceeds the capacity of the existing building on the Site. The proposed expansion will support the adjacent neighborhood to the west and other residences in the area by providing additional education options for families in this rapidly growing area, while also reducing the burden on public schools.

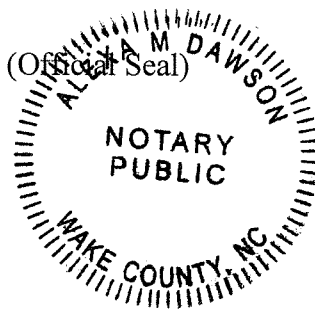
FURTHER, AFFIANT SAYETH NOT.

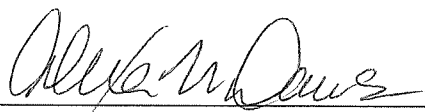
This the 3rd day of March, 2022.


Brandon Hafner

Signed and sworn to before me this day by BRANDON HAFNER.

Date: March 3, 2022




Official Signature of Notary Public

Alexa M. Dawson, Notary Public

My commission expires: 4/28/24

NORTH CAROLINA
WAKE COUNTY

TOWN OF HOLLY SPRINGS
(17-DP-04-A02 & 21-SEU-02)

IN RE THALES ACADEMY MAJOR)
AMENDMENT TO DEVELOPMENT)
PLAN AND SPECIAL EXCEPTION)
USE)
_____)

AFFIDAVIT OF
BRENDIE VEGA

I, BRENDIE VEGA, being duly sworn, hereby depose and say:

1. I am over the age of eighteen years old, am under no disability, and have personal knowledge of all matters stated in this Affidavit.

2. I am the Director of Planning for WithersRavenel, the civil engineering and land development and planning firm retained by Thales Academy for the proposed expansion of an existing private school. The existing school currently contains one school building for grades kindergarten through eighth grade, and the proposed expansion would add a new upper school building to accommodate grades six through twelfth grade and a gymnasium, for an overall maximum of 1200 students, on an approximately 9.74 acre site located at 11244 Holly Springs New Hill Road, Holly Springs, North Carolina, PIN 0649265028 (the "Site"). On behalf of Thales Academy, WithersRavenel submitted a major amendment to an existing development plan (the "Site Plan") and special exception use application (the "Application") for the project, which must meet the criteria in Holly Springs' Unified Development Ordinance (UDO) § 9.10.A.2.

3. I received my master's degree in urban planning from the University of Michigan. I obtained my AICP certification in 2006 from the American Institute of Certified Planners.

4. I have reviewed the layout and design of the proposed school expansion shown on the Site Plan, and am familiar with the zoning classification for the Site, applicable UDO requirements and applicable Comprehensive Plan policies.

5. The Site is zoned R-10, Residential District, which is established to protect, promote, and maintain the development of medium-density, single-family dwellings and provide limited public and institutional uses, such as schools, that are compatible therewith. Schools, public and private, are permitted as a Special Exception Use in the R-10, Residential District.

6. The Character Area designation for the Site on the Town's Comprehensive Plan is Mixed Residential Neighborhood. This Character Area designation identifies schools as contextually appropriate uses.

7. Based on the above, the proposed school expansion is consistent with the character of the Site's zoning district and land uses authorized therein as it is an expansion of a private school use that will support surrounding residential development, providing additional options for education to the surrounding community and decreasing the burden on public schools in this rapidly growing area.

8. The Project is also consistent with the Comprehensive Plan as the proposed school expansion is a contemplated use for the Site's designated Character Area.

FURTHER, AFFIANT SAYETH NOT.

This the 2nd day of March, 2022.

Brendie Vega
Brendie Vega

Signed and sworn to before me this day by Brendie Vega.

Date: March 2, 2022

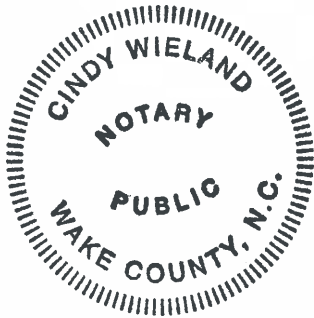
Cindy Wieland

Official Signature of Notary Public

Cindy Wieland, Notary Public

(Official Seal)

My commission expires: 2-22-26



NORTH CAROLINA
WAKE COUNTY

TOWN OF HOLLY SPRINGS
(17-DP-04-A02 & 21-SEU-02)

IN RE THALES ACADEMY MAJOR)
AMENDMENT TO DEVELOPMENT)
PLAN AND SPECIAL EXCEPTION)
USE)
_____)

AFFIDAVIT OF
DANIEL WHATLEY

I, DANIEL WHATLEY, being duly sworn, hereby depose and say:

1. I am over the age of eighteen years old, am under no disability, and have personal knowledge of all matters stated in this Affidavit.

2. I am the registered landscape architect with WithersRavenel for Thales Academy's proposed expansion of an existing private school. The existing school currently contains one school building for grades kindergarten through eighth grade, and the proposed expansion would add a new upper school building to accommodate grades six through twelfth grade and a gymnasium, for a total maximum of 1200 students, on an approximately 9.74 acre site located at 11244 Holly Springs New Hill Road, Holly Springs, North Carolina, PIN0649265028(the "Site"). On behalf of Thales Academy, WithersRavenel submitted a major amendment to an existing development plan (the "Site Plan") and a special exception use application (the "Application") for the project, which must meet the criteria in Holly Springs' Unified Development Ordinance (UDO) Section 9.10.A.2.

3. I received my degree in Horticultural Science from North Carolina State University, and am a registered landscape architect in the State of North Carolina. I am also a certified landscape designer with the Association of Professional Landscape Designers. I have over 10 years of experience in permitting, master planning and landscape architecture, and have worked in landscape architecture in North Carolina for 10 years.

4. I have overseen the layout and design of the Site Plan, and interacted with City staff regarding UDO requirements, including requirements for parking, pedestrian and vehicular circulation, setbacks, buffers, landscaping, tree conservation, building height and fire access.

5. As demonstrated by the submitted Site Plan, the proposed school expansion will comply with all development standards applicable to the proposed use in the R-10 zoning district for the Site, except for the waivers previously approved for the existing school in 17-SEU-02, 17-VARTC-03, and the associated waivers and alternative compliance requests from the UDO architectural design requirements.

6. The Site is bordered to the south by Holly Springs New Hill Road, to the west by the Hensley residential neighborhood, and to the north and east by vacant land zoned for industrial uses. Farther east and south of the Site there are multifamily, commercial and light industrial uses.

7. The siting of the proposed new upper school building, gymnasium, parking and drive aisles have been configured to create maximum separation from the residential neighborhood to the west and to maximize retention of natural vegetation along the western and northern property lines. Site Plan, Sheet L1.0. Additional landscaped buffers will be installed along the western, northern and eastern property lines where retention of natural vegetation is not possible. Site Plan, Sheet L2.0.1.

8. Off street parking, trash enclosures and trash-pick up and removal areas are located to minimize economic, glare, odor and other impacts on adjoining properties and properties in the general neighborhood. Off street parking is located at the center of the site and will be screened from the residential neighborhood to the west by natural vegetation and additional landscaped buffers. Site Plan, Sheets C.2, C2.3, C2.4, L1.0, L2.0.1, L2.1, L2.3, L2.4. Exterior lighting for the parking areas will not be measurable on the western property line adjacent to the residential

neighborhood, and will be well under the lighting limitations for the northern and eastern property lines. Site Plan, Sheet labeled “Site Lighting Plan”. The trash enclosure is located on the eastern property line, farthest from the residences to the west, and will be screened. Site Plan, Sheet L2.0.1. There are no other loading or services areas on the site. Additionally, off street parking and trash enclosures and pick-up areas are sited to be safe, convenient and allow for access in case of an emergency. Site Plan, Sheet C2.6.

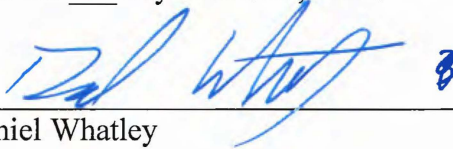
9. The access drives and driveways will be sufficient in size and properly located to ensure automotive and pedestrian safety and convenience and traffic flow, as well as control and access in the case of fire or other emergency. The proposed expansion will improve the current queueing spillback for the existing school building onto Holly Springs New Hill Road by providing additional queueing space. The current queueing space for the existing lower school building of 1,400 feet will be increased to 3,500 feet with the proposed expansion, such that no queue spillback is anticipated onto Holly Springs New Hill Road after the expansion. Site Plan, Sheet C2.8. The average demand queue required for the increased capacity at the lower school building is 2,552 feet, and the high demand queue required is 3,318 feet. Site Plan, Sheet C2.8. The plans for the proposed school expansion will provide a 3,503 feet queue, exceeding the requirements. Site Plan, Sheet C2.8. The average demand queue required for the proposed upper school building is 2,426 feet and the high demand queue required is 3,155 feet. Site Plan, Sheet C2.7. The plans for the proposed school expansion will provide a 3,722 feet queue, exceeding the requirements. Site Plan, Sheet C2.7.

10. The siting of the proposed expansion together with the proposed buffering, landscaping, and tree conservation will serve to ensure the proposed school expansion is in harmony with the adjoining properties and general area and minimize adverse impacts. The design

and siting of the off street parking, access drives, driveways and queueing plans ensure that the proposed expansion will not be injurious to the public health, safety, convenience or general welfare.

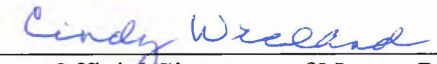
FURTHER, AFFIANT SAYETH NOT.

This the 3 day of March, 2022.

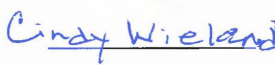

Daniel Whatley

Signed and sworn to before me this day by Daniel Whatley .

Date: March 3, 2022


Official Signature of Notary Public

(Official Seal)

 Notary Public

My commission expires: 2-22-26



NORTH CAROLINA
WAKE COUNTY

TOWN OF HOLLY SPRINGS
(17-DP-04-A02 & 21-SEU-02)

IN RE THALES ACADEMY MAJOR)
AMENDMENT TO DEVELOPMENT)
PLAN AND SPECIAL EXCEPTION)
USE)
_____)

AFFIDAVIT OF
DAVID MCCLURE

I, DAVID MCCLURE, being duly sworn, hereby depose and say:

1. I am over the age of eighteen years old, am under no disability, and have personal knowledge of all matters stated in this Affidavit.

2. I am the licensed professional engineer with WithersRavenel for Thales Academy's proposed expansion of an existing private school. The existing school currently contains one school building for grades kindergarten through eighth grade, and the proposed expansion would add a new upper school building to accommodate grades six through twelve and a gymnasium, for a total maximum of 1200 students, on an approximately 9.74 acre site located at 11244 Holly Springs New Hill Road, Holly Springs, North Carolina, PIN0649265028(the "Site"). On behalf of Thales Academy, WithersRavenel submitted a major amendment to an existing development plan (the "Site Plan") and a special exception use application (the "Application") for the project, which must meet the criteria in Holly Springs' Unified Development Ordinance (UDO) Section 9.10.A.2.

3. I received my degree in Civil Engineering from Tennessee Technological University, and am a licensed professional engineer in the State of North Carolina. I have over 24 years of experience in engineering.

4. As shown on the Site Plan, the proposed new water and sewer lines for the expansion will connect to existing water and sewer facilities on the site. Site Plan, Sheets C4.0, C4.1, C4.2, C4.3.

5. For the proposed school expansion, I performed a water system analysis and sewer study. The water system analysis is attached hereto as **Exhibit A** (“Water Analysis”), and the sewer study is attached hereto as **Exhibit B** (“Sewer Study”).

6. For the Water Analysis, I assessed the adequacy of the flow from the proposed water system to meet the fire hydrant flow requirements to provide fire protection for the proposed expansion. Based on my experience and knowledge and results of the analysis I performed, which are detailed in the Water Analysis, the proposed water system is adequate to meet the Town’s fire flow requirements to provide fire protection to the proposed expansion.

7. For the Sewer Study, I evaluated whether the downstream sewer system has the capacity to accept the anticipated sewage from the proposed expansion. As detailed in the Sewer Study, I reviewed the as-built plans for the existing sewer system and evaluated the properties currently contributing to the existing sewer system. Based on my experience and knowledge and the results of the analysis I performed, which are detailed in the Sewer Study, the existing sewer system is adequate to handle the proposed sewage flow from the proposed expansion.

FURTHER, AFFIANT SAYETH NOT.

This the 04 day of March, 2022.

David McClure
David McClure

Signed and sworn to before me this day by David McClure.

Date: 03/04/22

Erin O'Rawe

Official Signature of Notary Public

Erin O'Rawe, Notary Public

My commission expires: 10/18/26

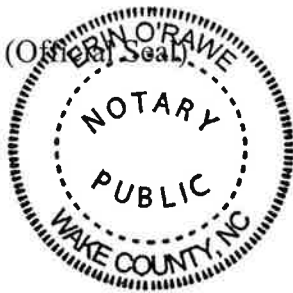


Exhibit A
of
Affidavit of David McClure



WithersRavenel
Our People. Your Success.

WATER DISTRIBUTION SYSTEM ANALYSIS

CaptiveAire, Inc.
Thales Academy
Holly Springs, North Carolina

Prepared For:

CaptiveAire, Inc.
4641 Paragon Park Road
Raleigh, NC 27616
Phone:
ATTN: Brandon Hafner

Prepared By:

WithersRavenel
115 MacKenan Drive
Cary, NC 27511
Phone: 919.469.3340
License #: C-0832

December 10, 2021

Project Number: 09210285.00

DocuSigned by:

David A. McClure
3D0771B82C9A405...

12/10/2021



David A. McClure, P.E.

Table of Contents

A. Project Description1

B. Design Requirements.....1

C. Fire Hydrant Test.....1

D. Model Calibration2

E. Assumptions.....3

F. Fire Flow Analysis Summary3

G. Fire Flow Results3

Appendices

Appendix A Project Map

Appendix B Hydrant Test and Simulated Pump Curve

Appendix C Calibration - Static Pressure

Appendix D Calibration - Residual Pressure

Appendix E Fire Flow Analysis Results

Appendix F School Fire Flow Analysis Results

Appendix F Gym Fire Flow Analysis Results

A. PROJECT DESCRIPTION

WithersRavenel (WR) has completed an analysis of the water distribution system for the proposed Thales Academy project. The project is located near the intersection of Holly Springs/New Hill Road and Socratic Way in Holly Springs, NC. The water distribution system will be owned and operated by the Town of Holly Springs.

Thales Academy is an existing school with approximately 450 students. The expansion of the academy will result in an increase to 1,200 students total. The expansion will also include a gymnasium.

In order to ensure adequate pressure and fire protection for the Thales Academy development a hydraulic analysis has been conducted utilizing a hydrant flow test. **Appendix A** contains maps of the water distribution system for Thales Academy and surrounding areas.

B. DESIGN REQUIREMENTS

A fire flow analysis is required to properly size the water distribution system serving the site. With proper line sizes, engineers can verify that the water distribution system can adequately deliver the necessary flow and meet the required system pressure. The Town of Holly Springs required fire flow is determined by the Town of Holly Springs Engineering and Construction Standards (ED&CS) Table E1 of Section 6.

Both buildings are categorized as Type II-B with sprinkler systems. **Table 1** provides information related to each building showing the required fire flow.

Table 1 Fire Flow Requirement		
	School	Gymnasium
Area	18,600 sf	13,832 sf
Type of Construction	Type II-B	Type II-B
Required Fire Flow	3,000 gpm	2,500 gpm
Approved Reduction	50%	40%
Required Fire Flow*	1,500 gpm	1,500 gpm
Sprinkler Demand	311 gpm	344 gpm

*1,500 gpm Minimum Fire Flow with Sprinkler Reduction

C. FIRE HYDRANT TEST

Using Bentley's WaterGEMS, a hydraulic analysis was constructed for a portion of the Town's water distribution system. **Appendix A** shows the water distribution system schematic including pipes, Junctions, reservoirs, pumps, hydrants, and existing and proposed water lines.

WR staff, with the assistance of Town of Holly Springs staff, conducted a hydrant flow test on December 9, 2021. This flow data was used as a boundary condition for predicting the available fire flow within the site. The "hydrant test" approach is an accepted method that provides sufficiently accurate predictions of flow and pressure and involves observing the pressure at each test hydrant under two conditions. The first condition is that no hydrants are discharging water. The second condition is that nearby hydrant(s) are opened, and the flow rate measured.

Appendix B contains the hydrant test results. **Table 2** summarizes the existing conditions based on the provided hydrant test and serves as a check to verify that the model is properly calibrated.

Table 2 Hydrant Test Data	
Hydrant Flowed	intersection of Socratic Way and Searle Wood Trail
Flow Rate	1,255 gpm
Hydrant Measuring Pressure	intersection of Holly Springs New Hill Road and Socratic Way
Pressure Hydrant Elevation	412 ft MSL
Static Pressure	74 psi
Residual Pressure	67 psi
Projected Flow at 20 psi	3,783 gpm

Utilizing the flow data, residual pressures corresponding to other flow rates at the test hydrant were computed via the fire flow equation described in “Fire Flow Testing and Marking of Hydrants”, NFPA 291 and shown here for convenience.

$$Q_r = Q_f * \left(\frac{H_r}{H_f} \right)^{0.54}$$

$Q_r =$	Flow available at the desired residual pressure
$Q_f =$	Flow obtained from hydrant test
$H_r =$	Pressure drop to desired residual
$H_f =$	Pressure drop during hydrant flow test

The pressure/flow relationship at the boundary of the model was simulated in the hydraulic model using a “virtual” pump with a multi-point rating curve. The two initial points of the pump curve were obtained from the hydrant flow test data; the additional points were calculated using the fire flow equation above for various pressures. **Appendix B** contains the simulated pump curve report used in the model.

D. MODEL CALIBRATION

A hydraulic model of the water distribution system was constructed. Calibration of the model was used to verify the accuracy of the model predictions against actual data. A simulation was performed to calibrate the system under static conditions (no hydrant flowing). Hydrant “H-Pressure” corresponds to the hydrant at the intersection of Holly Springs New Hill Road and Socratic Way where system pressure was obtained. A static pressure of 74 psi was reported and

the model also reported a pressure of 74 psi at Hydrant “H-Pressure”. A second calibration of the model simulated the test pressure while the hydrant was flowing. Hydrant “H-Flow” depicts the hydrant at the intersection of Socratic Way and Searle Wood Trail where the flow rate was measured. The results of this calibration test match that of the field test in that 1,255 gpm was withdrawn from Hydrant “H-Flow” while measuring a residual pressure of 67 psi at Hydrant “H-Pressure”.

Based on the results of the calibration, the model matched actual field test data and is therefore capable of accurately predicting available fire flow. **Appendix C** is a summary of the modeling results showing the existing static conditions and includes the Reservoir, Pump, Junction, Hydrant, and Pipe Reports. **Appendix D** is similar to **Appendix C** except it is the summary of the residual conditions with the test hydrant flowing.

E. ASSUMPTIONS

The analysis requires that some assumptions about the existing and proposed water distribution system be made. The analysis is dependent on the hydrant test which only reveals conditions at one moment in time. The available hydraulic grade line would of course vary and is dependent on the time it was conducted. To determine friction losses in pipes using the Hazen-Williams equation a roughness factor (C) of 120 was used for ductile iron pipes to simulate the behavior of an older system.

F. FIRE FLOW ANALYSIS SUMMARY

WaterGEMS contains a fire flow analysis tool within the program. This procedure permits the automatic application of fire flow demands at each Junction in the system. In addition to the fire flow demand the peak day demand has been included in the calculations. The peak day demand (based on 15A NCAC 18C .0409) for the entire school is:

$$1,200 \text{ students} \times 15 \frac{\text{gpd}}{\text{unit}} = 18,000 \text{ gpd} = 13 \text{ gpm}$$

G. FIRE FLOW RESULTS

Appendix E contains a summary of the results of the fire flow analysis. **Appendix F** summarizes a school fire scenario accounting for a sprinkler demand of 311 gpm. **Appendix G** summarizes a gym fire scenario accounting for a sprinkler demand of 344 gpm. It should be noted that Section B105.3 in Appendix B of the latest edition of the NC Fire Code only requires that the water supply be capable of providing the greater of the sprinkler demand or required fire flow, but not both. However, the Town has required that the analysis consider both the sprinkler demand and the required fire flow simultaneously. The Thales Academy project with 1,500 gpm fire flow, 13 gpm peak domestic flow, and the previously described sprinkler demand provides a minimum of 49 psi residual pressure at the critical node (H-1). With a residual pressure of 25 psi H-3 will provide a fire flow of 2,168 gpm. This meets the fire flow requirements.

Appendix A

Project Map



LEAST FIRE FLOW AVAILABLE
1,680 GPM @ 25 PSI
1,500 GPM @ 36 PSI

Color Coding Legend

Pipe: Diameter (in)

<= 6

<= 8

Other

SEARLE WOOD TRAIL

HYDRANT TEST
FLOW HYDRANT
1,255 GPM

H-Flow
J-1
P-17
P-18
J-12
J-11

SOCRATIC WAY

HYDRANT TEST
PRESSURE HYDRANT
STATIC PRESSURE 74 PSI
RESIDUAL PRESSURE 67 PSI

J-4
P-2
P-23
PMP-1
R-1
P-22

EXISTING THALES ACADEMY
GRADES K-5

PROPOSED THALES ACADEMY
GYMNASIUM

PROPOSED THALES ACADEMY
GRADES 6-12

OLD HOLLY SPRINGS APEX ROAD

HOLLY SPRINGS NEW HILL ROAD

Water Map

Legend

- 2"
- 3"
- 4"
- 6"
- - - 6" Abandon
- 8"
- - - 8" Abandon
- 10"
- 12"
- 16"
- - - 30"
- Unknown
- Future I-540
- Town Area
- Town ETJ



0 700 1,400 2,800
Feet

1 inch = 1,400 feet
State Plane NAD 1983
Revision Date: 2/20/2020
Print Date: 6/11/2020

For More Information contact:
Town of Holly Springs
Engineering Department
P.O. Box 8
Holly Springs, NC 27540
919.557.3920
www.hollyspringenc.us

The Town expressly denies any and all responsibility for errors, if any, in the information/data or for the misuse of the information/data by the user or anyone else. The user understands that he or she should verify the accuracy of the information/data before using it.

Appendix B

Hydrant Test and Simulated Pump Curve

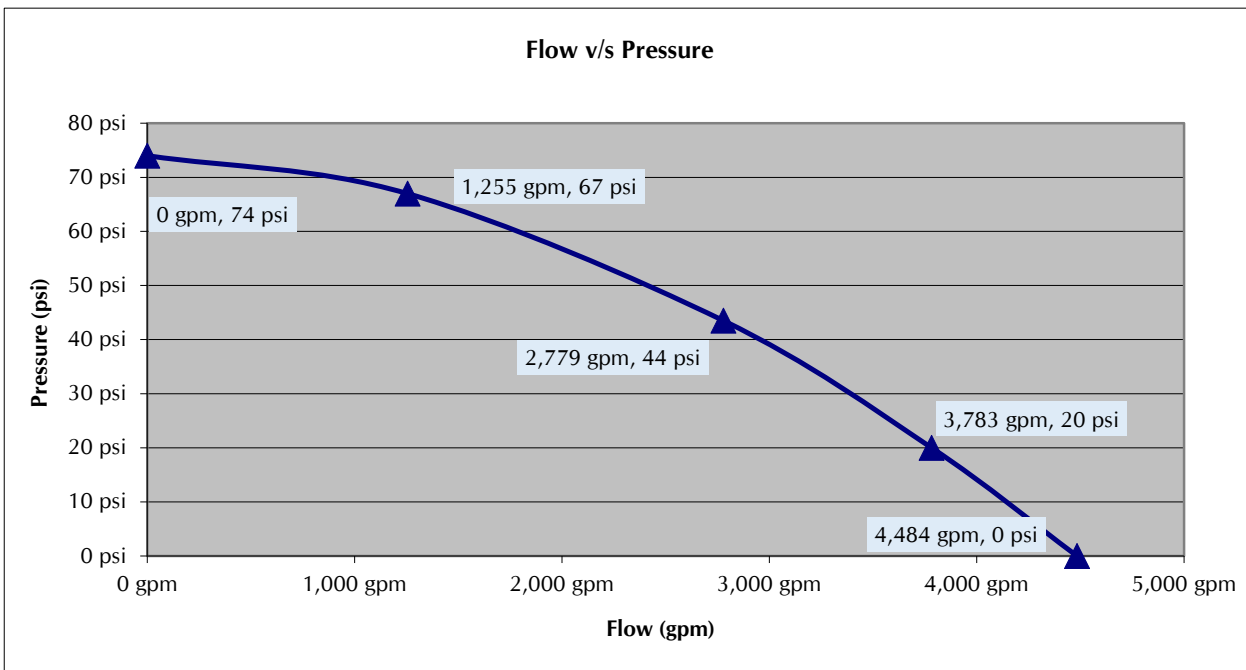
FIRE FLOW TEST DATA

Project Name	Thales Academy
WR Project #	09210285.00
Test Date	December 9, 2021
Flow Hydrant Location	intersection of Socratic Way and Searle Wood Trail
Pressure Hydrant Location	intersection of Holly Springs New Hill Road and Socratic Way

Test Hydrant Static Pressure	74 psi
Test Hydrant Residual Pressure	67 psi
Nozzle 1 Pressure	14 psi
Nozzle 1 - 2" Pitotless Flow (from chart)	617 gpm
Nozzle 2 Pressure	15 psi
Nozzle 2 - 2" Pitotless Flow (from chart)	638 gpm
Total Calculated Flow	1,255 gpm
Pressure Drop	7 psi

Flow/Pressure Relationship	Flow	Pressure
	0 gpm	74 psi
	1,255 gpm	67 psi
	2,779 gpm	44 psi
	3,783 gpm	20 psi
	4,484 gpm	0 psi

Pump Curve	Flow	Head
	0 gpm	171 ft
	1,255 gpm	155 ft
	2,779 gpm	100 ft
	3,783 gpm	46 ft
	4,484 gpm	0 ft





(ITEMS IN BOLD ARE REQUIRED INFORMATION DURING FIELD MEASUREMENTS)

SYSTEM INFORMATION

WR Project #: 09210285.00

WR Task #: Task 3, Subtask 2

System: Holly Springs

Service Location Address: 11244 Holly Springs New Hill Rd, Holly Springs, NC 27540

TEST INFORMATION

Test Designation:

One Test Hydrant, One Flow Hydrant

(if flowing multiple hydrants simultaneously, assign the same test designations to the respective worksheets)

Test Date:

12-9-21

Test Time:

10:55

PRESSURE ZONE

Zone Name:

Zone Elevation:

feet

Tank Elevation at Test Time:

feet

Pressure Zone Comments:

TO HS REP DAVID SUMMERS PROVIDED TANK
ELEV'S @ TEST TIME - SEE BELOW

RESULTS:

<u>Residual Hydrant</u>		<u>Flowing Hydrant</u>	
Residual Hydrant Elevation: (filled out by Engineer)	_____ MSL	Pitot 1 Pressure: <u>14</u> psi	Pitot 2 Pressure: <u>15</u> psi
Theoretical Static Pressure: (filled out by Engineer)	_____ psi	Flow 1: (filled out by Engineer)	Flow 2: (filled out by Engineer)
Measured Static Pressure: <u>74</u> psi		Total Flow: (filled out by Engineer)	_____ gpm
Measured Residual Pressure: <u>67</u> psi			
Equip. Used: _____			

Test Comments:

SCHOOL DAYS TANK ELEVATION 19.5'

LEE ST. TANK ELEVATION 22.8'

This is to certify that the above test results were completed in accordance with the WithersRavenel, Inc. Utilities Department Procedure.

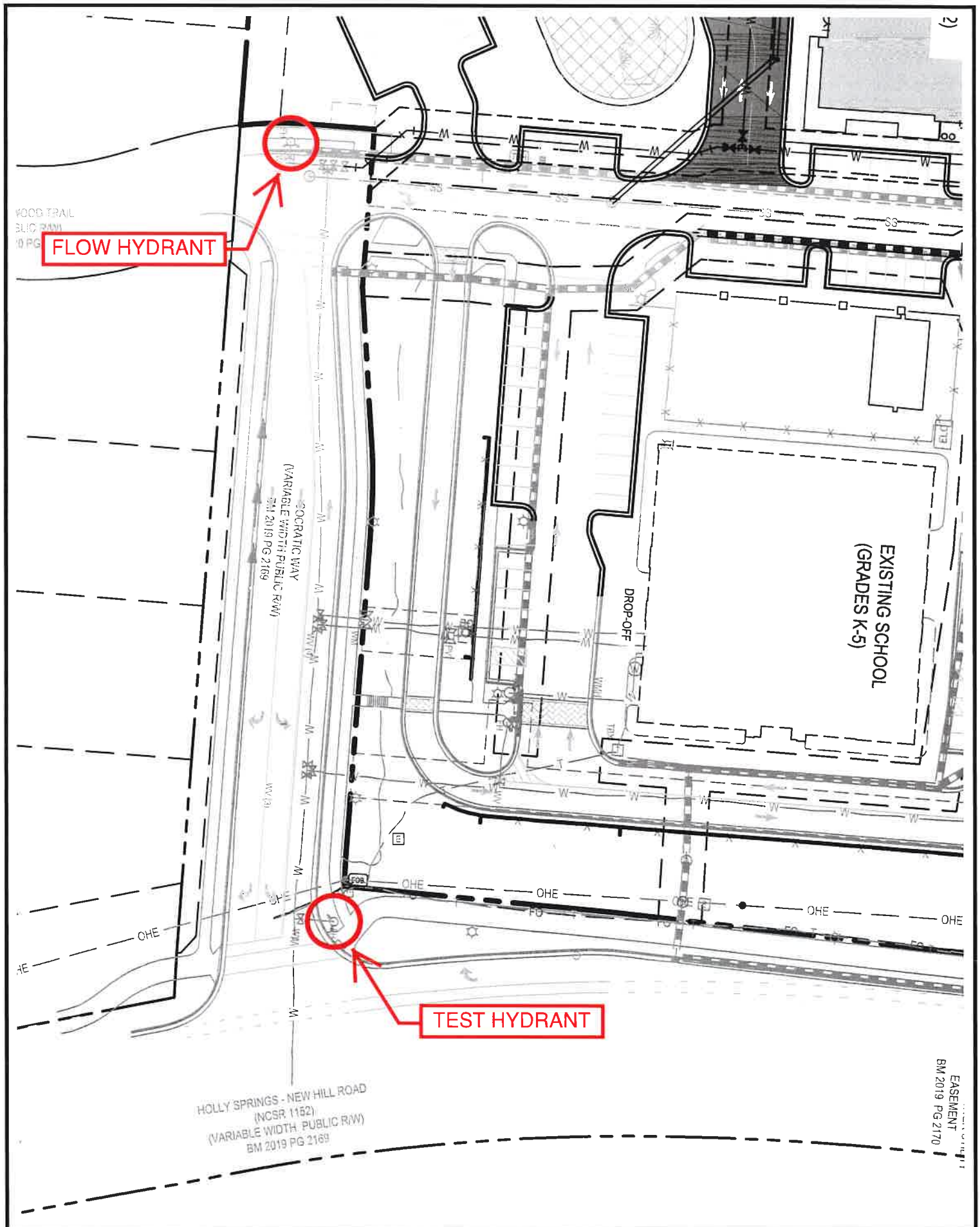
System Staff Present

Test Conducted by (WithersRavenel Staff)

Date

Signature

Fire Flow Test Map



Thales Academy Addition
Pump Definition Detailed Report: Hydrant Test Pump
Active Scenario: Existing Residual Hydrant Test

Element Details		
ID	368	Notes
Label	Hydrant Test Pump	

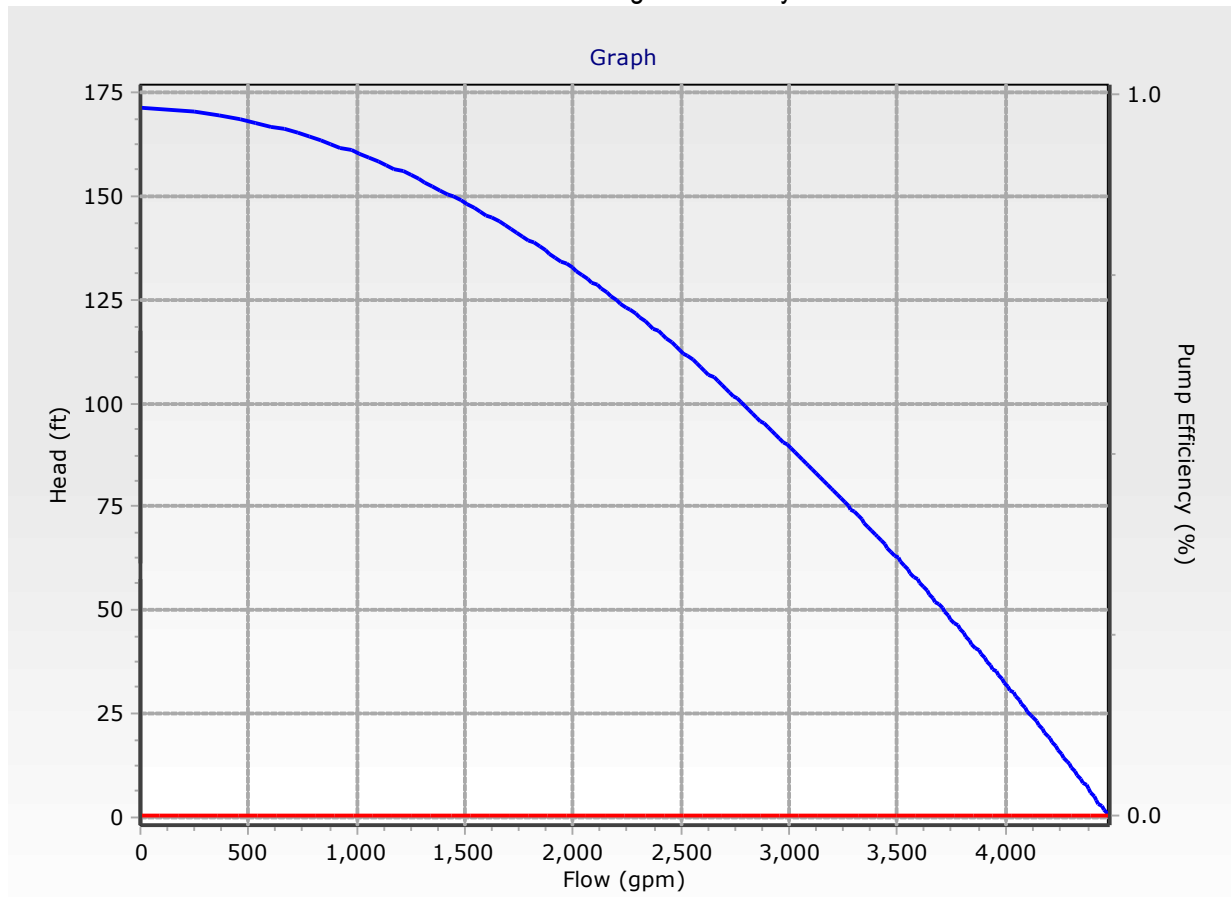
Pump Curve

Flow (gpm)	Head (ft)
0	171
1,255	155
2,779	100
3,783	46
4,484	0

Pump Efficiency Type			
Pump Efficiency Type	Best Efficiency Point	Motor Efficiency	100.0 %
BEP Efficiency	0.0 %	Is Variable Speed Drive?	False
BEP Flow	0 gpm		

Transient (Physical)			
Inertia (Pump and Motor)	0.000 lb·ft ²	Specific Speed	SI=25, US=1280
Speed (Full)	0 rpm	Reverse Spin Allowed?	True

Thales Academy Addition
Pump Definition Detailed Report: Hydrant Test Pump
Active Scenario: Existing Residual Hydrant Test



Appendix C

Calibration

Static Pressure

Thales Academy Addition

FlexTable: Hydrants

Active Scenario: Existing Static Hydrant Test

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
H-5	397	0	81	583
H-6	398	0	80	583
H-Flow	400	0	79	583
H-Pressure	412	0	74	583

Thales Academy Addition
FlexTable: Junctions
Active Scenario: Existing Static Hydrant Test

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
J-1	401	0	79	583
J-4	412	0	74	583
J-6	393	0	82	583
J-7	403	0	78	583
J-10	393	0	82	583
J-11	398	0	80	583
J-12	399	0	80	583
J-13	412	0	74	583

Thales Academy Addition
FlexTable: Pipes
Active Scenario: Existing Static Hydrant Test

Label	Diameter (in)	Material	Hazen- Williams C	Flow (Absolute) (gpm)	Velocity (ft/s)
P-2	6	DIP	120	0	0.00
P-3	6	DIP	120	0	0.00
P-6	6	DIP	120	0	0.00
P-10	6	DIP	120	0	0.00
P-11	8	DIP	120	0	0.00
P-15	8	DIP	120	0	0.00
P-16	8	DIP	120	0	0.00
P-17	8	DIP	120	0	0.00
P-18	8	DIP	120	0	0.00
P-20	8	DIP	120	0	0.00
P-21	8	DIP	120	0	0.00
P-22	100	DIP	120	0	0.00
P-23	100	DIP	120	0	0.00

Thales Academy Addition

FlexTable: Pumps

Active Scenario: Existing Static Hydrant Test

Label	Elevation (ft)	Pump Definition	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-1	411	Hydrant Test Pump	412	583	0	171

Thales Academy Addition
FlexTable: Reservoirs
Active Scenario: Existing Static Hydrant Test

Label	Hydraulic Grade (ft)	Flow (Out net) (gpm)
R-1	412	0

Appendix D

Calibration

Residual Pressure

Thales Academy Addition

FlexTable: Hydrants

Active Scenario: Existing Residual Hydrant Test

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
H-5	397	0	73	565
H-6	398	0	72	565
H-Flow	400	1,255	67	554
H-Pressure	412	0	67	567

Thales Academy Addition

FlexTable: Junctions

Active Scenario: Existing Residual Hydrant Test

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
J-1	401	0	67	555
J-4	412	0	67	567
J-6	393	0	74	565
J-7	403	0	70	565
J-10	393	0	74	565
J-11	398	0	68	556
J-12	399	0	68	556
J-13	412	0	66	565

Thales Academy Addition
FlexTable: Pipes
Active Scenario: Existing Residual Hydrant Test

Label	Diameter (in)	Material	Hazen- Williams C	Flow (Absolute) (gpm)	Velocity (ft/s)
P-2	6	DIP	120	0	0.00
P-3	6	DIP	120	1,255	14.24
P-6	6	DIP	120	0	0.00
P-10	6	DIP	120	0	0.00
P-11	8	DIP	120	0	0.00
P-15	8	DIP	120	1,255	8.01
P-16	8	DIP	120	1,255	8.01
P-17	8	DIP	120	1,255	8.01
P-18	8	DIP	120	0	0.00
P-20	8	DIP	120	0	0.00
P-21	8	DIP	120	0	0.00
P-22	100	DIP	120	1,255	0.05
P-23	100	DIP	120	1,255	0.05

Thales Academy Addition

FlexTable: Pumps

Active Scenario: Existing Residual Hydrant Test

Label	Elevation (ft)	Pump Definition	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-1	411	Hydrant Test Pump	412	567	1,255	155

Thales Academy Addition

FlexTable: Reservoirs

Active Scenario: Existing Residual Hydrant Test

Label	Hydraulic Grade (ft)	Flow (Out net) (gpm)
R-1	412	1,255

Appendix E

Fire Flow Analysis Results

Thales Academy Addition
Fire Flow Node FlexTable: Fire Flow
Active Scenario: Thales Academy Addition

Label	Elevation (ft)	Satisfies Fire Flow?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Calculated Zone Lower Limit @ Total Flow Needed) (psi)
H-1	397	True	1,500	2,469	25	J-5	58	60
H-2	400	True	1,500	2,818	25	J-2	62	63
H-3	395	True	1,500	2,416	25	J-8	58	61
H-4	400	True	1,500	2,900	25	J-2	63	63
H-5	397	True	1,500	2,904	25	J-2	64	63

Thales Academy Addition
FlexTable: Hydrants
Active Scenario: Thales Academy Addition

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
H-1	397	0	81	583
H-2	400	0	79	583
H-3	395	0	81	583
H-4	400	0	79	583
H-5	397	0	81	583
H-6	398	0	80	583
H-Flow	400	0	79	583
H-Pressure	412	0	74	583

Thales Academy Addition
FlexTable: Junctions
Active Scenario: Thales Academy Addition

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
J-1	401	0	79	583
J-2	403	0	78	583
J-3	392	0	83	583
J-4	412	0	74	583
J-5	396	0	81	583
J-6	393	0	82	583
J-7	403	0	78	583
J-8	397	4	81	583
J-9	401	0	79	583
J-10	393	0	82	583
J-11	398	0	80	583
J-12	399	2	80	583
J-13	412	2	74	583
J-14	400	0	79	583
J-15	397	0	81	583
J-415	399	4	80	583

Thales Academy Addition
FlexTable: Pipes
Active Scenario: Thales Academy Addition

Label	Diameter (in)	Material	Hazen- Williams C	Flow (Absolute) (gpm)	Velocity (ft/s)
P-1	6	DIP	120	0	0.00
P-2	6	DIP	120	0	0.00
P-3	6	DIP	120	0	0.00
P-4	8	DIP	120	0	0.00
P-5	8	DIP	120	4	0.02
P-6	6	DIP	120	0	0.00
P-7	6	DIP	120	0	0.00
P-8	6	DIP	120	0	0.00
P-9	6	DIP	120	0	0.00
P-10	6	DIP	120	0	0.00
P-11	8	DIP	120	4	0.03
P-12	8	DIP	120	4	0.03
P-13	8	DIP	120	4	0.03
P-14	8	DIP	120	4	0.02
P-15	8	DIP	120	13	0.08
P-16	8	DIP	120	6	0.04
P-17	8	DIP	120	0	0.00
P-18	8	DIP	120	4	0.02
P-19	8	DIP	120	4	0.03
P-20	8	DIP	120	4	0.03
P-21	8	DIP	120	4	0.03
P-22	100	DIP	120	13	0.00
P-23	100	DIP	120	13	0.00
P-24	8	DIP	120	0	0.00
P-25	8	DIP	120	8	0.05
P-26	8	DIP	120	8	0.05

Thales Academy Addition

FlexTable: Pumps

Active Scenario: Thales Academy Addition

Label	Elevation (ft)	Pump Definition	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-1	411	Hydrant Test Pump	412	583	13	171

Thales Academy Addition
FlexTable: Reservoirs
Active Scenario: Thales Academy Addition

Label	Hydraulic Grade (ft)	Flow (Out net) (gpm)
R-1	412	13

Appendix F

School Fire Flow Analysis Results

Thales Academy Addition
Fire Flow Node FlexTable: Fire Flow
Active Scenario: School Fire

Label	Elevation (ft)	Satisfies Fire Flow?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Calculated Zone Lower Limit @ Total Flow Needed) (psi)
H-1	397	True	1,500	2,272	25	J-5	53	54
H-2	400	True	1,500	2,564	25	J-2	56	57
H-3	395	True	1,500	2,196	25	J-8	51	54
H-4	400	True	1,500	2,624	25	J-2	57	58
H-5	397	True	1,500	2,654	25	J-2	59	58

Thales Academy Addition
FlexTable: Hydrants
Active Scenario: School Fire

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
H-1	397	0	80	581
H-2	400	0	78	581
H-3	395	0	80	581
H-4	400	0	78	581
H-5	397	0	80	581
H-6	398	0	79	582
H-Flow	400	0	78	581
H-Pressure	412	0	73	582

Thales Academy Addition
FlexTable: Junctions
Active Scenario: School Fire

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
J-1	401	0	78	581
J-2	403	0	77	581
J-3	392	0	82	581
J-4	412	0	73	582
J-5	396	0	80	581
J-6	393	0	82	581
J-7	403	0	77	582
J-8	397	4	80	581
J-9	401	0	78	581
J-10	393	0	82	581
J-11	398	0	79	581
J-12	399	2	79	581
J-13	412	2	73	582
J-14	400	311	78	581
J-15	397	0	80	581
J-415	399	4	79	581

Thales Academy Addition
FlexTable: Pipes
Active Scenario: School Fire

Label	Diameter (in)	Material	Hazen- Williams C	Flow (Absolute) (gpm)	Velocity (ft/s)	Minor Loss Coefficient (Unified)
P-1	6	DIP	120	0	0.00	0.000
P-2	6	DIP	120	0	0.00	0.000
P-3	6	DIP	120	0	0.00	0.000
P-4	8	DIP	120	0	0.00	0.000
P-5	8	DIP	120	4	0.02	0.000
P-6	6	DIP	120	0	0.00	0.000
P-7	6	DIP	120	0	0.00	0.000
P-8	6	DIP	120	0	0.00	0.000
P-9	6	DIP	120	0	0.00	0.000
P-10	6	DIP	120	0	0.00	0.000
P-11	8	DIP	120	140	0.89	0.000
P-12	8	DIP	120	140	0.89	0.000
P-13	8	DIP	120	140	0.89	0.000
P-14	8	DIP	120	179	1.14	0.000
P-15	8	DIP	120	324	2.06	0.000
P-16	8	DIP	120	181	1.16	0.000
P-17	8	DIP	120	0	0.00	0.000
P-18	8	DIP	120	179	1.14	0.000
P-19	8	DIP	120	140	0.89	0.000
P-20	8	DIP	120	140	0.89	0.000
P-21	8	DIP	120	140	0.89	0.000
P-22	100	DIP	120	324	0.01	0.000
P-23	100	DIP	120	324	0.01	0.000
P-24	8	DIP	120	0	0.00	0.000
P-25	8	DIP	120	319	2.03	0.000
P-26	8	DIP	120	8	0.05	0.000

Thales Academy Addition
FlexTable: Pumps
Active Scenario: School Fire

Label	Elevation (ft)	Pump Definition	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-1	411	Hydrant Test Pump	412	582	324	170

Thales Academy Addition
 FlexTable: Reservoirs
 Active Scenario: School Fire

Label	Hydraulic Grade (ft)	Flow (Out net) (gpm)
R-1	412	324

Appendix G

Gym Fire Flow Analysis Results

Thales Academy Addition
Fire Flow Node FlexTable: Fire Flow
Active Scenario: Gym Fire

Label	Elevation (ft)	Satisfies Fire Flow?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Pressure (Calculated Residual) (psi)	Junction w/ Minimum Pressure (Zone)	Pressure (Calculated Residual @ Total Flow Needed) (psi)	Pressure (Calculated Zone Lower Limit @ Total Flow Needed) (psi)
H-1	397	True	1,500	2,168	25	J-5	49	51
H-2	400	True	1,500	2,521	25	J-2	55	56
H-3	395	True	1,500	2,209	25	J-8	51	55
H-4	400	True	1,500	2,599	25	J-2	57	57
H-5	397	True	1,500	2,614	25	J-2	58	57

Thales Academy Addition
 FlexTable: Hydrants
 Active Scenario: Gym Fire

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
H-1	397	0	79	580
H-2	400	0	78	581
H-3	395	0	80	581
H-4	400	0	78	581
H-5	397	0	80	581
H-6	398	0	79	581
H-Flow	400	0	78	581
H-Pressure	412	0	73	582

Thales Academy Addition
FlexTable: Junctions
Active Scenario: Gym Fire

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)	Hydraulic Grade (ft)
J-1	401	0	78	581
J-2	403	0	77	581
J-3	392	0	82	581
J-4	412	0	73	582
J-5	396	0	79	580
J-6	393	0	81	581
J-7	403	0	77	581
J-8	397	4	80	581
J-9	401	0	78	581
J-10	393	0	81	581
J-11	398	0	79	581
J-12	399	2	79	581
J-13	412	2	73	581
J-14	400	0	78	581
J-15	397	344	79	580
J-415	399	4	79	581

Thales Academy Addition
FlexTable: Pipes
Active Scenario: Gym Fire

Label	Diameter (in)	Material	Hazen- Williams C	Flow (Absolute) (gpm)	Velocity (ft/s)	Minor Loss Coefficient (Unified)
P-1	6	DIP	120	0	0.00	0.000
P-2	6	DIP	120	0	0.00	0.000
P-3	6	DIP	120	0	0.00	0.000
P-4	8	DIP	120	344	2.20	0.000
P-5	8	DIP	120	4	0.02	0.000
P-6	6	DIP	120	0	0.00	0.000
P-7	6	DIP	120	0	0.00	0.000
P-8	6	DIP	120	0	0.00	0.000
P-9	6	DIP	120	0	0.00	0.000
P-10	6	DIP	120	0	0.00	0.000
P-11	8	DIP	120	178	1.13	0.000
P-12	8	DIP	120	166	1.06	0.000
P-13	8	DIP	120	166	1.06	0.000
P-14	8	DIP	120	174	1.11	0.000
P-15	8	DIP	120	357	2.28	0.000
P-16	8	DIP	120	176	1.13	0.000
P-17	8	DIP	120	0	0.00	0.000
P-18	8	DIP	120	174	1.11	0.000
P-19	8	DIP	120	178	1.13	0.000
P-20	8	DIP	120	178	1.13	0.000
P-21	8	DIP	120	178	1.13	0.000
P-22	100	DIP	120	357	0.01	0.000
P-23	100	DIP	120	357	0.01	0.000
P-24	8	DIP	120	0	0.00	0.000
P-25	8	DIP	120	8	0.05	0.000
P-26	8	DIP	120	8	0.05	0.000

Thales Academy Addition

FlexTable: Pumps

Active Scenario: Gym Fire

Label	Elevation (ft)	Pump Definition	Hydraulic Grade (Suction) (ft)	Hydraulic Grade (Discharge) (ft)	Flow (Total) (gpm)	Pump Head (ft)
PMP-1	411	Hydrant Test Pump	412	582	357	170

Thales Academy Addition
 FlexTable: Reservoirs
 Active Scenario: Gym Fire

Label	Hydraulic Grade (ft)	Flow (Out net) (gpm)
R-1	412	357

Exhibit B
of
Affidavit of David McClure

115 Mackenan Drive
Cary NC 27511

TO: Town of Holly Springs
128 S Main Street
Holly Springs, NC 27540

DATE:	7/29/2021	PROJ. NO.:	09210285.00
ATTENTION:	Staff		
RE:	Thales Academy Sewer Study		

**WE ARE SENDING
YOU THE
FOLLOWING
ITEMS:**

- ☒ Attached
 ☐ Under Separate Cover Via _____
- ☐ Shop Drawings
 ☐ Prints
 ☒ Plans
 ☐ Samples
 ☐ Specifications
- ☐ Copy of Letter
 ☐ Change Order
 ☐ Disk
 ☐ Other _____

COPIES	DESCRIPTION
1	Signed and Sealed Report
2	Special Studies Application Form 8037
3	Completed Fee Schedule Form 7019

THESE ARE TRANSMITTED as checked below:

- ☒ For approval
 ☐ Approved as submitted
 ☐ Resubmit _____ copies for approval
- ☐ For your use
 ☐ Approved as noted
 ☐ Submit _____ copies for distribution
- ☐ As requested
 ☐ Returned for corrections
 ☐ Return _____ corrected prints
- ☐ For review and comment
 ☐ Other _____
- ☐ FOR BIDS DUE _____
 ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

COPY TO: _____ **SIGNED:** David A. McClure, P.E.

QA/QC: _____

If enclosures are not as noted, kindly notify us at once.



ENGINEERING DEPARTMENT FEE SCHEDULE

Construction, Environmental, Special Study, and Stormwater Reviews, Water, Wastewater, and Reclaimed Water Permitting, Easement and Right of Way Plat Review, and Bonding

RECEIPT

DESCRIPTION:

**SPECIAL ENGINEERING STUDY - SEWER
FOR PROPOSED SCHOOL EXPANSION AT 11244
Holly Springs New Hill Rd**

RECEIVED FROM:

**COURTNEY LANDOLL, CSM
WITHERSRAVENEL**

TRANSACTION DESCRIPTION	FEE	TOTAL	ACCOUNT #
Construction Drawing Plan Review			
Subdivision	\$650 + \$50 x _____ Lots (Covers 1 st & 2 nd Reviews)	_____	10 320.07
Site	0-5 acres \$1,000 / 5-20 acres \$1,400 / >20 acres \$1,750 (Covers 1 st & 2 nd Reviews)	_____	10 320.07
Other (Ex. Utility or Roadway)	\$1500 (Per Project/Covers 1 st and 2 nd Reviews)	_____	10 320.07
Construction Drawing Subsequent Plan Reviews	\$450 (Per Review after 2 nd Review)	_____	10 320.07
Construction Drawing Plan Review Revisions	\$450 (covers 1 st and 2 nd Reviews)	_____	10 320.07
Construction Drawing Plan Review Revision Subsequent Reviews	\$450 (Per Review after 2 nd Review)	_____	10 320.07
Major Plan Revisions	\$1,000 per review	_____	10.320.07
Pump Station Plan Review			
Preliminary Pump Station Site Plan Review	\$650 (Covers 1 st and 2 nd Reviews)	_____	10.320.07
Construction Drawing Pump Station Review	\$1,000 (Covers 1 st and 2 nd Reviews)	_____	10.320.07
Subsequent Pump Station Reviews (Site Plan and CD)	\$450 (Per Review after 2 nd Review)	_____	10.320.07
Environmental Plan Review			
Subdivision/Site	\$300 Per Acre (Covers 1 st & 2 nd Reviews)	_____	31 320.11
Environmental Subsequent Plan Review/Revision	\$450 (Per Review after 2 nd Review)	_____	31 320.11
Environmental Variance/Waiver/Appeal Reviews	\$300 (Per Request) if prior to event	_____	31 320.11
Environmental Variance/Waiver/Appeal Review	\$500 (Per Request) if post event	_____	31 320.11
NPDES Stormwater Review			
Subdivision	\$500 + \$25 x _____ Lots (Covers 1 st & 2 nd Reviews)	_____	31 320.11
Site	≤20 Acres \$850 (Covers 1 st & 2 nd Reviews) >20 Acres \$1200 (Covers 1 st & 2 nd Reviews)	_____	31 320.11
Stormwater Subsequent/Revision Reviews	\$500 (Per Review after 2 nd Review)	_____	31 320.11
Stormwater As-built/Engineer Certification Administration	\$200	_____	31 320.11
Special Study Review			
Special Study (Flood Study, Traffic Impact Analysis, Sewer Basin, Fire Flow/Hydraulic Analysis, Pump Station, etc.)	Actual Plus \$350 (Covers 1 st & 2 nd Reviews) NOTE: Actual costs are to be paid by Engineer/Developer and can be in excess of \$5,000	350.00	10 320.07
Special Study Subsequent Reviews	Actual Cost Plus \$200	_____	10 320.07
Special Study Revision Reviews	Actual Cost Plus \$200 (Per Review)	_____	10 320.07
Hydraulic Model Update Fee Per DOE	Proportionate to Development	_____	
General Fees			
Construction As-Built Review	\$200	_____	10.320.07
Timbering Review	\$500 (Per Project)	_____	10 320.07
Water/Wastewater/Reclaimed Permit Processing	\$200 (Due with Permit Application)	_____	30 322.10
Irrigation Well Review	\$200	_____	30 320.07
Surety Fees			
Infrastructure/Stormwater BMP Surety	New \$350 each/Revision or Renewal \$300 each	_____	10 320.06
Infrastructure Cash Surety	(Internal Use Only)	_____	10 210.02
Stormwater BMP Performance Cash Surety	(Internal Use Only)	_____	10 210.04
Stormwater BMP Maintenance Cash Surety	(Internal Use Only)	_____	30 215.02
TOTAL			350.00

STAFF USE ONLY

Prepared By: _____ Date: _____ To Finance: _____ Date: _____



Town of Holly Springs Engineering Department Special Studies & Reports Application

All Special Study submittals must be submitted directly to the ENGINEERING

DEPARTMENT when the first submittal of the Development or Rezoning Petition associated with the property is submitted to the Planning & Zoning Department, or your submittal will be rejected from that review cycle.

Include the following items with the first submittal:

- Applicable review fees in accordance with the current fee schedule (Form 7019)
- One (1) copy of populated Fee Schedule (Form 7019)
- Special Study Scoping Form (Form 8035)
- Special Study Application (Form 8037)
- One (1) hard copy of bound report
- Digital copy of all documents in submittal package (submitted electronically through website or on a flash drive with submittal)

Complete this form for EACH required Special Study or Report

Type of Study (Check ONE):

- ☐ Fire Flow Analysis (FFA) ☐ Traffic Impact Analysis ☐ Traffic Assessment Report
☒ Sewer Study ☐ Pump Station Report
☐ Flood Study (FS) ☐ Reclaimed Water Model (RWM)

Project Name: Proposed School Expansion - 11244 Holly Springs New Hill Road

☐ New Study ☒ Updating Existing Report

Contact Information

Engineering Firm Preparing Report: WithersRavenel

Contact Name: Courtney Landoll, CSM

Mailing Address: 137 S. Wilmington Street

City: Raleigh State: NC Zip Code: 27601

Phone: 919.238.0387 E-mail: clandoll@withersravenel.com

Firm working on the development project (if different than the report contact above):

WithersRavenel

Phone: 919.238.0387 E-mail: clandoll@withersravenel.com



Town of Holly Springs Engineering Department Special Studies & Reports Application

Special Studies are generally outsourced for review by the Town; with the cost of review to be paid by the applicant.

If the party responsible for payment is different than the information included on this form, please provide the name and address where the invoice is to be sent for payment.

Developer/Engineer to be billed Actual Review Cost: _____

Contact Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ E-mail: _____

Non-payment of the outsourced review fees could delay approval of the project.



WithersRavenel
Our People. Your Success.

WASTEWATER COLLECTION SYSTEM CAPACITY ANALYSIS

CaptiveAire, Inc.
Thales Academy
Holly Springs, North Carolina

Prepared For:

CaptiveAire, Inc.
4641 Paragon Park Road
Raleigh, NC 27616

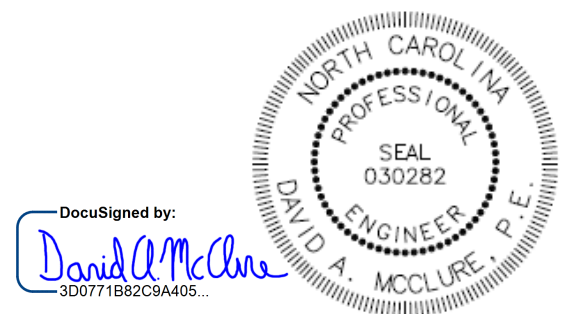
ATTN: Brandon Hafner

Prepared By:

WithersRavenel
115 MacKenan Drive
Cary, NC 27511
Phone: 919.469.3340
License #: C-0832

July 27, 2021

Project Number: 02210285.00



David A. McClure, P.E. 7/27/2021

Table of Contents

A. Project Description1

B. Projected Wastewater Flow Rates1

C. Modifications to Existing Wastewater Collection System.....1

D. Summary2

Appendices

Appendix A	Project Map
Appendix B	Stewart Report
Appendix C	Gravity Sewer Capacity

A. PROJECT DESCRIPTION

WithersRavenel (WR) has completed an analysis of the capacity of a portion of the existing wastewater collection system owned and operated by the Town of Holly Springs (Town). The purpose of the analysis is to determine if the existing infrastructure has the capacity to accept flow from the proposed Thales Academy addition and to determine what improvements (if any) are required to accept the anticipated wastewater flow from the proposed development. Thales Academy is located at 11244 Holly Springs New Hill Road in Holly Springs, NC.

WR has analyzed the appropriate portions of the existing 12 Oaks Sewage Pump Station Sewer Basin to determine if the existing infrastructure has adequate capacity to accept the wastewater flow from Thales Academy. The 12 Oaks Pump Station is a relatively large pump station downstream of Thales Academy. See **Appendix A** for a map of a portion of the Town's wastewater collection system including the 12 Oaks Sewage Pump Station.

This analysis relies on previous reports provided by the Town. More specifically, the Stewart report (**Appendix B**) titled "Sewer Feasibility Study for the proposed Thales Academy" dated June 16, 2017 was utilized as a baseline for flow. It should be noted that the Stewart report relies on the Spaulding & Norris (S&N) Report titled "Sanitary Sewer Study for Twelve Oaks PUD, Stephenson Tract" dated November 24, 2014.

B. PROJECTED WASTEWATER FLOW RATES

1. THALES ACADEMY

Thales Academy is an existing school with approximately 450 students. An expansion of the school will result in a student capacity of 1,200 students and the addition of a gymnasium. The original flow allocation for Thales Academy was:

$$450\text{students} \times \frac{10\text{gpd}}{\text{student}} = 4,500\text{gpd} - \text{Average Daily Flow}$$

The addition of the gymnasium changes the unit flow from 10gpd/student to 15gpd/student. The revised allocation to Thales Academy is:

$$1,200\text{students} \times 15\text{gpd}/\text{student} = 18,000\text{gpd} - \text{Average Daily Flow}$$

C. MODIFICATIONS TO EXISTING WASTEWATER COLLECTION SYSTEM

1. GRAVITY SEWER SYSTEM

Thales Academy lies within Basin 7B of the S&N report. Flow from Basin 7B will follow the flow path of S&N Nodes C3→C2→C1→C→A. **Table 1** provides a summary of the original peak flow to these sections as well as the Stewart and WR modifications to that flow.

Table 1 – Flow Modifications			
S&N Section	S&N (2014) Peak Flow	Stewart (2017) Peak Flow	WR (2021) Peak Flow
C3→C2	197,850 gpd	266,900 gpd	300,650 gpd
C2→C1	308,775 gpd	377,825 gpd	411,575 gpd
C1→C	334,913 gpd	403,963 gpd	437,713 gpd
C→A	2,925,730 gpd	2,968,017 gpd	3,001,767 gpd

Appendix C contains a more detailed summary of the changes as well as the capacity of the existing system. Peak flow through Section C3→C2 will increase to approximately 50% of the pipe capacity. This is within the Town's parameters of the pipe flowing $\frac{1}{2}$ full at peak flow. Sections C2→C1 and C1→C will be well within the capacity parameters using up approximately 35% and 49% of full pipe capacity respectively. The projected peak flow through Section C→A will exceed the $\frac{1}{2}$ the full pipe capacity using up approximately 56% of the full pipe capacity. Although this does exceed the Town's requirement the section still has excess capacity, and it is recommended that there be no improvements at this time.

2. 12 OAKS SEWAGE PUMP STATION CAPACITY

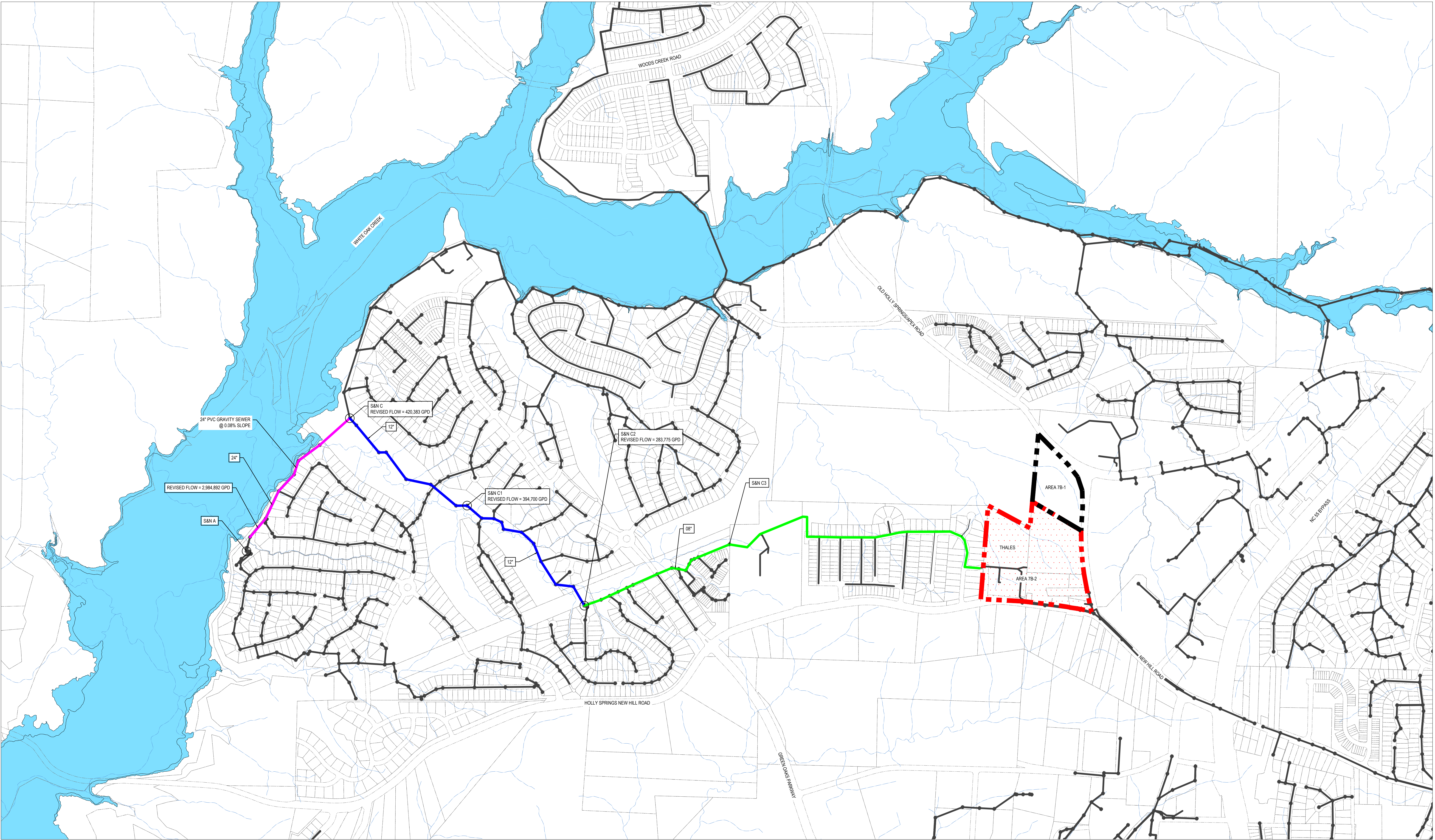
The 12 Oaks Sewage Pump Station has a current pumping capacity of 1,350 gpm. The Town is in the process of an upgrade evaluation of the 12 Oaks Pump Station. For this reason, an evaluation of the pump station is not warranted as it will be upgraded to include the additional flow from this project.

D. SUMMARY

The proposed addition to Thales Academy will not overwhelm the existing wastewater collection system. Although a section of 24-inch gravity line will exceed the Town's capacity requirement, the pipe is well within the state requirement that the pipe carry the average daily while not exceeding $\frac{1}{2}$ the pipes capacity.

Appendix A

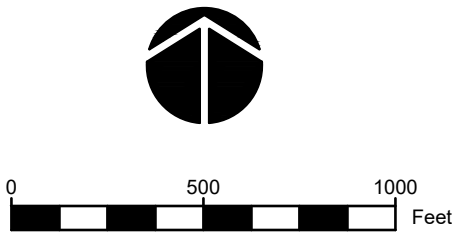
Project Map



THALES ACADEMY

12 OAKS SEWER BASIN AMENDMENT

TOWN OF HOLLY SPRINGS
NORTH CAROLINA



Appendix B

Stewart Report

Engineering
Received
om

OCT 03 2017

Project Number 17-10-SS
Comments Due 10/17/17

Received

OCT 03 2017

Engineering

Sewer Feasibility Study

For the proposed
Thales Academy

Holly Springs, North Carolina

Project Number: 17-10-SS

Prepared for:

This special study is approved with
recommendations listed within
the report - unless noted below.

Town of Holly Springs

Prepared by:

Randolph 10-3-17
Town Engineer Date



STEWART

421 Fayetteville St., Ste 400
Raleigh, NC 27601
Firm License #: C-1051

June 16, 2017



Overview:

The following sewer feasibility study is for the proposed Thales Academy located at 11244 Holly Springs New Hill Road for the purpose of evaluating downstream gravity sewer line capacity. The new Elementary Academy will hold approximately 450 students and will be located on two parcels totaling 10.74 acres, and is comprised of 32,000 sf of building and surrounding parking lot.

Proposed Sanitary Sewer for this project will be a gravity sewer approach and will encompass both onsite flows and offsite flows. Offsite flows will include 14 single family homes southeast of the site, as well as future commercial (per Holly Springs Future Land Use Plan) to the east (see exhibit EXH-1). This study relies on the prior study "Sanitary Sewer Study for Twelve Oaks PUD" by Spaulding & Norris dated 11-25-2014. The proposed gravity sewer for the Thales School will connect to Node C3 identified in Twelve Oaks PUD study through the adjacent downstream parcels currently being developed as Wake County Public Schools E-43 and the Hensley Subdivision (174 single family lots – see Appendix for layout plan C-02).

Sewer Flow:

The proposed school site is located within sub-basin 7B as identified in the Twelve Oaks PUD sewer study. This study updates the sewer demand for basin areas 7 and 7B.

Area 7 – The development plan for area 7 is now planned for 174 single lots (Hensley Subdivision).

Area 7B – Consist of the proposed Thales school and future commercial. It was determined that a portion of 7B area (7B-1) can be served thorough area 7, while the balance of the site, 7B-2 will be served as shown on the Twelve Oaks PUD study to node D4.

Sewer flow is determined using flow rates from the NCDENR 15A NCAC 02T .0114 and from Holly Springs flow rate for single family residential (255 GPD/residential unit).

- Thales Academy (School with no cafeteria/gym) – 450 students @ 10 gal/student.
- Commercial - 130 GPD per 1,000 sf of building.
 - Commercial building area determined assuming 70% developable area and 10,000 sf building per acre.

Peak flow is determined by applying 2.5 peak factor multiplied by the Average Day Demand.

Updated sewer flows to nodes C3 and D4 are tabulated as follows:

Evaluation of flow increase to Outfall C from node C3 to node A.

Line	Spaulding & Norris Peak Flow (GPD)	Net Flow Impact (GPD)	Revised Peak Flow (GPD)		Capacity (GPD)	Min. Slope (%)	Pipe Size (Inches)	Pipe Material	Roughness Coefficient <i>n</i>	50% depth (Inches)	Area SF	Wetted Perimeter FT	Hydraulic Radius FT	Velocity FPS	Flow CFS
C3-C2	197,850	+69,050	266,900	≤	299,104	0.50%	8	DIP	0.012	4	0.17	1.05	0.17	2.65	0.46
C2-C1	308,775	+69,050	377,826	≤	584,966	0.22%	12	DIP	0.012	6	0.39	1.57	0.25	2.30	0.91
C1-C	334,913	+69,050	403,965	≤	449,667	0.13%	12	DIP	0.012	6	0.39	1.57	0.25	1.77	0.70
C-A	2,925,730	+42,287	2,968,017	>	2,687,833	0.08%	24	PVC	0.010	12	1.57	3.14	0.50	2.65	4.16

Outfall A has a capacity deficiency between MH 18 and MH 17 of: (280,184) GPD

Sewer Capacity Impact Analysis

Comparison of sewer demand for revised uses with the Spaulding & Norris Sanitary Sewer Study for Tweleve Oaks PUD dated 11/25/2014.

Outfall Nodes		gpd	ADF (GPD)	Peak Flow ((GPD)	Capacity (GPD)	Min. Slope (%)	Pipe Size (Inches)	Pipe Material	Roughness Coefficient <i>n</i>	50% depth (Inches)	Area SF	Wetted Perimeter FT	Hydraulic Radius FT	Velocity FPS	Flow CFS
<u>Spaulding & Norris Study</u>															
D4-D2	Offsite Flow from 7A	6,250	45,265	113,163	486,998	0.28%	10	PVC	0.010	5	0.27	1.31	0.21	2.76	0.75
	Offsite Flow from 7B	18,360													
	(72 units @ 255 gpd) 12 Oaks Onsite Units (81 units @ 255 gpd)	20,655													
C3-C2	Offsite Flow from School	10,800	79,140	197,850	299,104	0.50%	8	DIP	0.012	4	0.17	1.05	0.17	2.65	0.46
	Offsite Flow from 7	38,250													
	(150 units @ 255 gpd) 12 Oaks Onsite Units (118 units @ 255 gpd)	30,090													
<u>Revised</u>															
D4-D2	Area from 7A	6,250	34,560	86,400	486,998	0.28%	10	PVC	0.010	5	0.27	1.31	0.21	2.76	0.75
	7B - 1	7,655													
	(Reg. Ctr. @ 70% Developed) 12 Oaks Onsite Units (81 units @ 255 gpd)	20,655													
C3-C2	Flow From Oakview Elem.	10,800	106,760	266,900	299,104	0.50%	8	DIP	0.012	4	0.17	1.05	0.17	2.65	0.46
	Flow From 7 (H.H. Hunt)	44,370													
	(174 units @ 255 gpd) 12 Oaks Onsite Units (118 units @ 255 gpd)	30,090													
	Flow from Thalles Academy	4,500													
	(450 students @ 10 gpspd) 7B - 2	13,430													
	(Reg. Ctr. @ 70% Developed) Units South of New Hill Rd. (14 units @ 255 gpd)	3,570													
<u>Flow Change</u>															
D4-D2			(10,705)	(26,763) Decrease to Node D4.											
C3-C2			27,620	69,050 Increase to Node C3.											
C-A			16,915	42,288 <--Net Increase at connection point with outfall C and D.											

Client:

THALES ACADEMY
11244 NEW HILL RD.
HOLLY SPRINGS, NC 27540

Project:

**THALES ACADEMY
HOLLY SPRINGS**

Vicinity map:

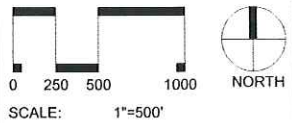
Seal:

PRELIMINARY - DO NOT
USE FOR CONSTRUCTION

Issued for:

**POST-IMPACT
ANALYSIS**

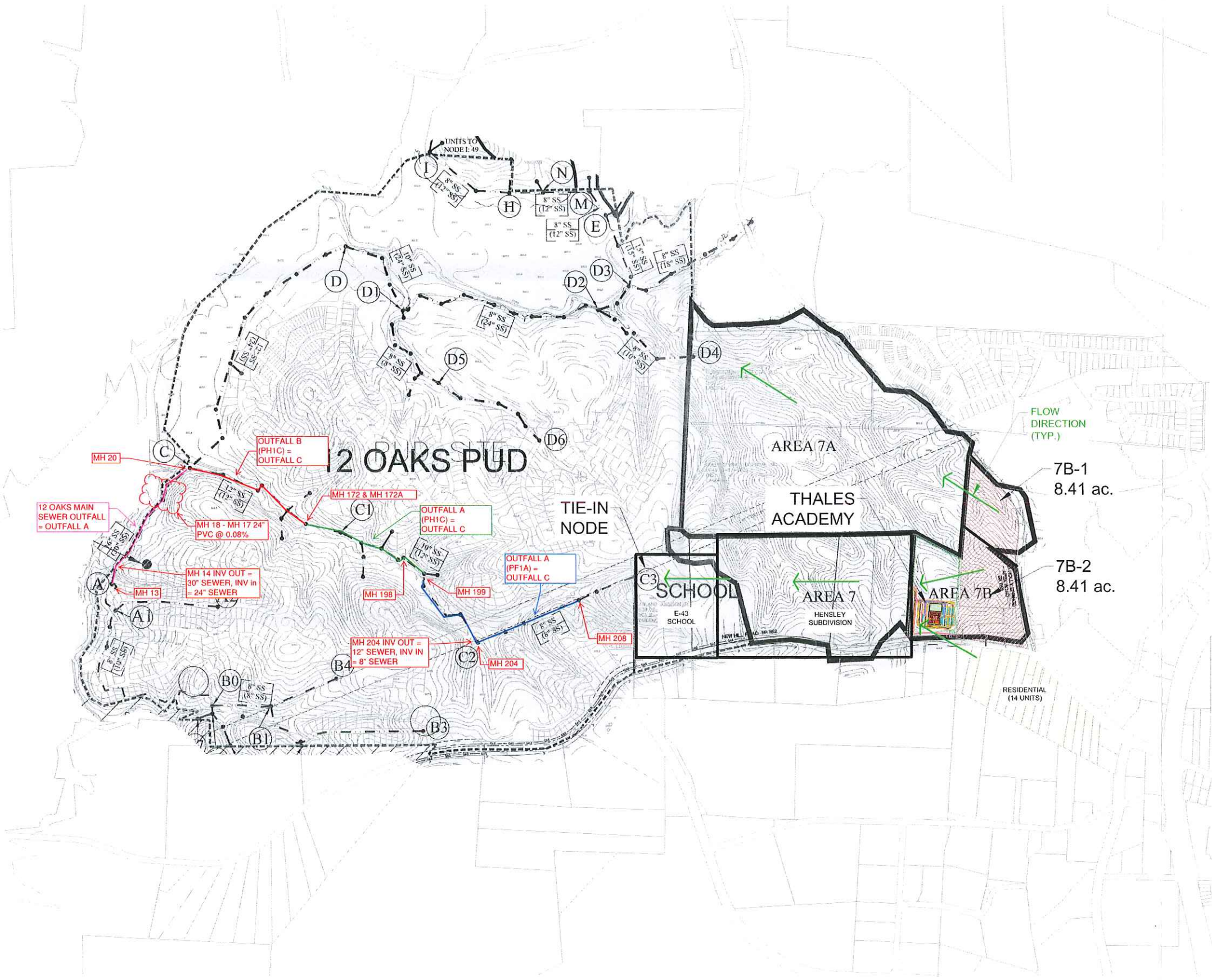
No.	Date	Description

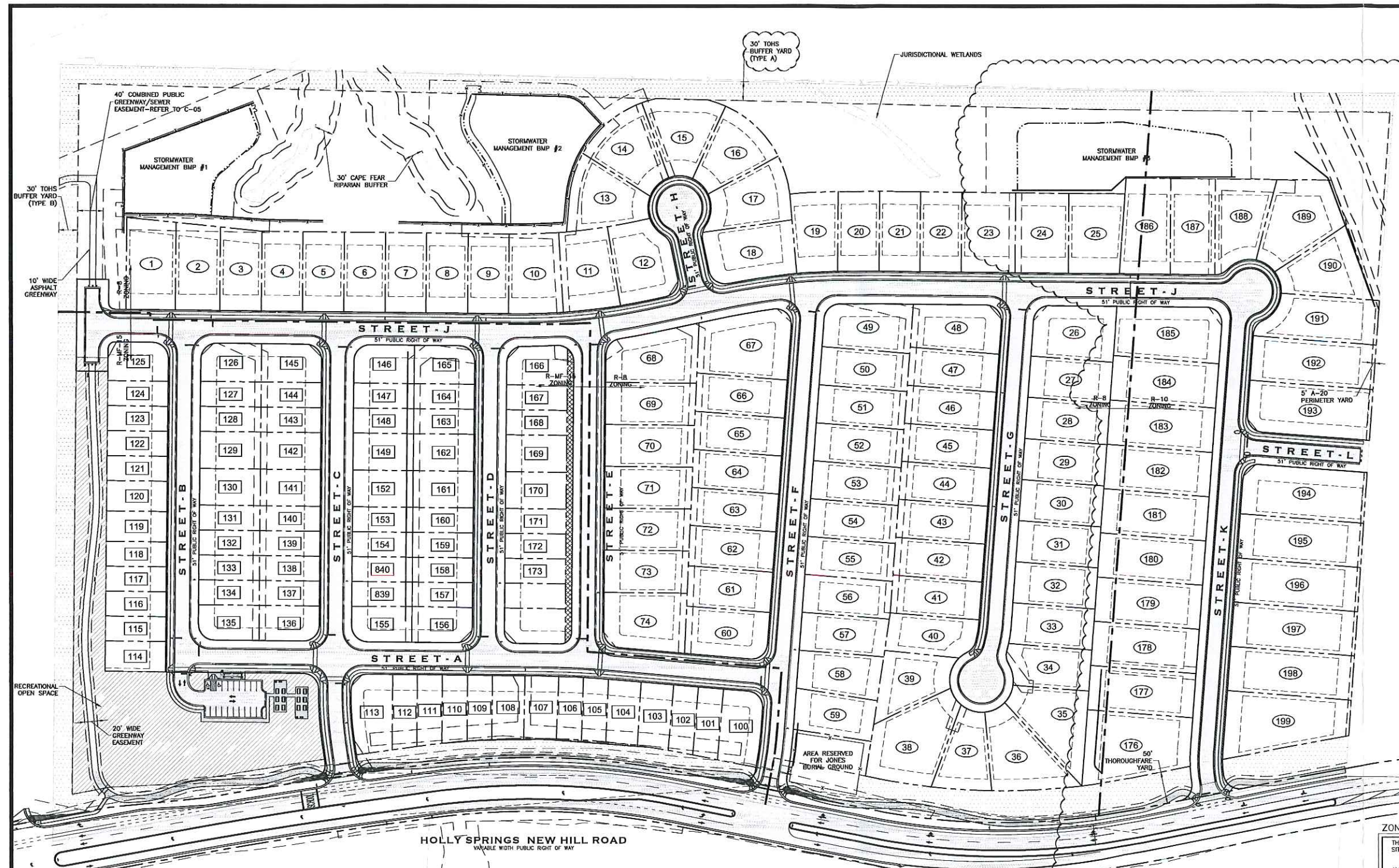


Title:

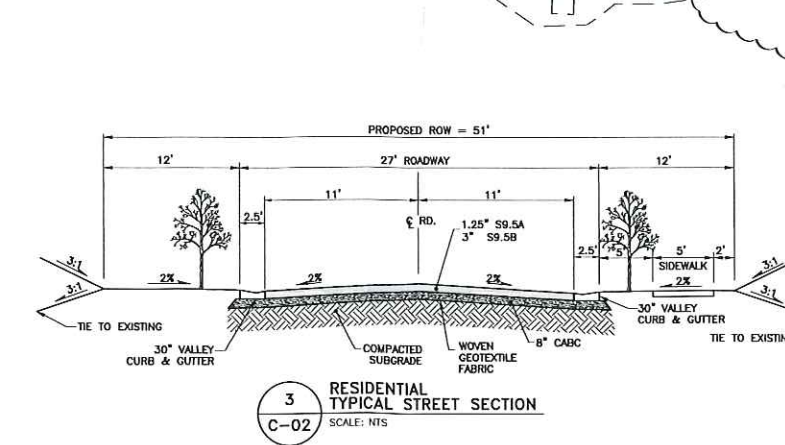
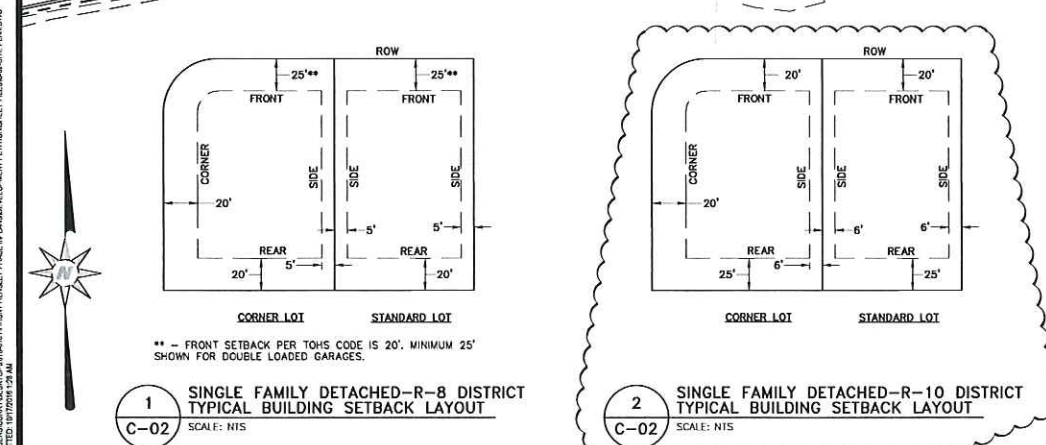
**SEWER STUDY
EXHIBIT**

Project number: C16129 Sheet:
Date: 03.07.2017
Drawn by: TEP
Approved by: ACP **EXH-2**





- NOTES:
1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARD SPECIFICATIONS AND DETAILS.
 2. BOUNDARY INFORMATION IS BASED ON SURVEY BY TAYLOR LAND CONSULTANTS.
 3. COMMON OPEN SPACE SHALL BE MAINTAINED BY HOMEOWNER'S ASSOCIATION.
 4. WETLANDS DELINEATED BY MITCHELL ENVIRONMENTAL AND HAVE BEEN USAGE CONCURRED AND FIELD SURVEYED.
 5. DELINEATED WETLAND AND RIPARIAN BUFFER AREAS SHALL NOT BE CLEARED, DRAINED, OR OTHERWISE DISTURBED UNLESS SPECIFICALLY PERMITTED BY THE US ARMY CORPS OF ENGINEERS AND INCIDENT-DWR.
 6. ALL STREETS SHALL BE PUBLIC.
 7. CONSTRUCTION DRAWING APPROVAL IS REQUIRED BEFORE CONSTRUCTION CAN BEGIN. ALL APPLICABLE FEES SHALL ALSO BE PAID PRIOR TO CONSTRUCTION DRAWING APPROVAL.
 8. THE DEVELOPER IS SOLELY RESPONSIBLE FOR THE COST AND COORDINATION WITH DUKE ENERGY FOR THE RELOCATION OR REMOVAL OF ANY ON-SITE OVERHEAD POWER POLES AND LINES.
 9. TREE PROTECTION FENCING SHALL BE PROVIDED ALONG ALL VEGETATED RIPARIAN AND VEGETATED PERMETER BUFFER AREAS.
 10. ANY ACTIVITY IN THE CFRB ZONE 1 OR ZONE 2 BUFFERS SHALL BE IN ACCORDANCE WITH SECTION 7.06 OF THE TOWN OF HOLLY SPRINGS UDO.
 11. THIS PLAN IS SUBJECT TO REVISION DURING THE CONSTRUCTION DRAWING REVIEW PROCESS FOLLOWING HOLLY SPRINGS TOWN COUNCIL ACTION.
 12. ALL ROADWAYS ARE 27' BACK TO BACK IN A 51' RIGHT OF WAY.
 13. A DEVELOPER AGREEMENT HAS BEEN OBTAINED FOR THIS PROJECT TO ADDRESS OFF-SITE ROADWAY IMPROVEMENTS.
 14. SIDEWALK SHALL BE LOCATED ONLY ON ONE SIDE OF ALL STREETS.
 15. THOROUGHFARE BUFFER YARD FROM HOLLY SPRINGS NEW HILL ROAD BASED ON BOUNDARY SURVEY AND PROPOSED RIGHT OF WAY DEDICATION.
 16. ACCESS TO HOLLY SPRINGS NEW HILL ROAD SUBJECT TO NDOT DRIVEWAY PERMIT APPROVAL. A TRAFFIC IMPACT ANALYSIS IS REQUIRED FOR THIS PROJECT AND HAS BEEN SUBMITTED WITH THIS DEVELOPMENT PETITION.
 17. PEDESTRIAN CROSSWALKS SHALL HAVE A VARIATION IN STREET PAVEMENT TEXTURE OR MARKINGS FOR DELINEATION PER TOWNSHIP REQUIREMENTS.
 18. ALL INTERSECTION RADII SHALL BE 30' UNLESS SHOWN OTHERWISE.
 19. THE DEVELOPER MUST SUBMIT DRAFT COVENANTS ESTABLISHING A HOMEOWNERS ASSOCIATION TO COVER MAINTENANCE OF THE FOLLOWING APPLICABLE ITEMS: PRIVATE STREETS, ALLEYS, STREET LIGHTING, SPECIALTY STREET SIGNS, STREET TREES, PRIVATE GREENWAYS, PONDS, LAKES, PRIVATE SEWER COLLECTION, PRIVATE DRAINAGE EASEMENTS, REUSE LINES, AND STORMWATER DEVICES. HOA COVENANTS SHALL BE RECORDED WITH THE FIRST PLAT ASSOCIATED WITH THIS SUBDIVISION.
 20. ALL PROPOSED RETAINING WALLS REQUIRE A BUILDING PERMIT. ANY WALL GREATER THAN 4' IN HEIGHT WILL REQUIRE ENGINEERING DESIGN APPROVAL AT CONSTRUCTION DRAWING REVIEW AS WELL AS A PERMIT.
 21. STRUCTURAL DESIGN OF RETAINING WALLS SHALL BE PERFORMED BY OTHERS. CONTRACTOR WILL PROVIDE CURRY ENGINEERING SEALED DRAWINGS OF ALL RETAINING WALL DESIGN FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
 22. RETAINING WALLS GREATER THAN 3 FEET IN HEIGHT SHALL INCLUDE A SAFETY HANDRAIL OR FENCE AT THE TOP OF THE WALL.
 23. SITE LAYOUTS MEET MINIMUM DRIVEWAY LENGTHS OF 20' FOR SINGLE AND 25' FOR DOUBLE.
 24. ADJACENT ROADWAYS WILL BE REQUIRED TO BE LIGHTED PRIOR TO THE FIRST CERTIFICATE OF OCCUPANCY AND INTERNAL ROADWAYS MUST BE LIGHTED PRIOR TO STREET ACCEPTANCE FOR 1 YEAR WARRANTY.
 25. FINAL PLAT MAY NOT BE RECORDED UNTIL PUNCHLIST INSPECTION IS COMPLETE.
 26. A PRECONSTRUCTION MEETING WITH THE TOWN CONSTRUCTION INSPECTOR AND ENVIRONMENTAL ENGINEER (TELEPHONE 557-3830) WILL BE REQUIRED BEFORE BEGINNING ANY CONSTRUCTION.



LOT ACREAGE DATA:

RECREATIONAL OPEN SPACE:	
AREA ZONED R-MF-15:	15.20 AC
REQUIRED TOTAL:	10%
CALCULATED TOTAL REQUIRED:	1.52 AC
TOTAL PROVIDED:	1.88 AC
LOTS IN R-MF-15:	76
AREA IN R-MF-15:	15.20 AC
MAX ALLOWED DENSITY IN R-MF-15:	15 UNITS/AC
PROPOSED DENSITY IN R-MF-15:	5 UNITS/AC
LOTS IN AREA R-BCU:	74
AREA IN R-BCU:	28.13 AC
MAX ALLOWED DENSITY IN R-BCU:	4.5 UNITS/AC
PROPOSED DENSITY IN R-BCU:	2.63 UNITS/AC
R-BCU MINIMUM ALLOWABLE LOT SIZE:	8,000 SF
MINIMUM PROPOSED LOT SIZE:	8,125 SF
MAXIMUM PROPOSED LOT SIZE:	14,615 SF
AVERAGE PROPOSED LOT SIZE:	9,233 SF
MINIMUM ALLOWABLE WIDTH:	60 FT
LOTS IN AREA R-10:	24
AREA IN R-10:	9.71 AC
MAX ALLOWED DENSITY IN R-10:	3.25 UNITS/AC
PROPOSED DENSITY IN R-10:	2.47 UNITS/AC
R-10 MINIMUM ALLOWABLE LOT SIZE:	10,000 SF
MINIMUM PROPOSED LOT SIZE:	10,504 SF
MAXIMUM PROPOSED LOT SIZE:	16,560 SF
AVERAGE PROPOSED LOT SIZE:	12,815 SF
MINIMUM ALLOWABLE WIDTH:	70 FT

ZONING NOTES:

THIS PROPERTY FEATURES A SPLIT ZONING DISTRICT DESIGNATION. REFER TO THE SITE PLAN FOR ZONING DISTRICT BOUNDARY.

ALL LOTS DESIGNATED WITH A **1** NUMBERED 1-74 AND 176-199 ARE SINGLE FAMILY DETACHED DWELLING UNITS WITH A MINIMUM LOT SIZE OF 8,000 SQUARE FEET LOCATED IN THE R-8 ZONING DISTRICT AND 10,000 SQUARE FEET IN THE R-10 DISTRICT (PHASE 5 AREA).

ALL LOTS DESIGNATED WITH A **2** NUMBERED 100-175 ARE SINGLE FAMILY DETACHED DWELLING UNITS WITH A DENSITY LESS THAN 15 UNITS/ACRE LOCATED IN THE R-MF-15 ZONING.

ROADWAY CROSS-SECTION NOTES:

1. THIS SUBDIVISION IS IN THE TRUSSIC BASIN. ALL ROADWAYS WILL BE REQUIRED TO MEET ALL SPECIAL DESIGN REQUIREMENTS AS OUTLINED IN THE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS SECTION 3.02J.

SCALE: 1" = 80' FT
SCALE IN FEET
HORIZONTAL

HENSLEY SUBDIVISION - HOLLY SPRINGS, NC
OVERALL SITE LAYOUT

Curry ENGINEERING
C-02

2025 S. Property Name
7/19/2022 MAP
07/19/2022

1 03/29/2016 PRELIMINARY
DATE: AUGUST 22, 2016
FILE NO. 2016-015

REVISIONS

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	
100	
101	
102	
103	
104	
105	
106	
107	
108	
109	
110	
111	
112	
113	
114	
115	
116	
117	
118	
119	
120	
121	
122	
123	
124	
125	
126	
127	
128	
129	
130	
131	
132	
133	
134	
135	
136	
137	
138	
139	
140	
141	
142	
143	
144	
145	
146	
147	
148	
149	
150	
151	
152	
153	
154	
155	
156	
157	
158	
159	
160	
161	
162	
163	
164	
165	
166	
167	
168	
169	
170	
171	
172	
173	
174	
175	
176	
177	
178	
179	
180	
181	
182	
183	
184	
185	
186	
187	
188	
189	
190	
191	
192	
193	
194	
195	
196	
197	
198	
199	



SEWER FLOWS

Total Projected Flow - Node D4						
	Built Out			Built Out		Built Out
Parcel Group Uses	Acreage	Max. Density Allowed (units/acre)	Density Used in Calculations (units/acre)	Total Yield (units)	Daily Flow (GPD/UNIT)	Total Flow (GPD)
Landfill (7A)	120.80 ac			n/a	6250	6,250
Commercial (7B-1)	8.41 ac	70% dev.	10,000sf/ac	58885	0.13	7,655
12 Oaks Residential	n/a			81	255	20,655
Subtotal Residential Flow:	n/a			n/a		34,560
Drainage Basin Totals:	n/a			Sub-Total Q_{phf} (GPD):		34,560
				Peak Flow Factor:		2.5
				Peak Flow Q_{phf} (GPD):		86,400
				Q_{peak} (GPM):		60.0

Total Projected Flow - Node C3						
	Built Out			Built Out		Built Out
Parcel Group Uses	Acreage	Max. Density Allowed (units/acre)	Density Used in Calculations (units/acre)	Total Yield (units)	Daily Flow (GPD/UNIT)	Total Flow (GPD)
Oakview Elementary - E43	22.63 ac			n/a	10800	10,800
Hensley Subdivision (7)	54.08 ac			174	255	44,370
12 Oaks Residential	n/a			118	255	30,090
Commercial (7B-2)	14.75 ac	70% dev.	10,000sf/ac	103305	0.13	13,430
Existing Residential S. of New Hill	n/a			14	255	3,570
Thales Academy	10.74 ac			450	10	4,500
Subtotal Residential Flow:	n/a			n/a		106,760
Drainage Basin Totals:	n/a			Sub-Total Q_{phf} (GPD):		106,760
				Peak Flow Factor:		2.5
				Peak Flow Q_{phf} (GPD):		266,899
				Q_{peak} (GPM):		185.3

Capacity Analysis:

The downstream sewer capacity is analyzed with the following assumptions:

1. Manning's equation used to determine hydraulic flow.

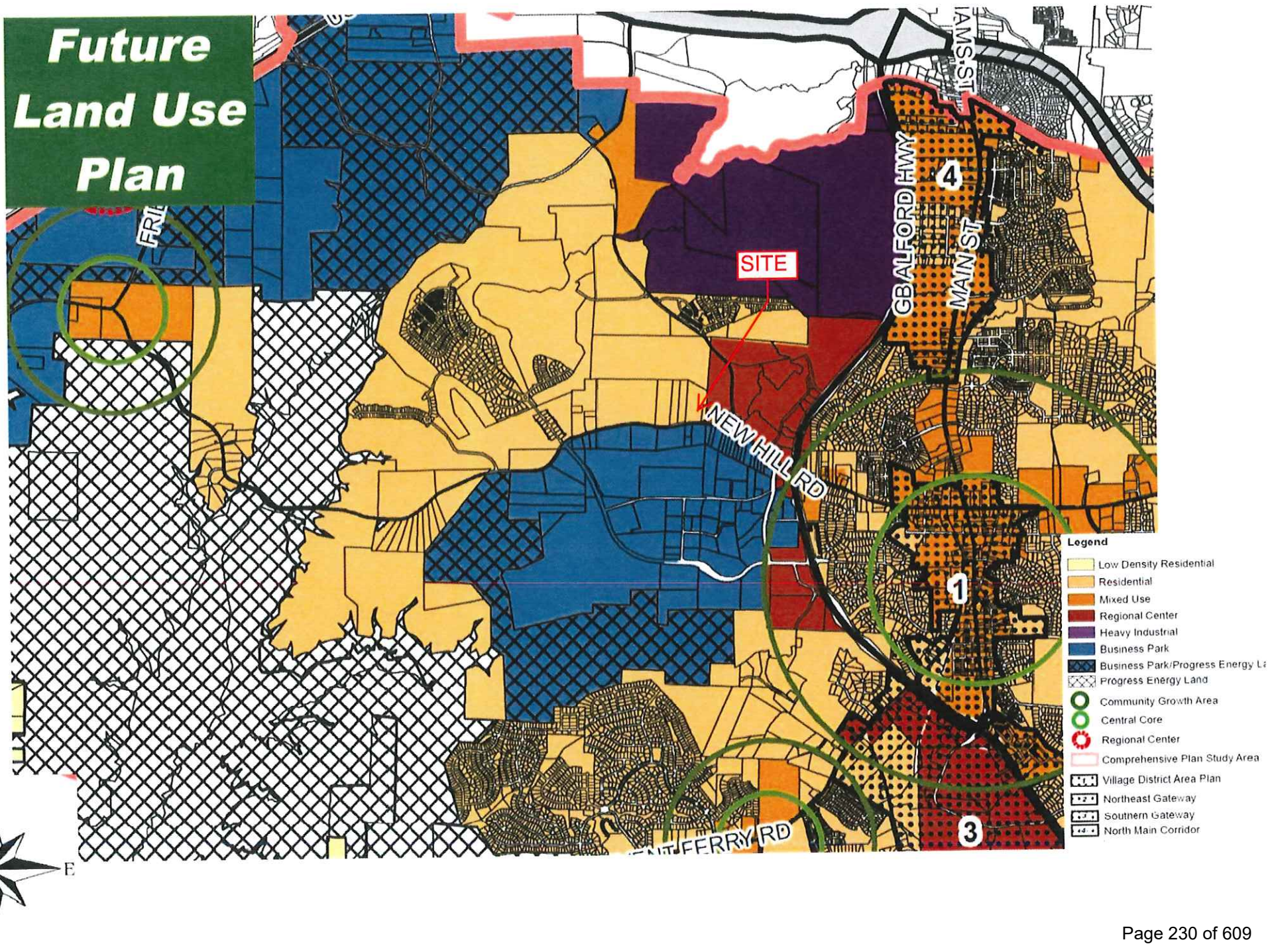
$$Q = \left(\frac{1.49}{n} \right) (A) (R^{\frac{2}{3}}) (s^{\frac{1}{2}})$$

2. Manning's "n" value; PVC = 0.010, DIP = 0.012
3. Slope based on as-built record drawings.
4. Sewer capacity based on pipe half full flow for maximum capacity (50% pipe capacity).

Exhibit Excerpt "Sanitary Sewer Study for Twelve Oaks PUD" drawing EX-1:



Future Land Use Plan





SPAULDING & NORRIS, PA

Planning • Civil Engineering • Surveying

SANITARY SEWER STUDY

for

TWELVE OAKS PUD

Stephenson Tract Amendment

Holly Springs, North Carolina

ENGINEERING
RECEIVED
(pm ____)

NOV 26 2014

03-16-SS-01

Project Number
121814
Comments Due

Submitted to:

Town of Holly Springs

128 South Main Street

Holly Springs, North Carolina 27540

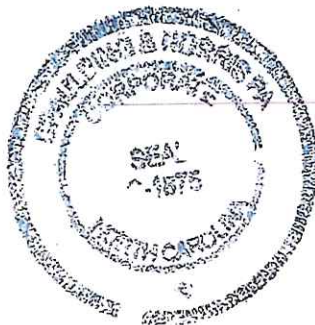
Submitted by:

Spaulding & Norris, PA

972 Trinity Road

Raleigh, North Carolina 27607

(919) 854-7990



Report Excerpt

REVISION DATE: November 25, 2014

PROJECT: 410-02

TABLE OF CONTENTS

GENERAL DESCRIPTION

PROPOSED AMENDMENT

DESIGN FLOW CALCULATIONS

DESIGN FLOW CALCULATIONS

BACKGROUND INFORMATION

EXHIBITS

- ONSITE SEWER MAP
- OFFSITE SEWER MAP
- John R McAdams Sewer Study

Project Number: 03-16-SS-01

**This special study is approved with
recommendations listed within the report
unless noted below.**



Town Engineer

12.10.14

Date

From Node To Node	DENSITY BREAKDOWN	(gpd)	AVERAGE DAILY FLOW (gpd)	PEAK FLOW (gpd)	LINE SIZE (Inches)	LINE MIN. SLOPE (%)	*CAPACITY AT MIN. SLOPE (GPD)	PIPE CAPACITY GREATER THAN PEAK FLOW
D2-D1	Onsite 125 units x 255 gpd/ unit = Flow from D3 = 749,503 gpd Flow from D4 = 42,157 gpd	31,875 839,612 45,265	916,752	2,291,880	24 DIP	0.09	2,375,786	YES
D6-D5	Onsite 159 units x 255 gpd/ unit =	27,030	27,030	67,575	8 DIP	0.5	299,122	YES
D5-D1	Flows from D6 = Onsite 24 units x 255 gpd/ unit =	27,030 6,120	33,150	82,875	8 DIP	0.5	299,122	YES
D1-D	Flows from D5 = Flows from D2 =	33,150 916,752	949,902	2,374,755	24 DIP	0.09	2,375,786	YES
D-C	Flows from D1 = Onsite 247 units @ 255 gpd/ unit = Recreation site	949,902 62,985 1,000	1,013,887	2,534,718	24 PVC	0.12	3,291,986	YES
C3	Offsite Flow from School Offsite Flow from Area 7 150 units@255/unit =	10,800 38,250	49,050	122,625	8 DIP	0.5	299,122	YES
C3-C2	Flow from offsite Node C3 = Onsite 118 units @ 255/gpd/ unit =	49,050 30,090	79,140	197,850	8 DIP	0.5	299,122	YES
C2-C1	Flows from C2 = Onsite 174 units @ 255 gpd/ unit =	79,140 44,370	123,510	308,775	12 DIP	0.22	585,071	YES
C1-C	Flows from C1 = Onsite 41 units @ 255 gpd/ unit =	123,510 10,455	133,965	334,913	12 DIP	0.22	585,071	YES
C-A	Flow from C = Onsite 88 units @ 255/gpd/ unit = Flow from D =	133,965 22,440 1,013,887	1,170,292	2,925,730	30 PVC	0.08	3,426,408	YES
A1-A	Flow from B = 99,920 A2-A1 = 45,263		145,183	362,958	15 PVC	0.15	1,051,117	YES
A2-A1	Onsite 71 units x 255 gpd/ unit =	18,105	18,105	45,263	8 DIP	0.5	299,122	YES
B4-B1	Onsite 8 units x 255 gpd/ unit = Onsite Future Recreation Site	2,040 2,000	4,040	10,100	8 DIP	0.5	299,122	YES
Flow to B2	Offsite 12 Ac@ 3 units/ ac =36 units 36 units x 255 gpd/ unit =	9,180	9,180	22,950	8 DIP	0.5	299,122	YES
B3-B1	Flows from B2 = Onsite 52 units @ 255 gpd/ unit =	9,180 13,260	22,440	56,100	8 DIP	0.5	299,122	YES
B1-B	Onsite 7 units @ 255gpd/ unit = Flow from B4 = Flow from B3 =	1,785 4,040 22,440	28,265	70,663	8 DIP	0.5	299,122	YES
B6-B5	Offsite 15 ac@ 3 units/ ac =45 units 45 units @ 255 gpd/ unit =	11,475	11,475	28,688	15 PVC	0.15	1,051,117	YES
B7-B5	Offsite 41 ac@3 units/ ac=124 units 124 units @ 255 gpd/ unit =	31,620	31,620	79,050	8 DIP	0.5	299,122	YES
B5-B	Flow from B6 = Flow from B7 =	11,475 31,620	43,095	107,738	15 PVC	0.15	1,051,117	YES
B-A1	Onsite 112 units @ 255/ unit = Flow from B1 = 28,265 gpd Flow from B5 = 43,095 gpd	28,560 28,265 43,095	99,920	249,800	15 PVC	0.15	1,051,117	YES

24" PVC

2,687,833

No

Appendix C

Gravity Sewer Capacity

Gravity Sewer Capacity													
S&N Section	Existing Pipe Properties				S&N (2014)	Stewart (2017)		WR (2021)		Capacity			
	Pipe Size	Pipe Slope	Pipe Material	Roughness Coefficient n	Peak Flow	Change in Peak Flow	Revised Peak Flow	Change in Peak Flow	Revised Peak Flow	Full Pipe Capacity		Maximum Pipe Capacity	
C3→C2	8 in	0.50%	DIP	0.012	197,850 gpd	69,050 gpd	266,900 gpd	33,750 gpd	300,650 gpd	598,252 gpd	50%	643,543 gpd	47%
C2→C1	12 in	0.22%	DIP	0.012	308,775 gpd	69,050 gpd	377,825 gpd	33,750 gpd	411,575 gpd	1,170,004 gpd	35%	1,258,580 gpd	33%
C1→C	12 in	0.13%	DIP	0.012	334,913 gpd	69,050 gpd	403,963 gpd	33,750 gpd	437,713 gpd	899,390 gpd	49%	967,478 gpd	45%
C→A	24 in	0.08%	PVC	0.010	2,925,730 gpd	42,287 gpd	2,968,017 gpd	33,750 gpd	3,001,767 gpd	5,375,870 gpd	56%	5,782,856 gpd	52%

Thales Academy Gravity Sewer Capacity Report

Label	Friction Method	n	Channel Slope (%)	Normal Depth (in)	Diameter (in)	Discharge (gal/day)	% Full (%)	Velocity (ft/s)	Maximum Discharge (gal/day)	Discharge Full (gal/day)
08-Inch-.50%	Manning Formula	0.012	0.50	4.01	8.00	300,650	50.1	2.66	643,543	598,252
12-Inch-.22%	Manning Formula	0.012	0.22	4.92	12.00	411,575	41.0	2.10	1,258,580	1,170,004
12-Inch-.13%	Manning Formula	0.012	0.13	5.90	12.00	437,713	49.2	1.76	967,478	899,389
24-Inch-.08%	Manning Formula	0.010	0.08	12.82	24.00	3,001,767	53.4	2.72	5,782,856	5,375,871

NORTH CAROLINA
WAKE COUNTY

TOWN OF HOLLY SPRINGS
(17-DP-04-A02 & 21-SEU-02)

IN RE THALES ACADEMY MAJOR)
AMENDMENT TO DEVELOPMENT)
PLAN AND SPECIAL EXCEPTION)
USE)
_____)

AFFIDAVIT OF
MELISSA HELBERT-POGOLOFF

I, MELISSA HELBERT-POGOLOFF, being duly sworn, hereby deposes and says:

1. I am over the age of eighteen years old, am under no disability, and have personal knowledge of all matters stated in this Affidavit.

2. I am the traffic engineer engaged by Thales Academy. Thales Academy seeks to expand an existing private school, currently containing one school building for grades kindergarten through eighth grade, by adding a new upper school building to accommodate grades six through twelfth grade and a gymnasium, for a maximum total of 1,200 students in the existing and new buildings, on an approximately 9.74 acre site located at 11244 Holly Springs New Hill Road, Holly Springs, North Carolina, PIN 0649265028 (the "Site"). This use is permitted as a Special Exception Use and must meet the criteria in Holly Springs' Unified Development Ordinance (UDO) § 9.10.A.2.

3. I received a degree in Civil Engineering from North Carolina State University. I am a licensed professional engineer in North Carolina.

4. Kimley-Horn, Inc. is the transportation engineer of record for the project, and I have worked for Kimley Horn for 6 years.

5. In this role I reviewed the applicant's site plan and performed a traffic impact analysis ("TIA") in July 2021. The TIA was updated in February 2022 to address an agreement between Thales Academy and the Town of Holly Springs to use a 45-minute staggered bell schedule between the proposed upper school and existing lower school on the Site to avoid overlap

in pick-up and drop-off times, further reduce queueing lengths and reduce impacts from the additional traffic anticipated from the proposed school expansion. The revised TIA is attached here as **Exhibit A**.

6. The current school serving grades kindergarten through eight has an enrollment of 470 students and 35 staff members. The proposed expansion will allow the current lower school building to serve 600 students, grades kindergarten through fifth grade, with 40 staff members. The proposed new upper school building for grades six through twelve anticipates opening in year 2023 and reaching a maximum enrollment of 600 students with 40 staff members in 2026. On the date of the traffic counts, 415 students and 34 staff members were present on the Site. Because of the 45-minute staggered bell schedule, the effective increase to traffic during the peak hours is only due to an additional 185 students ($600 \text{ proposed students} - 415 \text{ current students} = 185 \text{ students}$ and $40 \text{ staff} - 34 \text{ staff} = 6 \text{ staff}$). The TIA studied the existing 2021 and projected 2026 background and build-out conditions of traffic within the vicinity of the project. [TIA p. ES-1]

7. At full enrollment, the school expansion is expected to generate 248 peak AM trips and 164 School PM peak trips. [TIA p. ES-2] Note that the School PM peak is roughly 2 hours before the general commuter traffic PM peak, and although there may be a few trips leaving the school in the general PM peak due to after school care, our site is not expected to have a notable amount of traffic on the network in the general commuter PM peak.

8. The TIA evaluated the operation of eight surrounding intersections for the AM and PM peak hour traffic conditions.

9. The TIA included a background growth rate of 5% per year and 12 approved developments, which results in an effective growth rate ranging from 7% to over 25% throughout the study area. Thus, these assumptions are expected to result in an extremely conservative

analysis of the impact of the traffic associated with the proposed school expansion and the associated recommended improvements and mitigation strategies.

10. The Town of Holly Springs previously asked whether the applicant would pay a fee-in-lieu contribution towards a planned widening and realignment improvement project planned for the intersection of Old Holly Springs Apex Road and New Hill Road. However, study of this intersection revealed that the proposed school expansion project accounts for only 7.2% in the AM peak and 5.8% in the School PM peak of the total traffic at this intersection at project build-out. Accordingly, road widening or realignment at this intersection were not recommended improvements for the proposed school expansion either in our TIA or by NCDOT in their review. Based on a review of the adjacent Green Oaks Tech Center PUD TIA (*Timmons Group, September 2021*), it is expected that the general commuter PM peak hour is the time when the intersection improvements are more critical to the intersection operation and our site is not expected to generate any significant traffic during the general commuter PM peak.

11. The Town of Holly Springs previously asked whether the applicant would pay a fee-in-lieu contribution towards improvements of the Bennett Knoll Parkway and Old Holly Springs Apex Road intersection. However, study of this intersection revealed that the proposed school expansion project accounts for only 1.3% of the total traffic in the AM and School PM peak hours at this intersection at project build-out. Accordingly, no improvements are recommended for the proposed school expansion at this intersection.

12. To accommodate anticipated Site traffic associated with the proposed school expansion, it is recommended that Thales Academy take additional steps to enforce a right-out only turn from Socratic Way onto Holly Springs New Hill Road, by either enforcement of the existing signage, or installation of a barrier to prevent the left-out turn. It is further recommended

that to enforce this movement, Thales Academy utilize an off-duty police officer to direct traffic during queue times. [TIA, p. ES-2]

13. The applicant's site plan includes the striping of the current left-turn lane from Socratic Way onto Holly Springs New Hill Road to increase the enforcement of the right-out only turn, as recommended by the TIA.

14. There are no recommended improvements for the other intersections studied. [TIA, pp. 19-22; 26]

15. In addition, the proposed expansion will improve the onsite queueing for the existing school building by providing additional on-site queueing space. The current queueing space for the existing lower school building of 1,400 feet will be increased to 3,500 feet with the proposed expansion, such that no queue spillback is anticipated onto Holly Springs New Hill Road after the expansion. [TIA, p. 2]

16. Per the Municipal and School Transportation Assistance ("MSTA") calculator, the average demand queue required for the increased capacity at the lower school building is 2,552 feet, and the high demand queue required is 3,318 feet. [TIA, p. 30] The plans for the proposed school expansion will provide a 3,503 feet queue, exceeding the MSTTA requirements. [TIA, p. 30; Figure 9.1]

17. Per the MSTTA calculator, the average demand queue required for the proposed upper school building is 2,426 feet and the high demand queue required is 3,155 feet. [TIA, p. 30] The plans for the proposed school expansion will provide a 3,722 feet queue, exceeding the MSTTA requirements. [TIA, p. 30; Figure 9.2]

18. The proposed school expansion will include three points of emergency access, including one from the south from Holly Springs New Hill Road and Socratic Way, one from the

west from Searle Wood Trail, and one from the east via a stub street connection to allow for emergency access upon development of the adjacent parcel. The eastern emergency access point will be controlled by collapsible bollards to be installed that will allow for emergency access only. This will ensure no cross access from the adjacent development to the east, except in emergency situations, to prevent disruption to the queueing plan for carpool and to prohibit unauthorized access to the campus to ensure student safety.

19. Based on my experience and knowledge of NCDOT requirements, there exists adequate transportation infrastructure to support the proposed school expansion, and the traffic will not be injurious to the public health, safety, comfort, convenience, or general welfare. This is underscored by the conservative assumptions used in the performance of the TIA. Additionally, the access drives and driveways will be sufficient in size and properly located to ensure automotive and pedestrian safety and convenience, and traffic flow. Finally, the proposed off-street parking areas, off-street loading areas and trash pick-up and removal areas are located to be safe, convenient, and allow for access in case of emergency.

FURTHER, AFFIANT SAYETH NOT.

This the 3rd day of March, 2022.

Melissa Helbert-Pogoloff
Melissa Helbert-Pogoloff

Signed and sworn to before me this day by Melissa Helbert-Pogoloff.

Date: March 3rd, 2022



Tracie L. Jacobs
Official Signature of Notary Public

Tracie L. Jacobs Notary Public

My commission expires: 5.11.2025



Exhibit A
of
Affidavit of Melissa Helbert-Pogoloff

Revised Traffic Impact Analysis

Thales Academy Expansion

Holly Springs, NC

Prepared for:
WithersRavenel

Kimley»Horn

© Kimley-Horn and Associates, Inc. 2022

Revised Traffic Impact Analysis for
Thales Academy Expansion – Holly Springs
Holly Springs, North Carolina

Prepared for:
WithersRavenel
Raleigh, NC

Prepared by:
Kimley-Horn and Associates, Inc.
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 677-2000



DocuSigned by:
J. Travis Flutt
E9D325BFBC3E429...
2/2/2022



DocuSigned by:
Melissa Helbert-Pogoloff
55C3D47E37BF400...
2/2/2022

February 2022
011822014

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Executive Summary

Kimley-Horn and Associates, Inc. has performed an update to the *Thales Academy – Revised Traffic Impact Analysis* (Kimley-Horn, June 2017) for the proposed expansion of the existing Thales Academy located at 11244 Holly Springs New Hill Road in Holly Springs, NC. The June 2017 traffic impact analysis (TIA) assumed 452 students in grades K-5 and 30 staff members. The existing school currently has an enrollment of 470 students with 35 staff members. The proposed expansion will increase the capacity of the existing school K-5 school to 600 students and 40 staff and add a new 600-student and 40 staff member facility for grades 6-12 just north of the existing school. The school will continue to utilize the existing access (Socratic Way) on New Hill Road. The school expansion is anticipated to open in 2023 and be fully occupied in 2026.

This report is a revision to the report dated October 15, 2021 to address comments from the Town of Holly Springs and NCDOT and presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the development. The traffic conditions studied include the existing (2021) and the projected (2026) background and build-out traffic conditions.

This report presents trip generation, distribution, traffic and queueing analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the development. The traffic conditions studied include the following:

- Existing Traffic (2021)
- Projected (2026) Background Traffic
- Projected (2026) Build-Out Traffic – Socratic Way as Full-Movement
- Projected (2026) Build-Out Traffic – Socratic Way as Right-out Only

Based on feedback from MSTA, a customized calculator was developed to determine the trip generation potential of the future expansion based on traffic counts performed at the existing school. While the school has an enrollment of 470 students, on the day of traffic counts 415 students and 34 staff members were present at school. Start times for the “Lower” (grades K-5) and “Upper” (grades 6-12) schools will be staggered by at least 45 minutes to prevent any overlap in pick-up and drop-off operations. Therefore, the trip generation for this analysis reflects the additional enrollment and staff proposed with this expansion for grades K-5 (i.e. 600 students – 415 students = 185 students). The trips generated for the additional enrollment of grades K-5 were calculated by proportionally increasing the trips from the traffic counts up to 600 students. As shown in Table ES-1 below, the additional enrollment is anticipated to generate 248 new AM peak hour trips and 164 new school PM peak hour trips.



Table ES-1 Trip Generation – Custom Calculator						
Land Use	Intensity		AM Peak Hour		School PM Peak Hour	
			In	Out	In	Out
K-5 School Expansion (185 Students)	185	students	127	121	79	85
	6	staff				

Capacity analyses were performed using Synchro and SimTraffic Version 11 software. Table ES-2 summarizes the operation of the study intersections for the AM and school PM peak hour traffic conditions. Synchro reports are included in the Appendix of this report.

Based on the capacity analysis presented herein, the following roadway improvements are recommended to be performed to accommodate projected background traffic:

New Hill Road at Old Holly Springs Apex Road:

- Modify the traffic signal to provide a protected eastbound left-turn phase

Analysis indicates that several of the study intersections are expected to operate at LOS E or F in one or more peak hours in the year 2026 with or without the proposed school expansion. The solution to the delays at the intersections along the NC 55 Bypass is widening the NC 55 Bypass to 6 lanes. An interchange is also planned for the intersection of NC 55 Bypass at New Hill Road/Holly Springs Road. The solution for the long delays at the intersection of New Hill Road at Old Holly Springs Road is the widening of New Hill Road to a 4-lane section, which is being done incrementally by development in the area.

Due to the minor impacts site traffic is expected to have on intersection operations in the area, no additional improvements are recommended to be performed in conjunction with the proposed expansion. While no roadway improvements are recommended to be performed to accommodate projected Thales Academy site traffic at the intersection of New Hill Road at Socratic Way, it is important that traffic making a right-out only either by better enforcement of the existing sign (if Thales traffic is making this movement) or by installation of a barrier to prevent the left-out will be important to preserve the on-site operations. To enforce this movement and improve operations, it is recommended that Thales utilize an off-duty police officer to direct traffic during queue times.

The recommended roadway laneage is shown on **Figure ES-1**.

Table ES-2 - Level of Service Summary

Intersection and Approach/Movement	Traffic Control	Existing (2021) Traffic		Background (2026) Traffic		Build-out (2026) Traffic - Full Movement		Build-out (2026) Traffic - Right-out Only	
		AM	School PM	AM	School PM	AM	School PM	AM	School PM
NC 55 Bypass SB at New Hill Road	Signalized	B (12.6)	C (28.7)	D (43.8)	F (140.1)	D (50.7)	F (146.6)	D (50.7)	F (146.6)
NC 55 Bypass NB at Holly Springs Road	Signalized	F (160.3)	B (12.9)	F (369.5)	D (39.0)	F (374.9)	D (44.2)	F (374.9)	D (44.2)
NC 55 Bypass SB at Holly Springs Road U-Turn	Signalized	B (11.3)	C (20.7)	E (63.1)	F (142.8)	E (67.9)	F (147.6)	E (67.9)	F (147.6)
NC 55 Bypass NB at New Hill Road U-Turn	Signalized	E (61.8)	B (12.0)	F (277.3)	E (67.7)	F (283.1)	E (74.4)	F (283.1)	E (74.4)
New Hill Road at Old Holly Springs Apex Road	Signalized	A (7.1)	A (8.3)	D (44.2)	B (19.8)	E (58.7)	C (23.3)	E (58.7)	C (23.3)
Bennett Knoll Parkway at Old Holly Springs Apex Road	Signalized	B (16.4)	A (7.7)	F (247.5)	C (28.8)	F (251.6)	C (30.2)	F (251.6)	C (30.2)
New Hill Road at Socratic Way	Unsignalized	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
Southbound		C (20.4)	C (21.8)	F (302.3)	F (341.5)	F (513.1)	F (395.9)	F (222.2)	F (144.1)
Eastbound*		A (9.7)	A (9.7)	B (13.5)	B (13.4)	C (17.2)	C (15.3)	C (17.2)	C (15.3)
Green Oaks Parkway at New Hill Road	Unsignalized/ Signalized	- (-)	- (-)	B (14.2)	B (16.9)	C (20.3)	B (17.5)	C (24.4)	B (19.0)
Northbound		C (15.8)	C (16.3)						
Southbound		D (29.7)	C (21.8)						
Eastbound*		A (7.8)	A (7.7)						
Westbound*		A (8.2)	A (7.5)						

*Reported major street left for approach in unsignalized scenario

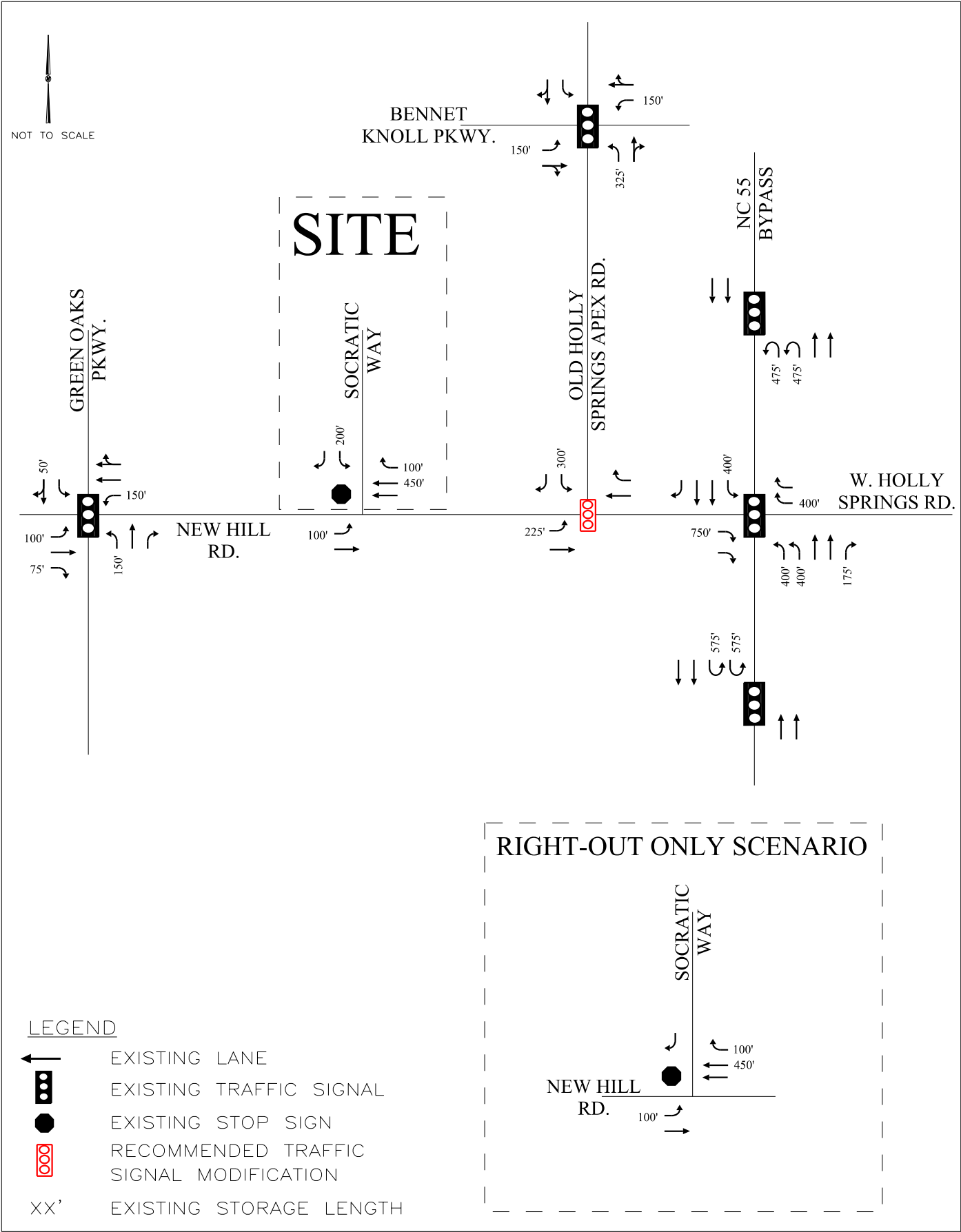




TABLE OF CONTENTS

	<u>Page No.</u>
1.0 INTRODUCTION.....	1
2.0 INVENTORY	2
2.1 STUDY AREA	2
2.2 EXISTING CONDITIONS	2
3.0 TRAFFIC GENERATION.....	6
4.0 SITE TRAFFIC DISTRIBUTION.....	7
4.1 DISTRIBUTION AND PERCENT ASSIGNMENT.....	7
5.0 PROJECTED TRAFFIC VOLUMES	9
5.1 EXISTING TRAFFIC	9
5.2 HISTORIC GROWTH TRAFFIC.....	9
5.3 APPROVED DEVELOPMENT TRAFFIC	10
5.4 SITE TRAFFIC.....	10
5.5 BUILD-OUT TRAFFIC.....	10
6.0 SIGNAL WARRANT ANALYSIS.....	15
7.0 CAPACITY ANALYSIS	17
7.1 SOUTHBOUND NC 55 BYPASS AT NEW HILL ROAD.....	19
7.2 NORTHBOUND NC 55 BYPASS AT W. HOLLY SPRINGS ROAD.....	20
7.3 NC 55 BYPASS AT U-TURN NORTH OF W. HOLLY SPRINGS ROAD.....	21
7.4 NC 55 BYPASS AT U-TURN SOUTH OF NEW HILL ROAD	22
7.5 NEW HILL ROAD AT OLD HOLLY SPRINGS APEX ROAD.....	23
7.6 BENNETT KNOLL PARKWAY AT OLD HOLLY SPRINGS APEX ROAD.....	24
7.7 HOLLY SPRINGS NEW HILL ROAD AT SOCRATIC WAY	25
7.8 NEW HILL ROAD AT GREEN OAKS PARKWAY	26
8.0 RECOMMENDATIONS.....	28
9.0 ON-SITE VEHICULAR OPERATIONS	30
9.1 ON-SITE QUEUING PLAN	30
9.2 ON-SITE TRAFFIC MANAGEMENT PLAN	31

Appendices

- A. TIA SCOPING DOCUMENT*
- B. TRIP GENERATION*
- C. TRAFFIC COUNT DATA*
- D. APPROVED DEVELOPMENT DATA*
- E. INTERSECTION SPREADSHEETS*
- F. SIGNAL WARRANT ANALYSIS*
- G. SYNCHRO & SIMTRAFFIC OUTPUT: EXISTING (2021)*
- H. SYNCHRO & SIMTRAFFIC OUTPUT: BACKGROUND (2026)*
- I. SYNCHRO & SIMTRAFFIC OUTPUT: BUILD-OUT (2026) - FULL MOVEMENT SCENARIO*
- J. SYNCHRO & SIMTRAFFIC OUTPUT: BUILD-OUT (2026) - RIGHT-OUT ONLY SCENARIO*
- K. SIGNAL PLANS AND TIMING DATA*
- L. MSTA QUEUE CALCULATORS AND UPPER SCHOOL TRIP GENERATION*

LIST OF TABLES

<u>Table No.</u>	<u>Title</u>	<u>Page No.</u>
Table 3.0	MSTA Traffic Generation (Vehicles)	6
Table 6.0	Traffic Signal Warrants Summary	15
Table 7.0	Level-of-Service Control Delay Thresholds.....	17
Table 7.1	Level-of-Service Southbound NC 55 Bypass at New Hill Road.....	19
Table 7.2	Level-of-Service Northbound NC 55 Bypass at W. Holly Springs Road	20
Table 7.3	Level-of-Service NC 55 Bypass at U-Turn North of W. Holly Springs Road.....	21
Table 7.4	Level-of-Service NC 55 Bypass at U-Turn South of New Hill Road.....	22
Table 7.5	Level-of-Service New Hill Road at Old Holly Springs Apex Road	23
Table 7.6	Level-of-Service Bennett Knoll Parkway at Old Holly Springs Apex Road .	24
Table 7.7	Level-of-Service New Hill Road at Socratic Way.....	25
Table 7.8	Level-of-Service New Hill Road at Green Oaks Parkway	27

LIST OF FIGURES

<u>Figure No.</u>	<u>Title</u>	<u>Page No.</u>
Figure 2.1	Site Location.....	4
Figure 2.2	Existing Roadway Laneage	5
Figure 4.1	Site Traffic Distribution and Percent Assignment	8
Figure 5.1	Existing and Projected (2026) Background AM Peak Hour Traffic Volumes.....	11
Figure 5.2	Existing and Projected (2026) Background School PM Peak Hour Traffic Volumes.....	12
Figure 5.3	Projected (2026) Build-out AM Peak Hour Traffic Volumes	13
Figure 5.4	Projected (2026) Build-out School PM Peak Hour Traffic Volumes	14
Figure 8.1	Recommended Roadway Laneage.....	29
Figure 9.1	Traffic Management Plan (Grades K-5).....	34
Figure 9.2	Traffic Management Plan (Grades 6-12).....	35

1.0 Introduction

Kimley-Horn and Associates, Inc. has performed an update to the *Thales Academy – Revised Traffic Impact Analysis* (Kimley-Horn, June 2017) for the proposed expansion of the existing Thales Academy located at 11244 Holly Springs New Hill Road in Holly Springs, NC. The June 2017 traffic impact analysis (TIA) assumed 452 students in grades K-5 and 30 staff members. The existing school currently consists of 470 students and 35 staff members, however on the day of traffic counts 415 students and 34 staff members were present at school. The proposed expansion will increase the capacity of the existing school K-5 school to 600 students and 40 staff and add a new 600-student and 40 staff member facility for grades 6-12 just north of the existing school. The school will continue to utilize the existing access (Socratic Way) on New Hill Road. The school expansion is anticipated to open in 2023 and be fully occupied in 2026.

This report is a revision to the report dated October 15, 2021 to address comments from the Town of Holly Springs and NCDOT and presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands in conjunction with the development. The traffic conditions studied include the existing (2021) and the projected (2026) background and build-out traffic conditions. Analyses were performed for the AM and school PM peak periods (7-9 AM and 2-4 PM).

NCDOT and Town of Holly Springs transportation staff provided background data and were consulted regarding the elements to be covered in this analysis. The TIA assumptions memorandum is included in Appendix A. Note that some assumptions may have slightly changed since the last scoping document.

2.0 Inventory

2.1 Study Area

The study area for this development includes the following intersections:

- Southbound NC 55 Bypass at New Hill Road
- Northbound NC 55 Bypass at W. Holly Springs Road
- NC 55 Bypass at U-Turn North of W. Holly Springs Road
- NC 55 Bypass at U-Turn South of New Hill Road
- New Hill Road at Old Holly Springs Apex Road
- Bennett Knoll Parkway at Old Holly Springs Apex Road
- Holly Springs New Hill Road at Socratic Way
- Holly Springs New Hill Road at Green Oaks Parkway

Figure 2.1 shows the site location.

2.2 Existing Conditions

Thales Academy is located on the northeast quadrant of the intersection of Holly Springs New Hill Road at Socratic Way in Holly Springs, North Carolina. A field visit was conducted to this site to document existing conditions. Roadways in the study area include NC 55, W. Holly Springs Road, New Hill Road, Old Holly Springs Apex Road, Bennett Knoll Parkway, and Green Oaks Parkway. The existing roadway laneage is shown in **Figure 2.2**.

The existing school has resulted in some queue spillback onto Holly Springs New Hill Road. This queue spillback is due to insufficient on-site queueing space. Due to the school expansion, the on-site queuing space for the existing K-5 school will go from 1,400' today to 3,500' with the proposed expansion. It is expected that due to this expansion, queues should not spillback to Holly Springs New Hill Road due to insufficient on-site queuing space. Additionally, due to spillback issues today, Thales has already made changes to their loading operations and increased on-site queueing space.

NC 55 is a 4-lane divided principal arterial with a posted speed limit of 55 mph. The reported 2019 Average Annual Daily Traffic (AADT) volume from NCDOT is approximately 43,000 vehicles per day (vpd) south of New Hill Road/W. Holly Springs Road.

W. Holly Springs Road is a 2-lane undivided minor arterial with a posted speed limit of 35 mph. The reported 2019 AADT volume from NCDOT is approximately 10,500 vpd.

In the vicinity of the site, New Hill Road is a multi-lane divided minor arterial with a posted speed limit of 35 mph. The reported 2019 AADT volume from NCDOT is approximately 14,000 vpd.

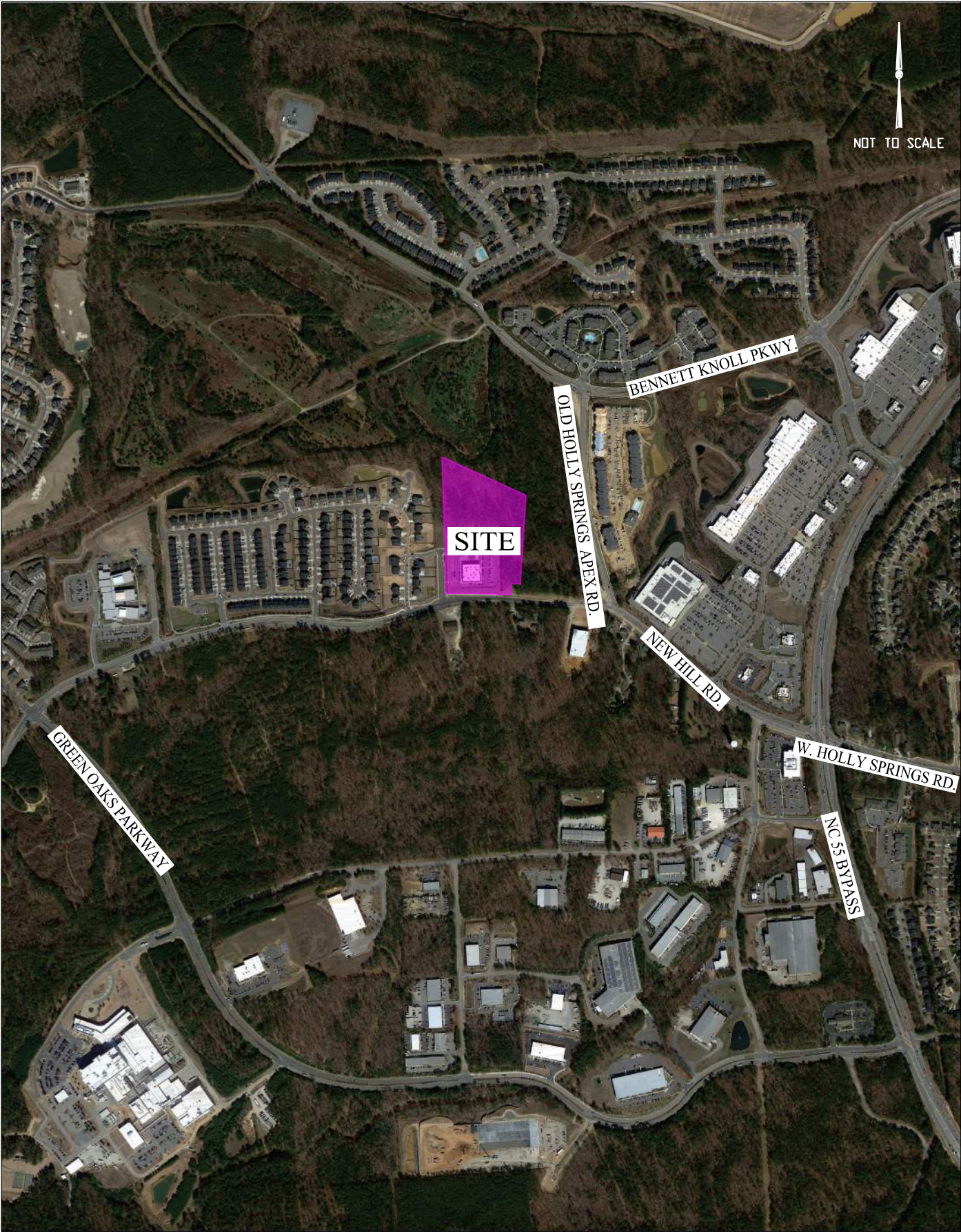
Old Holly Springs Apex Road is a two-lane undivided minor arterial with a posted speed limit of 35 mph. The reported 2015 AADT volume from NCDOT is approximately 3,000 vpd.



Thales Academy Expansion – Holly Springs, NC

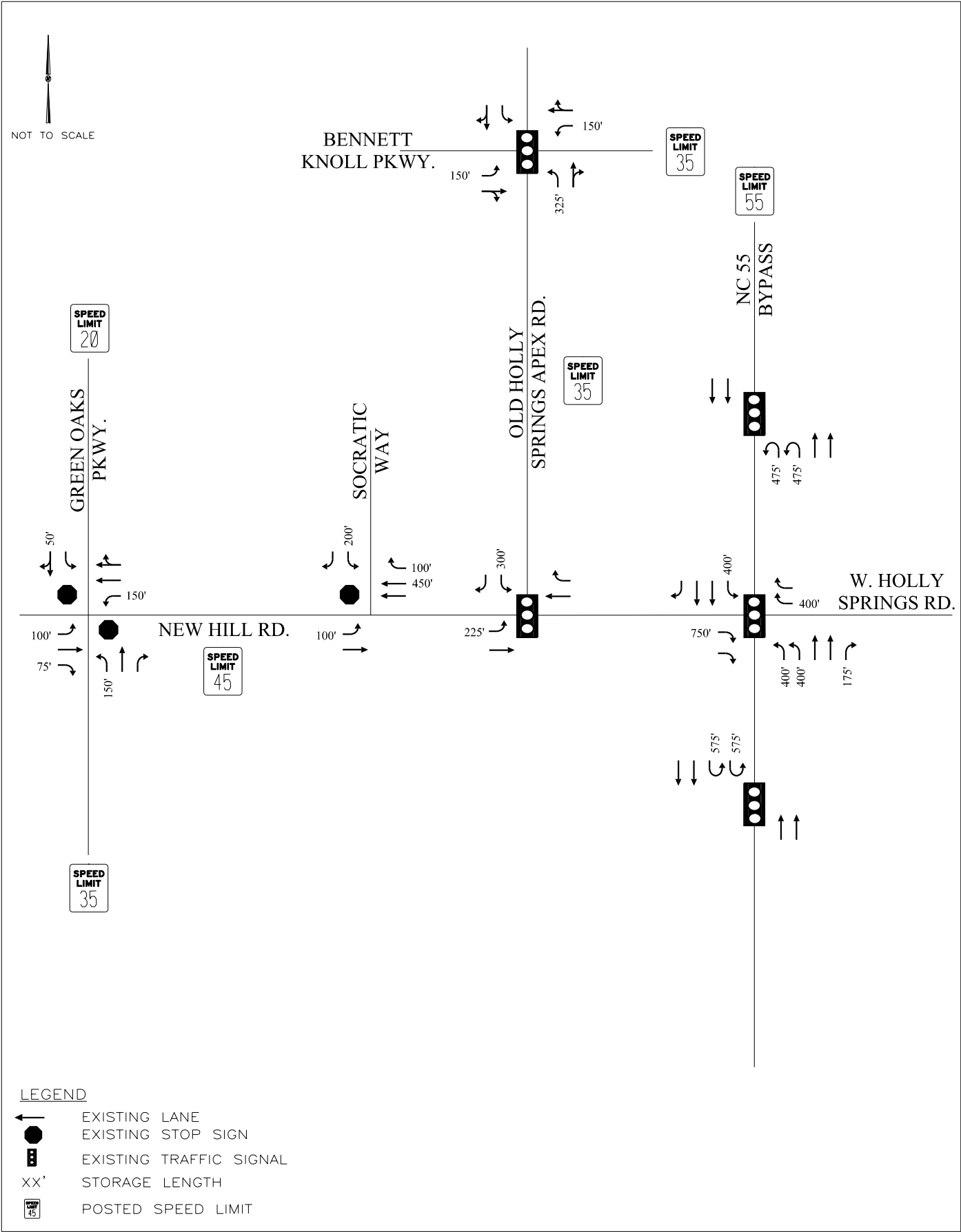
Bennett Knoll Parkway is a two-lane divided roadway with a posted speed limit of 35 mph.

South of New Hill Road, Green Oaks Parkway is a four-lane divided roadway with a posted speed limit of 35 mph and an estimated 2021 AADT volume of approximately 3,000 vpd.



	THALES ACADEMY EXPANSION HOLLY SPRINGS, NC TRAFFIC IMPACT ANALYSIS	SITE LOCATION	FIGURE 2.1
---	--	---------------	---------------

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.



THALES ACADEMY EXPANSION
HOLLY SPRINGS, NC
TRAFFIC IMPACT ANALYSIS

EXISTING ROADWAY
LANEAGE

FIGURE
2.2

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

3.0 Traffic Generation

Based on feedback from MSTA, a customized calculator was developed to determine the trip generation potential of the future expansion based on traffic counts performed at the existing school. While the school has an enrollment of 470 students, on the day of traffic counts 415 students and 34 staff members were present at school. Start times for the “Lower” (grades K-5) and “Upper” (grades 6-12) schools will be staggered by at least 45 minutes to prevent any overlap in pick-up and drop-off operations. Therefore, the trip generation for this analysis reflects the additional enrollment and staff proposed with this expansion for grades K-5 (i.e. 600 students – 415 students = 185 students). The trips generated for the additional enrollment of grades K-5 were calculated by proportionally increasing the trips from the traffic counts up to 600 students. As shown in Table 3.0 below, the additional enrollment is anticipated to generate 248 new AM peak hour trips and 164 new school PM peak hour trips.

Table 3.0 Thales Expansion Trip Generation – Custom Calculator						
Land Use	Intensity		AM Peak Hour		School PM Peak Hour	
			In	Out	In	Out
K-5 School Expansion (185 Students)	185	students	127	121	79	85
	6	staff				

The MSTA “School Traffic Calculator” spreadsheets and customized school trip calculator are included in Appendix B of this report.

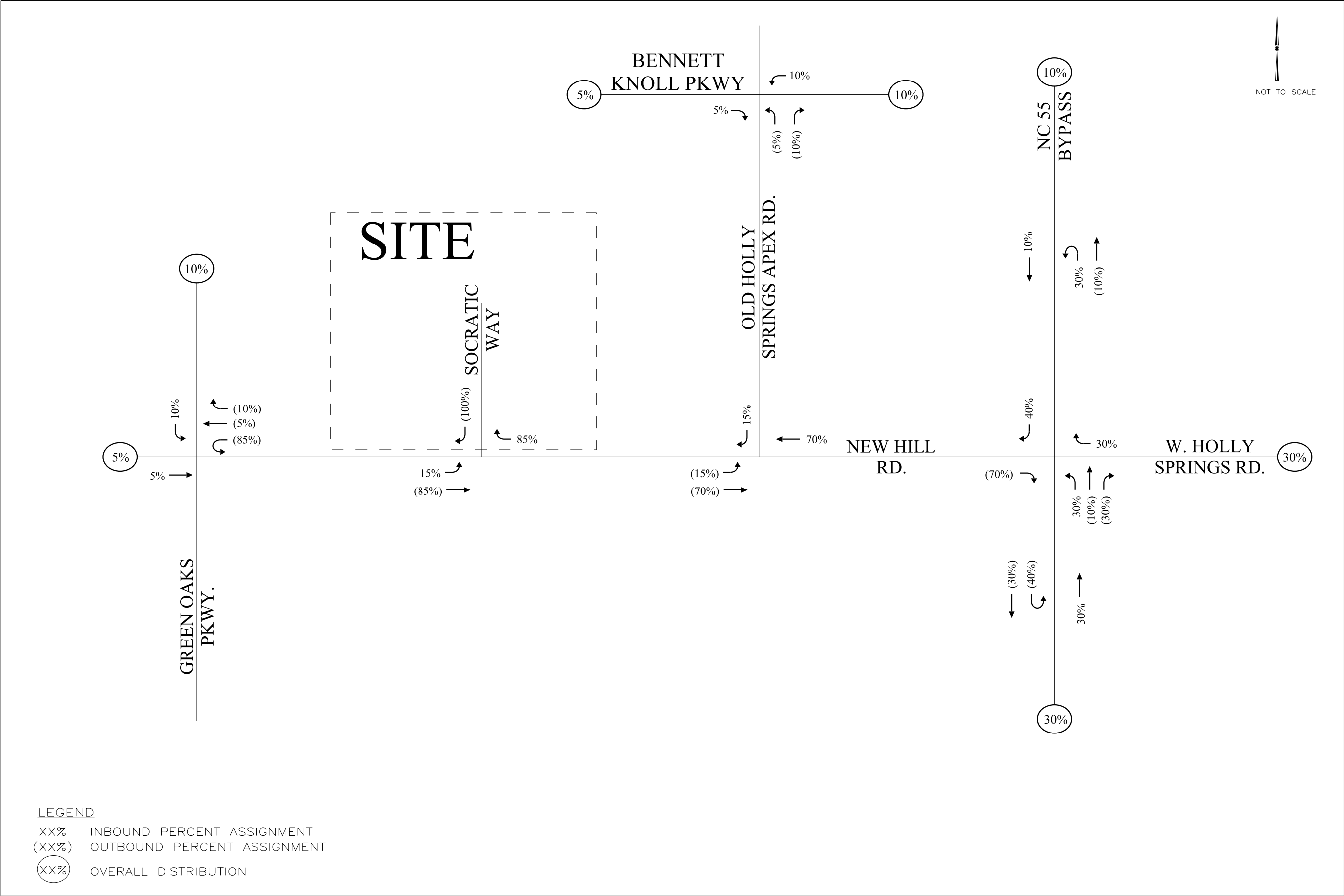
4.0 Site Traffic Distribution

4.1 Distribution and Percent Assignment

The projected site-generated trips were assigned to the surrounding roadway network. The directional distribution and assignment are based on land uses in the area and existing travel patterns and is generally consistent with the June 2017 TIA performed for the existing school.

- 30% to/from the east on W. Holly Springs Road
- 30% to/from the south on NC 55 Bypass
- 10% to/from the north on NC 55 Bypass
- 10% to/from the east on Bennett Knoll Parkway
- 10% to/from the north on Green Oaks Parkway
- 5% to/from the west on New Hill Road
- 5% to/from the west on Bennett Knoll Parkway

The site traffic distribution and percent assignment are shown on **Figure 4.1**. It should be noted that Thales Academy has posted a sign on the southbound approach of Socratic Way at New Hill Road indicating “No Left Turn During Carpool Hours (7:00-8:00AM and 2:30-3:30PM). Therefore, all new school traffic was assigned as right-turns onto New Hill Road, and traffic wanting to go east was assigned as westbound U-turns at Green Oaks Parkway.



5.0 Projected Traffic Volumes

5.1 Existing Traffic

A new 13-hour (6AM-7PM) turning movement count was performed at the following intersection:

- New Hill Road at Socratic Way July 20, 2021

A new school PM peak hour (2-4) turning movement count was performed at the following intersection:

- New Hill Road at Old Holly Springs Apex Road July 20, 2021

2019 AM peak hour turning movement volumes at all other intersections were obtained from the *Green Oaks West Traffic Impact Analysis* (Timmons Group, March 2021).

Historic traffic counts for the school PM peak hour at the other study intersections were obtained from past traffic studies or NCDOT as follows:

- NC 55 Bypass at New Hill Road/Holly Springs Road May 30, 2018
- NC 55 Bypass at U-Turn north of New Hill Road June 5, 2019
- NC 55 Bypass at U-Turn south of New Hill Road June 5, 2019
- New Hill Road at Green Oaks Parkway March 5, 2019

To determine school PM peak hour volumes at Old Holly Springs Apex Road at Bennet Knoll Parkway, the turns were balanced with the school PM peak hour volumes at New Hill Road at Old Holly Springs Apex Road.

Consistent with the Green Oaks West TIA, volumes from traffic counts performed prior to 2021 were grown at 5% per year up to 2021. Volumes for approved developments constructed between 2019 and 2021 were also obtained from the *Green Oaks West TIA* and added at all study intersections.

The adjusted existing AM and school PM peak hour traffic volumes are shown on **Figures 5.1** and **5.2**, and the traffic count data are included in Appendix C.

5.2 Historic Growth Traffic

Historic growth traffic is the increase in traffic due to usage increases and non-specific growth throughout the area. Based on discussions with the Town of Holly Springs, an annual growth rate of 5% was applied to the historic traffic counts up to the existing year 2021. This annual growth rate was also applied to the existing volumes up to the build-out year of 2026.

5.3 *Approved Development Traffic*

Approved development traffic is generated by approved but not yet constructed projects in the vicinity of the proposed project. Projects identified for inclusion were obtained from the *Green Oaks West TIA*. The following projects were included in this analysis: Hensley Subdivision (formerly the Shaffer Subdivision), Addison Pond, Ferguson Warehouse, Holly Springs Place Apartments, New Hill Subdivision, Carolina Springs PUD, Trinity Creek, Regency Subdivision, Andorra Apartments (formerly New Hill Place Apartments), E-51, Crescent Commons, and 12 Oaks (Phase 9).

Both the year 2024 and 2026 approved development volumes were included in this analysis, and to be conservative, no reduction was applied to the PM approved development volumes to account for the school PM peak hour. It should be noted that the approved development traffic analyzed as part of this study is expected to be conservative as no reduction was applied to account for interaction between these uses. Furthermore, by including a 5% annual growth rate up to 2026 as well as the approved development traffic described above, the effective annual growth rates at the study intersections range from 7% to over 25%, which is expected to result in an extremely conservative analysis.

The approved development volumes are included in Appendix D.

Background traffic volumes include historic growth traffic and approved development traffic are shown on **Figures 5.1** and **5.2** for the AM and school PM peak hours, respectively.

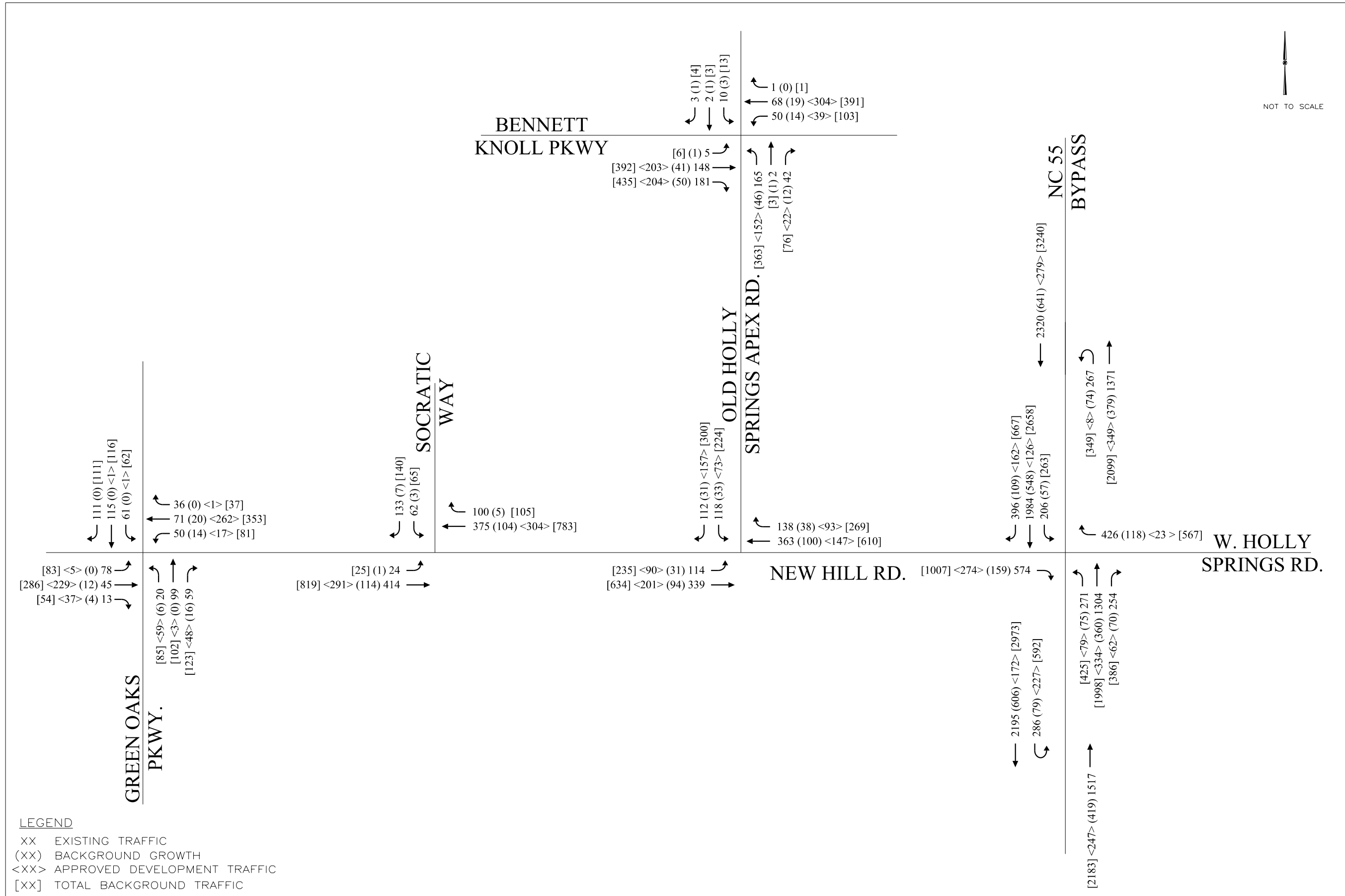
5.4 *Site Traffic*

The proposed site traffic was generated and assigned to the adjacent roadway network according to the distribution discussed previously in Section 4.0. The AM and school PM peak hour site traffic volumes are shown on **Figures 5.3** and **5.4**, respectively.

5.5 *Build-Out Traffic*

To obtain the projected (2026) build-out traffic volumes, the projected site traffic was added to the projected (2026) background traffic. Traffic volume calculations are detailed in intersection spreadsheets in Appendix E of this report. **Figures 5.3** and **5.4** show the projected (2026) AM and school PM peak hour build-out traffic volumes, respectively.





EXISTING AND PROJECTED (2026)
BACKGROUND SCHOOL PM
PEAK HOUR TRAFFIC VOLUMES

FIGURE





THALES ACADEMY EXPANSION
HOLLY SPRINGS, NC
TRAFFIC IMPACT ANALYSIS

PROJECTED (2026) BUILD-OUT SCHOOL PM PEAK HOUR TRAFFIC VOLUMES

FIGURE 5.4

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY KIMLEY-HORN AND ASSOCIATES, INC. SHALL BE WITHOUT LIABILITY TO KIMLEY-HORN AND ASSOCIATES, INC.

6.0 Signal Warrant Analysis

A traffic signal warrant analysis was performed at the intersection of Holly Springs New Hill Road at Socratic Way based on the criteria contained in the *Manual on Uniform Traffic Control Devices* (MUTCD) 2009 Edition published by the Federal Highway Administration (FHWA).

This traffic signal warrant analysis evaluated projected traffic conditions to determine if minimum vehicular volume warrants established by the MUTCD are expected to be satisfied in the 2026 analysis year for this intersection. Warrants 1, 2, and 3 are the vehicular volume warrants and are based on mainline traffic volumes, side street traffic volumes, and the number of travel lanes. To determine the projected volumes, the newly-collected (2021) 13-hour counts at the intersection of Holly Springs New Hill Road at Socratic Way were grown to 2026 at 5% per year. The approved development traffic was added using the remaining percentages of each development in 2021 as published in the *Green Oaks Tech Center TIA* (Timmons Group, March 2021). The volumes were then distributed to 13 hours by using the hourly distributions published by ITE and added to the estimated 2026 traffic counts. It was assumed that school traffic occurred in one hour in the AM and school PM peak hours, and no school traffic was assumed to occur outside of these AM and school PM times. These school trips were then added to the estimated 2026 traffic counts and approved development traffic to determine the build-out traffic volumes.

The results of the traffic signal warrant analysis under future year 2026 conditions at the intersection of Holly Springs New Hill Road at Socratic Way are shown below in [Table 6.0](#). The posted speed limit along Holly Springs New Hill Road is 35 mph, so no volume reduction was applied for this analysis. The 8-hour (Warrants 1A, 1B, and 1C), 4-hour (Warrant 2), and peak hour (Warrant 3) were evaluated as a part of this analysis.

Table 6.0				
Traffic Signal Warrants Summary				
Holly Springs New Hill Road at Socratic Way				
Warrant	Background (2026)		Build-out (2026)	
	Hours Met / Required	Criteria Satisfied?	Hours Met / Required	Criteria Satisfied?
1A	2 / 8	NO	2 / 8	NO
1B	1 / 8	NO	2 / 8	NO
1C	2 / 8	NO	2 / 8	NO
2	2 / 4	NO	2 / 4	NO
3	0 / 1	NO	2 / 1	YES

The MUTCD states that engineering judgement and rationale should be applied to a minor street approach with one lane plus a right-turn lane. The right-turn traffic should not be included in the minor-street volume if the movement enters the major street with minimal conflict. At the intersection of Holly Springs New Hill Road at Socratic Way, the southbound approach has an



exclusive right-turn lane, and it is expected that the volume could enter the major street with minimal conflict. However, given that most of the traffic on the minor street approach is right-turn traffic entering the major street, 50% of the right-turns were included in this analysis to reflect traffic on the minor street approach.

Based on the results of this signal warrant analysis only meeting the peak hour warrant due to school traffic, it is not recommended to install a signal as part of this expansion. However, due to the amount of development in the area and potential for a fourth leg to this intersection, a signal may need to be reevaluated in the future.

Detailed traffic signal warrant analyses for the study intersection in both scenarios are shown in Appendix F.

7.0 Capacity Analysis

Capacity analyses were performed for the AM and school PM peak hours for the existing traffic condition and the projected (2026) background and build-out traffic conditions using Synchro/SimTraffic Version 11 software to determine the operating characteristics of the adjacent road network and the impacts of the proposed project.

Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a set time duration. Capacity is combined with Level-of-Service (LOS) to describe the operating characteristics of a road segment or intersection. LOS is a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with A representing the shortest average delays and F representing the longest average delays. LOS D is the typically accepted standard for signalized intersections in urbanized areas. For signalized intersections, LOS is defined for the overall intersection operation.

For unsignalized intersections, only the movements that must yield right-of-way experience control delay. Therefore, LOS criteria for the overall intersection is not reported by Synchro/SimTraffic Version 11 or computable using methodology published in the *Highway Capacity Manual*. It is typical for stop sign controlled side streets and driveways intersecting major streets to experience long delays during peak hours, while the majority of the traffic moving through the intersection on the major street experiences little or no delay. Table 7.0 lists the LOS control delay thresholds published in the *Highway Capacity Manual* for signalized and unsignalized intersections.

Table 7.0 Level-of-Service Control Delay Thresholds			
Level-of-Service	Signalized Intersections – Control Delay Per Vehicle [sec/veh]	Unsignalized Intersections – Average Control Delay [sec/veh] & Qualitative Operational Description	
A	≤ 10	≤ 10	Short Delays
B	> 10 – 20	> 10 – 15	
C	> 20 – 35	> 15 – 25	
D	> 35 – 55	> 25 – 35	Moderate Delays
E	> 55 – 80	> 35 – 50	
F	> 80	> 50	Long Delays

The following assumptions were used in the analysis:

- Existing signal timings were obtained from the signal controllers by permission of NCDOT.
- Existing splits were optimized for the future conditions and the same timings were used for the background and build-out conditions.

- The intersection peak hour factor (PHF) from the traffic counts was used at each intersection with the exception of Socratic Way which was used by movement due to the impact of existing school traffic at that intersection
- A weighted peak hour factor (PHF) by movement was used in the build condition, with a PHF of 0.50 used for school traffic volumes and the existing overall PHF values used for non-school movements.
- Right-turns on red were permitted in the analysis where permitted today.

Capacity analyses were performed for the existing (2021) traffic condition and the projected (2026) background and build-out traffic conditions for the following intersections:

- Southbound NC 55 Bypass at New Hill Road
- Northbound NC 55 Bypass at W. Holly Springs Road
- NC 55 Bypass at U-Turn North of W. Holly Springs Road
- NC 55 Bypass at U-Turn South of New Hill Road
- New Hill Road at Old Holly Springs Apex Road
- Bennett Knoll Parkway at Old Holly Springs Apex Road
- New Hill Road at Socratic Way
- New Hill Road at Green Oaks Parkway

The results of the capacity analysis are summarized in the following sub-sections. Synchro reports are included in Appendix G-J of this report. Traffic signal plans and timing information is included in Appendix K.

7.1 Southbound NC 55 Bypass at New Hill Road

Analyses indicate that the signalized intersection of Southbound NC 55 Bypass at New Hill Road currently operates at LOS B in the AM peak hour and at LOS C in the school PM peak hour. With the addition of background growth and approved development traffic, the intersection is expected to degrade to LOS D in the AM peak hour and LOS F in the school PM peak hour in the background traffic condition. At project build-out, the intersection is expected to continue operating at LOS D in the AM peak hour and LOS F in the school PM peak hour.

Long queues observed in the existing and background conditions at this intersection are expected to continue in the build-out traffic condition, though it should be noted that site traffic associated with this project accounts for less than 4% of the total intersecting volume. As noted by other projects, widening of NC 55 Bypass to a 6-lane section would be necessary to achieve acceptable LOS at this intersection, which is out of scope for this project given the minor impact to this intersection. No roadway improvements are recommended to be performed at this intersection as part of this project.

Table 7.1 summarizes the LOS and delay (seconds per vehicle) of the intersection of Southbound NC 55 Bypass at New Hill Road for the existing (2021) and projected (2026) background and build-out traffic conditions.

Table 7.1 Level-of-Service Southbound NC 55 Bypass at New Hill Road (Signalized)		
Condition	AM Peak Hour LOS (Delay)	School PM Peak Hour LOS (Delay)
Existing (2021) Traffic	B (12.6)	C (28.7)
Background (2026) Traffic	D (43.8)	F (140.1)
Build-out (2026) Traffic	D (50.7)	F (146.6)

7.2 Northbound NC 55 Bypass at W. Holly Springs Road

Analyses indicate that the signalized intersection of Northbound NC 55 Bypass at W. Holly Springs Road currently operates at LOS F in the AM peak hour and at LOS B in the school PM peak hour. With the addition of background growth and approved development traffic, the intersection is expected to continue operating at LOS F in the AM peak hour and begin operating at LOS D in the school PM peak hour with or without the proposed school expansion in place.

Long queues observed in the existing and background conditions at this intersection are expected to continue in the build-out traffic condition, though it should be noted that site traffic associated with this project accounts for less than 2% of the total intersecting volume. As noted by other projects, widening of NC 55 Bypass to a 6-lane section would be necessary to achieve acceptable LOS at this intersection, which is out of scope for this project given the minor impact to this intersection. No roadway improvements are recommended to be performed at this intersection as part of this project.

Table 7.2 summarizes the LOS and delay (seconds per vehicle) of the intersection of Northbound NC 55 Bypass at W. Holly Springs Road for the existing (2021) and projected (2026) background and build-out traffic conditions.

Table 7.2 Level-of-Service Northbound NC 55 Bypass at W. Holly Springs Road (Signalized)		
Condition	AM Peak Hour LOS (Delay)	School PM Peak Hour LOS (Delay)
Existing (2021) Traffic	F (160.3)	B (12.9)
Background (2026) Traffic	F (369.5)	D (39.0)
Build-out (2026) Traffic	F (374.9)	D (44.2)

7.3 NC 55 Bypass at U-Turn North of W. Holly Springs Road

Analysis indicates that the intersection of NC 55 Bypass at the U-Turn North of W. Holly Springs Road currently operates at LOS B in the AM peak hour and LOS C in the school PM peak hour. With the addition of background growth and approved development traffic, the intersection is expected to degrade to LOS E in the AM peak hour and LOS F in the school PM peak hour in the background traffic condition. At project build-out, the intersection is expected to continue operating at LOS E and LOS F in the AM and school PM peak hours, respectively. The long-term solution for this intersection is the widening of NC 55 Bypass to a 6-lane section. Site traffic associated with the proposed school project accounts for less than 1% of the total traffic at the intersection at project build-out, and no improvements are recommended to be performed as part of this project.

Table 7.3 summarizes the LOS and delay of the intersection of NC 55 Bypass at the U-Turn North of W. Holly Springs Road for the existing (2021) and projected (2026) background and build-out traffic conditions.

Table 7.3 Level-of-Service NC 55 Bypass at U-Turn North of W. Holly Springs Road (Signalized)		
Condition	AM Peak Hour LOS (Delay)	School PM Peak Hour LOS (Delay)
Existing (2021) Traffic	B (11.3)	C (20.7)
Background (2026) Traffic	E (63.1)	F (142.8)
Build-out (2026) Traffic	E (67.9)	F (147.6)

7.4 NC 55 Bypass at U-Turn South of New Hill Road

The analysis indicates that the intersection of NC 55 Bypass at the U-Turn South of New Hill Road currently operates at LOS E in the AM peak hour and LOS B in the school PM peak hour. With the addition of background growth and approved development traffic, the intersection is expected to degrade to LOS F in the AM peak hour and LOS E in the school PM peak hour in the background traffic condition. At project build-out, the intersection is expected to continue operating at LOS F in the AM peak hour and LOS E in the school PM peak hour. The long-term solution for this intersection is the widening of NC 55 Bypass to a 6-lane section. Site traffic associated with the proposed school project accounts for 2% or less of the total traffic at the intersection at project build-out, and no improvements are recommended to be performed as part of this project.

Table 7.4 summarizes the LOS and delay of the intersection of NC 55 Bypass at the U-Turn South of New Hill Road for the existing (2021) and projected (2026) background and build-out traffic conditions.

Table 7.4 Level-of-Service NC 55 Bypass at U-Turn South of New Hill Road (Signalized)		
Condition	AM Peak Hour LOS (Delay)	School PM Peak Hour LOS (Delay)
Existing (2021) Traffic	E (61.8)	B (12.0)
Background (2026) Traffic	F (277.3)	E (67.7)
Build-out (2026) Traffic	F (283.1)	E (74.4)

7.5 New Hill Road at Old Holly Springs Apex Road

Analyses indicate that the signalized intersection of New Hill Road at Old Holly Springs Apex Road currently operates at LOS A in both the AM and school PM peak hours. The intersection is expected to degrade to LOS D in the AM peak hour and LOS B in the school PM peak hour in the background traffic condition due to the significant amount of growth and approved development traffic projected. It is recommended that a protected eastbound left-turn phase be added to accommodate projected background traffic and provide an easily implementable solution until the widening of New Hill Road and the realignment can be completed.

At project build-out, the intersection is expected to operate at LOS E in the AM peak hour and LOS C in the school PM peak hour. Although the intersection operates at LOS E in the AM peak hour, SimTraffic simulations show no queueing issues. The long-term solution for this intersection is the widening of New Hill Road to a 4-lane section, which is being done incrementally by development in the area. Thales Academy performed thoroughfare widening along the site frontage, including an exclusive westbound right-turn lane, when the existing school was built. Site traffic associated with the proposed school project accounts for less than 8% of the total traffic at the intersection at project build-out, and no additional improvements are recommended to be performed as part of this project.

Table 7.5 summarizes the LOS and delay of the intersection of New Hill Road at Old Holly Springs Apex Road for the existing (2021) and projected (2026) background and build-out traffic conditions.

Table 7.5 Level-of-Service New Hill Road at Old Holly Springs Apex Road (Signalized)		
Condition	AM Peak Hour LOS (Delay)	School PM Peak Hour LOS (Delay)
Existing (2021) Traffic	A (7.1)	A (8.3)
Background (2026) Traffic w/ <i>Signal Improvement</i>	D (44.2)	B (19.8)
Build-out (2026) Traffic w/ <i>Signal Improvement</i>	E (58.7)	C (23.3)

7.6 Bennett Knoll Parkway at Old Holly Springs Apex Road

Analyses indicate that the signalized intersection of Bennett Knoll Parkway at Old Holly Springs Apex Road currently operates at LOS B in the AM peak hour and LOS A in the school PM peak hour. In the background traffic condition, the intersection is expected to degrade to LOS F in the AM peak hour and LOS C in the school PM peak hour due to the significant amount of growth and approved development traffic projected.

At project build-out, the intersection is expected to continue operating at LOS F in the AM peak hour and LOS C in the school PM peak hour with long queues. Site traffic associated with the proposed school project accounts for less than 2% of the total traffic at the intersection at project build-out, and no additional improvements are recommended to be performed as part of this project.

Table 7.6 summarizes the operation of the intersection of Bennett Knoll Parkway at Old Holly Springs Apex Road for the existing (2021) and projected (2026) background and build-out traffic conditions.

Table 7.6 Level-of-Service Bennett Knoll Parkway at Old Holly Springs Apex Road (Signalized)		
Condition	AM Peak Hour LOS (Delay)	School PM Peak Hour LOS (Delay)
Existing (2021) Traffic	B (16.4)	A (7.7)
Background (2026) Traffic	F (247.5)	C (28.8)
Build-out (2026) Traffic	F (251.6)	C (30.2)

7.7 Holly Springs New Hill Road at Socratic Way

Analyses indicate that the unsignalized intersection of New Hill Road at Socratic Way currently operates with short delays for the minor street approach (Socratic Way) in both the AM and school PM peak hours. The intersection is expected to operate with long delays on the minor street approach in both peak hours in the background and build-out traffic conditions. SimTraffic simulations indicate the potential for occasional long queueing for the southbound left-turn movement in the peak hours in both the background and build-out traffic conditions, which could lead to spillback to the school site. However, as previously noted, school traffic is directed to make a right-turn from Socratic Way onto New Hill Road.

Due to Thales already requiring site traffic to make a right-turn out and delay and queues experienced for the southbound left-turn movement, an alternative access scenario was studied at this intersection that evaluates the impact of restricting the outbound traffic to right-out only. The vehicles that were making a southbound left-turn movement in the traffic counts were diverted as right-turns and then U-turns downstream at New Hill Road at Green Oaks Parkway. Analyses indicate that with this alternative access scenario in place the minor street approach (Socratic Way) at this intersection is expected to continue operating with long delays in both the AM and school PM peak hours. However, the delay is greatly reduced and SimTraffic simulations show improved internal operations at the school due to the reduced likelihood of spillback to the school driveway.

No roadway improvements are recommended to be performed to accommodate projected Thales Academy site traffic at this intersection; however, it is important that traffic make a right-out only either by better enforcement of the existing sign (if Thales traffic is making this movement) or by installation of a barrier to prevent the left-out will be important to preserve the on-site operations. To enforce this movement and improve operations, it is recommended that Thales utilize an off-duty police officer to direct traffic during queue times.

Table 7.7 summarizes the operation of the intersection of New Hill Road at Socratic Way for the existing (2021) and projected (2026) background and build-out traffic conditions.

Table 7.7 Level-of-Service New Hill Road at Socratic Way (Unsignalized)		
Condition	AM Peak Hour LOS (Delay)	School PM Peak Hour LOS (Delay)
Existing (2021) Traffic	SB – C (20.4) EBL – A (9.7)	SB – C (21.8) EBL – A (9.7)
Background (2026) Traffic	SB – F (302.3) EBL – B (13.5)	SB – F (341.5) EBL – B (13.4)
Build-out (2026) Traffic – <i>Full Movement</i>	SB – F (513.1) EBL – C (17.2)	SB – F (395.9) EBL – C (15.3)
Build-out (2026) Traffic – <i>Right-out Only</i>	SB – F (222.2) EBL – C (17.2)	SB – F (144.1) EBL – C (15.3)

7.8 New Hill Road at Green Oaks Parkway

Analyses indicate that the unsignalized intersection of New Hill Road at Green Oaks Parkway currently operates with short delays on the northbound minor street approach (Green Oaks Parkway) in both the AM and school PM peak hours. The southbound approach of Green Oaks Parkway currently operates with moderate delays in the AM peak hour and with short delays in the school PM peak hour.

A traffic signal has been installed at this intersection, but it is not yet in operation. It was assumed to be operational by the year 2026. With a traffic signal in place, the intersection is expected to operate at LOS B in both peak hours in the background traffic condition. At project build-out, the intersection is expected to operate at LOS C in the AM peak hour but remain operating at LOS B in the school PM peak hour, and no additional improvements are recommended to be performed as part of this project. Note that synchro shows long queues for the westbound left-turn/U-turn movement; however, SimTraffic simulations show this queue can be contained in the existing storage. Furthermore, there are multiple unsignalized median breaks east of this intersection that most likely will be used as turn lanes are installed with developer projects, so U-turn volumes at this intersection are likely overstated.

As part of this analysis, an alternative access scenario at the intersection of New Hill Road at Socratic Way was studied that restricted the southbound approach to right-out only. The traffic that would have made a southbound left movement at that intersection was diverted to the intersection of New Hill Road at Green Oaks Parkway as a westbound U-turn.

Analyses indicate that the intersection of New Hill Road at Green Oaks Parkway is expected to operate at LOS C in the AM peak hour and LOS B in the school PM peak hour for this alternative access scenario. Note that synchro shows long queues for the westbound left-turn/U-turn movement; however, SimTraffic simulations show this queue can be contained with this storage recommendation. Furthermore, there are multiple unsignalized median breaks east of this intersection that most likely will be used as turn lanes are installed with developer projects, so U-turn volumes at this intersection are likely overstated.

Table 7.8 summarizes the operation of the intersection of New Hill Road at Green Oaks Parkway for the existing (2021) and projected (2026) background and build-out traffic conditions.



Table 7.8 Level-of-Service New Hill Road at Green Oaks Parkway		
Condition	AM Peak Hour LOS (Delay)	School PM Peak Hour LOS (Delay)
Existing (2021) Traffic - <i>Unsignalized</i>	NB – C (15.8) SB – D (29.7) EBL – A (7.8) WBL – A (8.2)	NB – C (16.3) SB – C (21.8) EBL – A (7.7) WBL – A (7.5)
Background (2026) Traffic – <i>Signalized</i>	B (14.2)	B (16.9)
Build-out (2026) Traffic – Full Movement Access Scenario (<i>Signalized</i>)	C (20.3)	B (17.5)
Build-out (2026) Traffic – Right-out Only Access Scenario (<i>Signalized</i>)	C (24.4)	B (19.0)

8.0 Recommendations

Based on the capacity analysis presented herein, the following roadway improvements are recommended to be performed to accommodate projected background traffic:

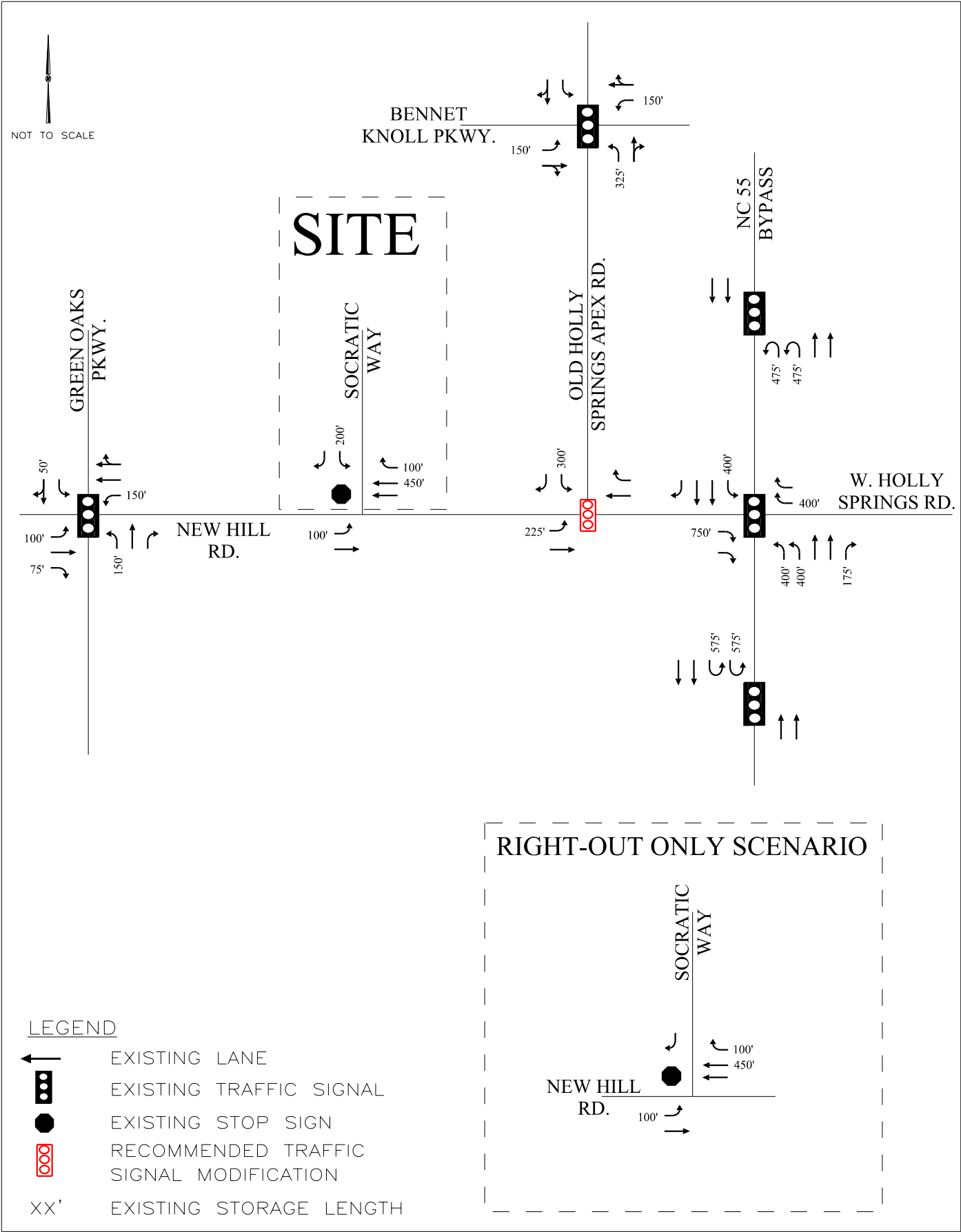
New Hill Road at Old Holly Springs Apex Road:

- Modify the traffic signal to provide a protected eastbound left-turn phase

Analysis indicates that several of the study intersections are expected to operate at LOS E or F in one or more peak hours in the year 2026 with or without the proposed school expansion. The solution to the delays at the intersections along the NC 55 Bypass is widening the NC 55 Bypass to 6 lanes. An interchange is also planned for the intersection of NC 55 Bypass at New Hill Road/Holly Springs Road. The solution for the long delays at the intersection of New Hill Road at Old Holly Springs Road is the widening of New Hill Road to a 4-lane section, which is being done incrementally by development in the area.

Due to the minor impacts site traffic is expected to have on intersection operations in the area, no additional improvements other than those previously mentioned are recommended to be performed in conjunction with the proposed expansion. While no roadway improvements are recommended to be performed to accommodate projected Thales Academy site traffic at the intersection of New Hill Road at Socratic Way, it is important that traffic making a right-out only either by better enforcement of the existing sign (if Thales traffic is making this movement) or by installation of a barrier to prevent the left-out will be important to preserve the on-site operations. To enforce this movement and improve operations, it is recommended that Thales utilize an off-duty police officer to direct traffic during queue times.

The recommended roadway laneage is shown on **Figure 8.1**.



9.0 On-Site Vehicular Operations

9.1 On-Site Queuing Plan

As currently envisioned, this school will have two academic buildings. The existing building will serve 600 students in grades K-5, and the new building will serve 600 students in grades 6-12. Pick-up and drop-off operations at the K-5 and 6-12 buildings will be staggered by a minimum of 45 minutes to reduce demand on-site and on the external road network. While Thales Academy is a private school, the urban charter school rates were used per MSTA guidance to determine the queue lengths for both the lower and upper school operations.

Per the MSTA calculator, for the lower school loading operations (600 K-5 students) the average queue required is 2,552 feet, and the high demand queue required is 3,318 feet. The school plans on providing 3,503 feet for this scenario, which meets the MSTA requirements. **Figure 9.1** shows the traffic management plan for the lower school. The MSTA calculator used to calculate these queues is shown in Appendix L.

Per the MSTA calculator, for the upper school loading operations (600 6-12 students) the average queue required is 2,426 feet, and the high demand queue required is 3,155 feet. The school plans on providing 3,722 feet for this scenario, which meets the MSTA requirements. **Figure 9.2** shows the traffic management plan for the upper school. The MSTA calculator used to calculate these queues is shown in Appendix L.

Although it is unlikely, a situation may arise where both schools have to release at the same time. To accommodate this scenario, a combination of infrastructure and traffic management strategies are recommended. It is recommended that all students go to the 6-12 school for more efficient loading operations. Per the MSTA calculator, the average queue required in this scenario is 5,317 feet, and the high demand queue required is 6,913 feet. To accommodate these queues, all available drive aisles on-site can be utilized to queue vehicles to provide 6,921 feet of queue, and it would be recommended to stagger loading operations if possible dependent on the situation. The MSTA calculator used to calculate these queues is shown in Appendix L.

To provide a complete analysis, a Synchro model was developed to show the upper school loading operations based on trip generation provided by the MSTA calculator (600 6-12 students). This generates 399 inbound trips and 296 outbound trips in the AM peak hour and 219 inbound trips and 336 outbound trips in the school PM peak hour. The MSTA calculator for this scenario is included in Appendix L.

Per MSTA guidelines, the drop-off/pick-up operations were modeled in Synchro using a 40-second cycle length. SimTraffic simulations for both the upper and lower schools indicate that all carpool queuing will be accommodated on-site and will not impact public streets.

9.2 On-Site Traffic Management Plan

The plan for this campus is to stagger the bell schedules by a minimum of 45 minutes. Due to the stagger, traffic management plans were developed to accommodate each school. The traffic management plans are visually depicted on **Figures 9.1 and 9.2**, and this section is an extension of those figures to detail how each user will interact with the site during loading operations.

All users will enter the site on Socratic Way and can make a left or right-turn onto Socratic Way from New Hill Road. All users will exit the site on Socratic Way and will be directed to make a right-turn only and make a U-turn to go east on New Hill Road.

Users

Parents

- Thales will denote K-5 parents from 6-12 parents by different carpool tags so that parents can be easily directed to the correct location.
- Lower School (Grades K-5) Loading Operations
 - Parents will follow the queuing pattern shown on the traffic management plan and enter a single lane queue on the west side of the site that opens up to two lanes on the east side of the site. These two lanes loop around the new building and then proceed to the existing loading area in a single lane.
 - A staff member will be placed at Location L1 at the end of the upper school loading zone to release one lane at a time where lower school traffic moves on to its assigned loading zone. A staff member will also be placed at Location L2 to keep the drive-aisle around the upper school clear.
- Upper School (Grades 6-12) Loading Operations
 - Parents will follow the queuing pattern shown on the traffic management plan and will enter a single lane queue on the west side of the site that opens up to two lanes on the east side of the site. These two lanes loop around the new building, with two additional lanes being available along the north side of the site for high demand queues and then proceed to the double stacked loading zone. At this loading zone, a staff member will be placed at Location U1 to release one lane at a time that then exits the site. Additional staff members will be in place at Locations U2 and U3 to direct high demand traffic into the extra lanes on the north side of the site and to direct traffic into the loading zone.
- It is anticipated that five (5) to seven (7) vehicles will enter and exit the loading zones for the lower and upper school at any given time. The lower school loading zone is single stacked but has an additional lane for double stacking when needed while the upper school loading zone is double stacked. It is recommended that no vehicle be allowed to pass another vehicle unless instructed by a staff member.
- For parents with students in both schools, it is recommended that parents arrive during the latest school release to pick up students in both schools.



- Parents who need additional time during loading operations will be directed to park in the visitor/short-term parking area just north of the entrance to the school.

Student Drivers

- Student drivers shall arrive and depart 15 minutes prior to the bell schedule for the upper school and park in the designated student parking areas along the north side of the new building.

Staff

- Staff members will be instructed to arrive at the school before morning loading operations begin and depart after afternoon operations are concluded to avoid any potential internal conflicts and reduce on-site queues.
- Lower School (Grades K-5) Staff Members
 - All staff members will use the parking directly adjacent to the lower school.
- Upper School (Grades 6-12) Staff Members
 - All staff members will use the parking to the east of the upper school

Carpool Processing in Building

Thales will start collecting carpool numbers in the queue prior to the release of students and broadcast those numbers on TVs in classrooms. This allows students time to get to the loading zone and be prepared once parents are in the loading zone.

Entire Campus Releasing at Once

Although it is unlikely, a situation may arise where both schools have to release at the same time. To accommodate this scenario a combination of infrastructure and traffic management strategies are recommended. In this scenario, it is recommended that all students go the 6-12 school for more efficient operations. To accommodate this scenario, all available pavement on-site can be utilized to queue vehicles and it would be recommended to stagger loading operations if possible dependent on the situation.

Traffic Control On-Site

The school traffic operates mostly in a one-way counter-clockwise circulation pattern, and both schools will follow a similar pattern, with the exception of the south side of the site at the existing building where traffic will travel in two directions. In this location, pavement markings such as arrows and solid lines separating the direction of travel are utilized to direct parents in the correct direction. In addition, the appropriate traffic control signage (stop, yield, one-way, do not enter, do not block intersection, etc.) shall be provided on-site. Specifically, lower school queue traffic shall be instructed to not block the roadway section separating the existing building and the new building in case emergency access across the site is needed. Temporary traffic control devices



shall also be installed during school peak hours along Seale Wood Trail to minimize interruptions to traffic flow in and out of Thales Academy by the nearby neighborhood traffic.

Additionally, a traffic control officer will be deployed at the intersection of New Hill Road at Socratic Way to guide traffic flow in and out of the site on Socratic Way and to minimize the potential for vehicle and pedestrian conflicts.

TMP Enforcement

It is important for the school to continue to monitor traffic operations and make any changes necessary to address issues that might arise from school operations. Since Thales Academy is a private institution, the school has greater control over enforcement of their traffic operations on-site and will be able to handle those parents, students or staff members who do not comply on an individual basis.

Figure 9.1 - Grades K-5 Queueing Plan
School Information:
Grades K-5 - 600 students and 40 staff
Required Average Queue = 2,552'
Required High Demand Queue = 3,318'
Queue Provided = 3,503'

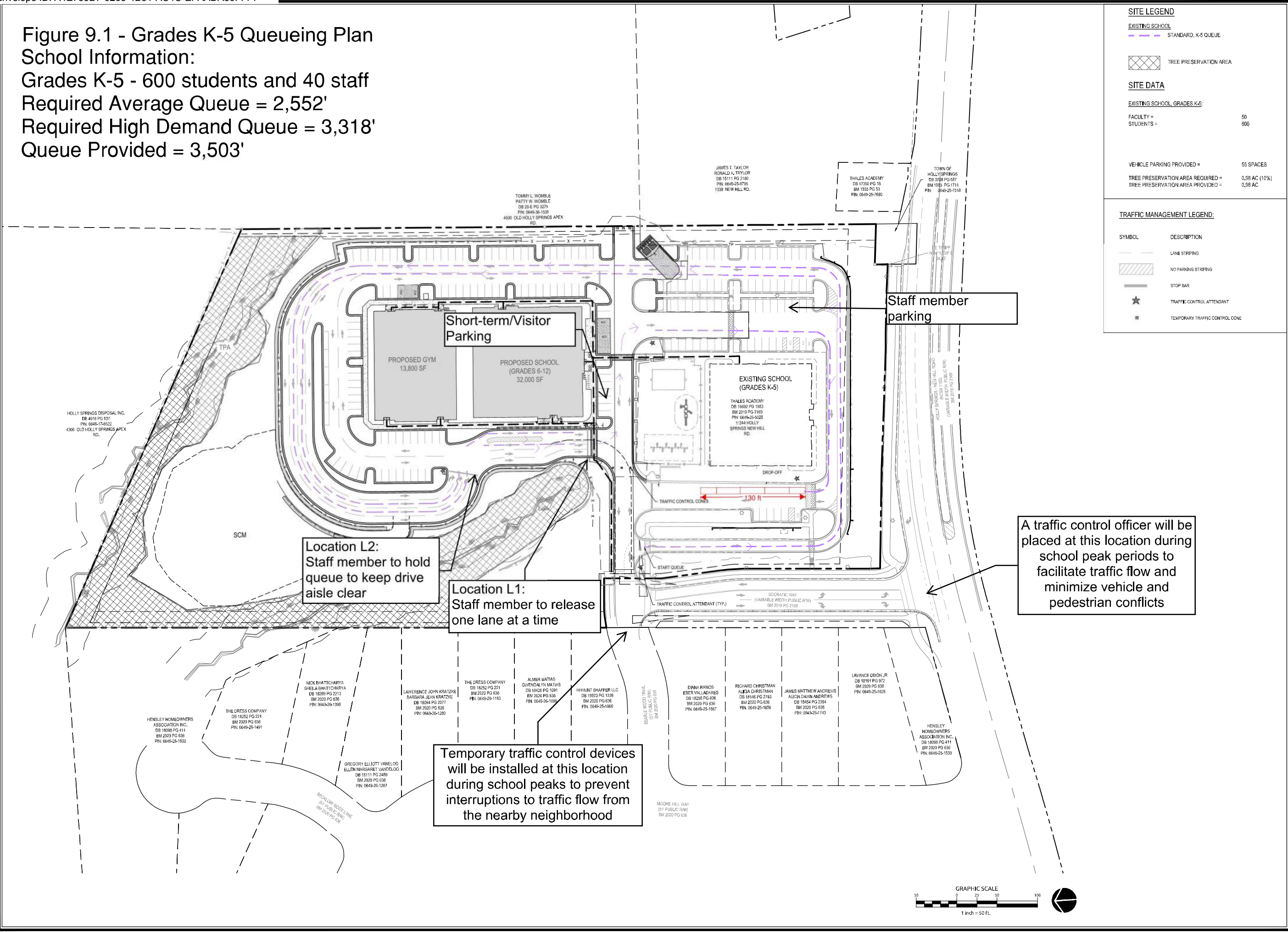
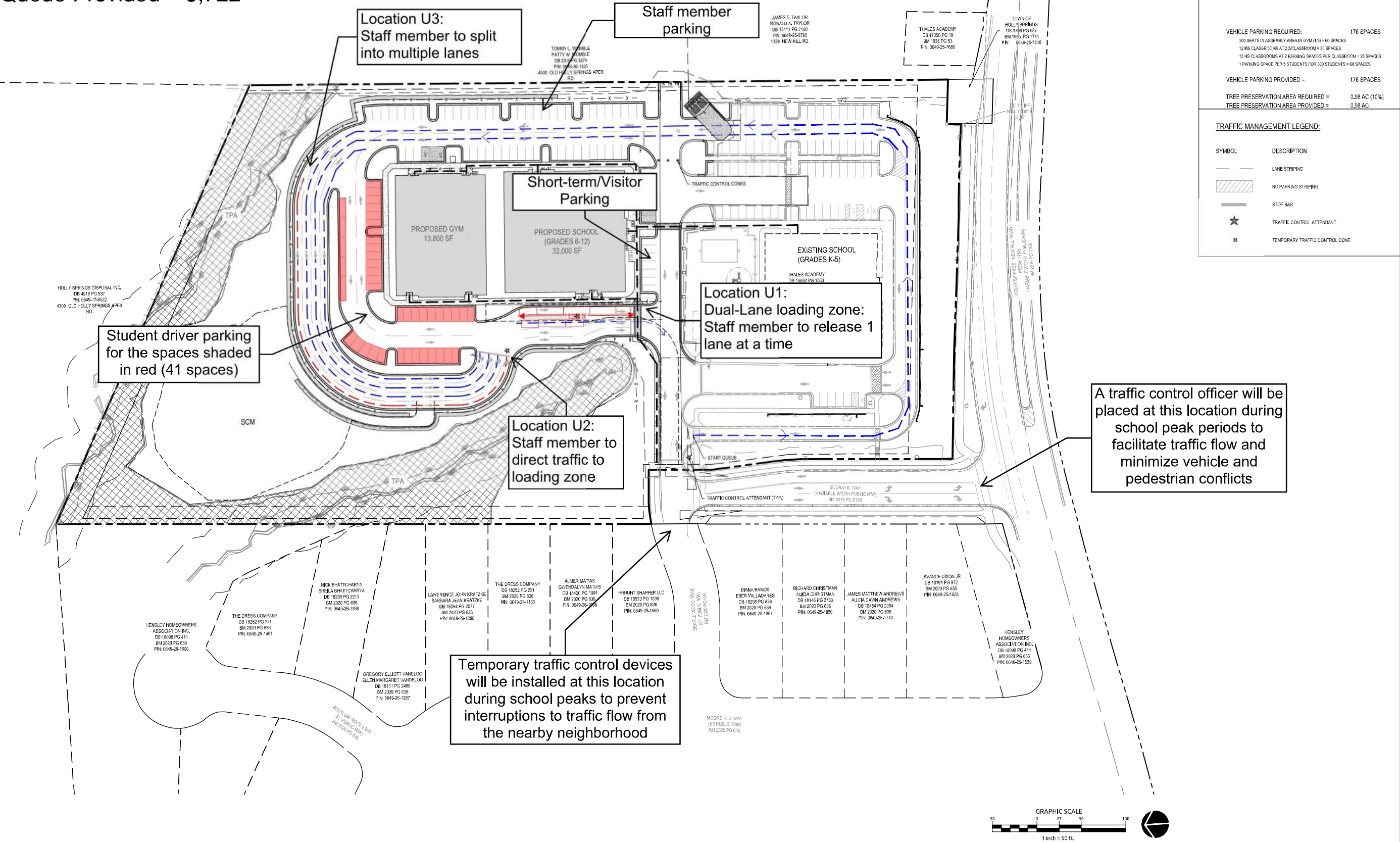


Figure 9.2 - Grades 6-12 Queueing Plan
School Information:
Grades 6-12 - 600 students and 40 staff
Required Average Queue = 2,426'
Required High Demand Queue = 3,155'
Queue Provided = 3,722'



Appendix

Appendix A:

TIA Scoping Document



MEMORANDUM

To: Rachel Jones, EI, Town of Holly Springs

From: Melissa Helbert, P.E., Kimley-Horn and Associates, Inc.

Date: September 16, 2021

Subject: Thales Academy Expansion – Holly Springs Traffic Impact Analysis
Memorandum of Understanding (MOU)

The following assumptions will be incorporated into the Traffic Impact Analysis (TIA) for the proposed Thales Academy School expansion. A TIA was previously completed for the existing Thales Academy in Holly Springs located at 11244 Holly Springs New Hill Road on June 1, 2017 (Kimley-Horn & Associates) that studied 452 students in grades K-5 and 30 staff members. The school currently consists of 35 staff members and 470 students. This project proposes to expand the existing Thales Academy school to reach a capacity of 600 students in grades K-5 and 600 students in grades 6-12 with 40 staff members for each age range. The proposed upper school buildings would be north of the existing Thales Academy facility. It should be noted that NCDOT is not requiring a TIA but is performing a courtesy review at the request of the Town.

DEVELOPMENT PLAN

The existing school currently consists of 470 students and 35 staff members, however on the day of traffic counts 415 students and 34 staff members were present at school. The proposed school expansion is expected to bring the totals for grades K-5 and 6-12 to 600 students and 40 staff members each. With the proposed expansion, additional queueing space is provided for the existing school building. The schedules of the upper and low schools will be staggered by at least 30 minutes. It is anticipated the proposed school expansion will open in 2023 and will reach full occupancy by 2026.

ON-SITE QUEUEING

The queueing plan for the existing (K-5) and proposed (6-12) buildings are shown on the attached **Figure 1 and Figure 2**, respectively. Note that per MSTA guidance a 25% overlap was included to account for any parents that arrive early or late for loading operations. The MSTA calculator used to calculate the queues for the lower school with the 25% overlap is shown on the attached Table 1. The MSTA calculator used to calculate the queues for the upper school with the 25% overlap is shown on the attached Table 2.

Although it is unlikely, a situation may arise where both schools have to release at the same time. In this scenario, it is recommended that all students go the 6-12 school for loading operations. The MSTA calculator used to calculate the queues for both schools is shown on the attached Table 3. The high demand queue for this scenario is 6,913 feet. Using all available queueing lanes and drive aisles on site a queue of 6,921' can be accommodated.

STUDY AREA

Based on the previous Thales Academy study and proposed site access, the following intersections will be studied as part of this analysis:

- NC 55 at New Hill Road/W Holly Springs Road

- NC 55 at U-Turn intersection north of New Hill Road
- NC 55 at U-Turn intersection south of New Hill Road
- New Hill Road at Old Holly Springs Apex Road
- Bennett Knoll Parkway at Old Holly Springs Apex Road
- Holly Springs New Hill Road at Socratic Way
- Holly Springs New Hill Road/New Hill Road at Green Oaks Parkway

The proposed study area is shown on the attached **Figure 3**.

ANALYSIS SCENARIOS

The K-5 and 6-12 buildings will operate on staggered bell schedules. We will analyze the weekday AM peak hour (7:00 to 9:00 AM) and school PM peak hour (2:00 PM to 4:00 PM) for the following traffic conditions:

- Existing Traffic (2021)
- Projected (2026) Background Traffic
- Projected (2026) Build-out Traffic

VOLUME DEVELOPMENT METHODOLOGY

1. Existing Traffic Counts
 - a. Typical weekday peak hours of 7-9AM and 2-4PM will be studied for all intersections
 - b. Pre-pandemic traffic count data was obtained for the following intersections:
 - i. NC 55 at New Hill Road/W Holly Springs Road (13 hour count)
 - ii. NC 55 at U-Turn intersection north of New Hill Road (13 hour count)
 - iii. NC 55 at U-Turn intersection south of New Hill Road (13 hour count)
 - iv. New Hill Road at Old Holly Springs Apex Road (AM and PM Peak hour Count)
 - v. Bennett Knoll Parkway at Old Holly Springs Apex Road (AM and PM Peak hour Count)
 - vi. Holly Springs New Hill Road/New Hill Road at Green Oaks Parkway (13 hour count)
 - c. To obtain traffic volumes at Holly Springs New Hill Road at Socratic Way and School PM Peak hour volumes at New Hill Road at Old Holly Springs Apex Road, counts were performed in 2021 while Thales was in session. However, Wake County traditional calendar schools, including Oakview Elementary, were not in session.
 - d. To obtain school PM peak hour traffic volumes at Bennett Knoll Parkway at Old Holly Springs Apex Road, the PM Peak hour volumes will be used from the 2019 count

- e. To account for COVID and Oakview Elementary not being in session, the peak hour (7-9AM and 2-4PM) through movements on New Hill Road from the new 13-hour counts were compared to volumes to/from New Hill Road in the 2019 count. It was determined that overall, the 2021 counts collected were higher than the 2019 counts available. Despite this, the 2021 volumes will be grown at 5% per year for two years and the 2021 approved development volumes from the *Green Oaks West TIA* will be added to present a conservative analysis.
 - f. We will grow the previously collected 2019 AM and school PM peak hour traffic counts at 5% per year to the year 2021 to arrive at existing traffic volumes and include the 2021 approved development volumes from the *Green Oaks West TIA*.
- 2. Growth Rate assumptions
 - a. A 5% annual growth rate will be applied to existing traffic volumes in the study area.
- 3. Approved Development Traffic
 - a. Approved development traffic will be obtained from the *Green Oaks West TIA* for the years 2021, 2024, and 2026. This includes the Hensley Subdivision, Addison Pond, Ferguson Warehouse, Holly Springs Place Apartments, New Hill Subdivision, Carolina Springs PUD, Trinity Creek, Regency Subdivision, Andorra Apartments, E-51, Crescent Commons, and 12 Oaks.

TRIP GENERATION

A comparison of the MSTA trip calculator to the traffic counts taken at Socratic Way was performed to determine if the calculator is accurately representing the trips generated. Note that the traffic counts also include trips from the adjacent development that connects to Socratic Way making it difficult to determine how much of the traffic is from Thales Academy versus the adjacent development. The trip generation from the MSTA calculator for the existing occupancy of the K-5 building is shown on the attached Table 4. The occupancy of the K-5 building on the day traffic counts were performed were confirmed with school staff.

Comparison of Counts to MSTA Calculator					
Source	Land Use	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
Traffic Counts	K-5 Private School (415 Students + 34 Staff)	268	272	124	195
MSTA		266	232	163	197

Based on feedback from MSTA, a customized calculator was developed to determine the trip generation potential of the future expansion based on the trip generation rates of the existing

school. Therefore, the trip generation for this analysis will reflect the additional enrollment and staff proposed with this expansion for grades K-5 (i.e. 600 students – 415 students = 185 students) and 25% of the 6-12 enrollment and staff (i.e. 600 students x 25% = 150 students). Note that no reduction to the counts was performed to provide a conservative trip generation. The additional enrollment is anticipated to generate 425 new AM peak hour trips and 246 new school PM peak hour trips. The trip generation for the expansion is shown in the table below.

Traffic Generation (Vehicles)							
Land Use Code	Land Use	Intensity		AM Peak Hour		PM Peak Hour	
				In	Out	In	Out
-	K-5 School Expansion (185 Students) + 25% of 6-12 School (150 Students)	335	students	205	220	100	146
		16	staff				

The trip generation from the customized calculator for this scenario is shown on the attached Table 5 and this will be used as the trip generation in the TIA.

TRIP DISTRIBUTION

Primary site traffic distribution is based on a review of origins and destinations within the area and input from Thales Academy. It should be noted that this is consistent with the previously performed TIA.

The following distribution will be used for all scenarios:

- 30% to/from the south on NC 55
- 30% to/from the east on W Holly Springs Road
- 15% to/from the north on Old Holly Springs Apex Road
- 10% to/from the north on NC 55
- 10% to/from the north on Green Oaks Parkway
- 10% to/from the east on Bennett Knoll Parkway
- 5% to/from the south on Green Oaks Parkway
- 5% to/from the west on Bennett Knoll Parkway

The trip distribution is shown on the attached **Figure 4**.

SIGNAL WARRANT ANALYSIS

A traffic signal warrant analysis will be performed for the following intersection:

- Holly Springs New Hill Road at Socratic Way

The analysis will be performed using the newly collected 13-hour traffic counts including site traffic from the proposed project and the identified approved developments listed above. Trips for the approved developments outside of the traditional peak hours will be obtained using the *Hourly*

Distribution of Entering and Exiting Vehicle Trips by Land Use from the Institute of Transportation Engineers (ITE) and assigned to the intersection as identified in the respective TIAs. This analysis will be performed in conformity with Section 4C of the 2009 Manual on Uniform Traffic Control Devices (MUTCD) requirements.

ACCESS SCENARIO

At the intersection of Holly Springs New Hill Road at Socratic Way, all outbound site traffic is directed to make a right-turn out and there is currently a sign in place stating this restriction. However, traffic counts show some traffic making a southbound left-turn out. As part of this TIA an access scenario will be analyzed that diverts all traffic to make a right-turn out only.

ATTACHMENTS

Figure 1: Preliminary Queueing Plan Existing School

Figure 2: Preliminary Queueing Plan Proposed School

Figure 3: Study Area

Figure 4: Site Traffic Distribution

Table 1: MSTA Calculator – (Grades K-5 + 25% of 6-12) Proposed

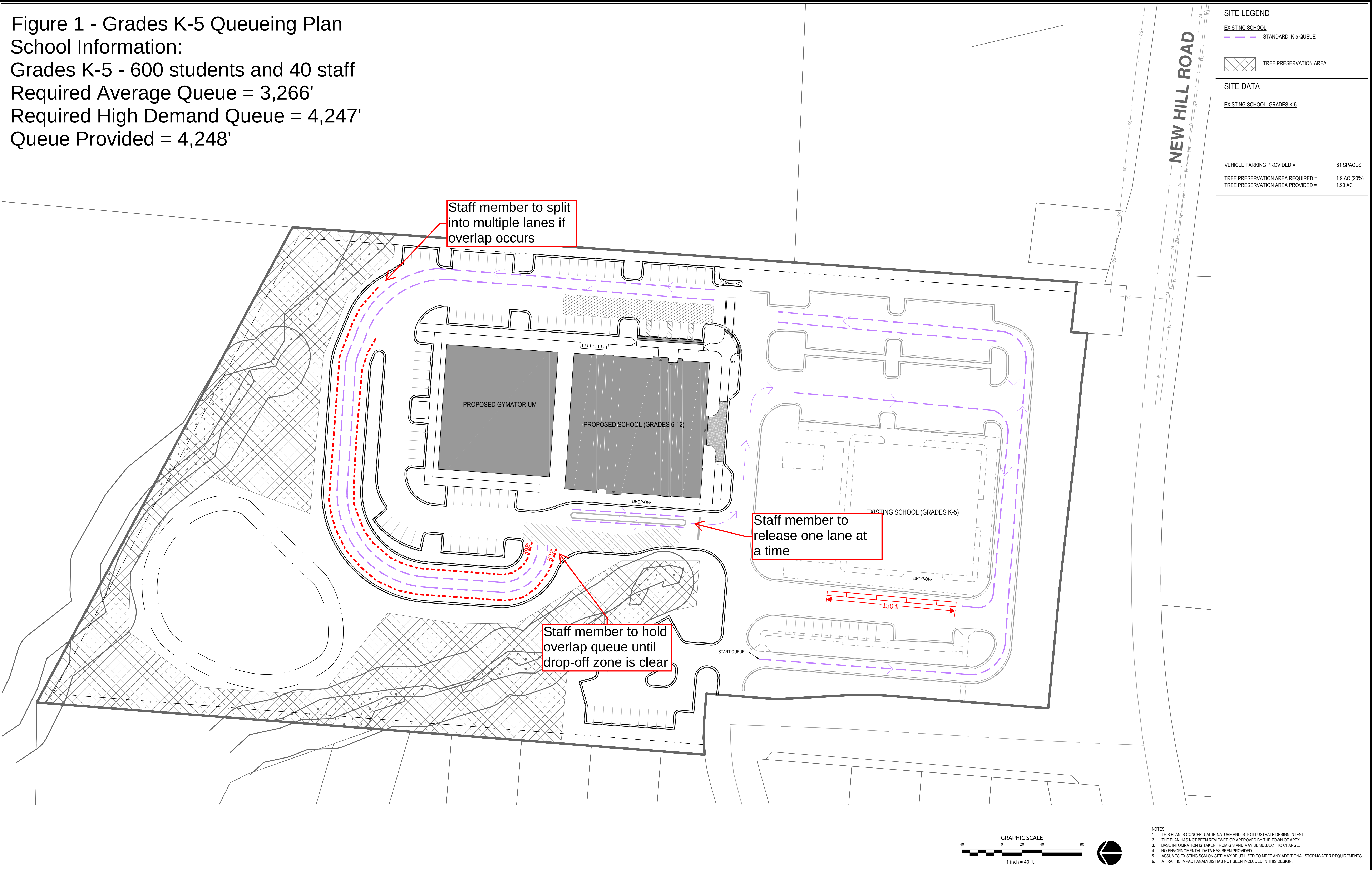
Table 2: MSTA Calculator – (Grades 6-12 + 25% of K-5) Proposed

Table 3: MSTA Calculator – (Entire Population) Proposed

Table 4: Trip Generation – (Grades K-5) Existing – 415 Students

Table 5: Customized Trip Generation

Figure 1 - Grades K-5 Queueing Plan
School Information:
Grades K-5 - 600 students and 40 staff
Required Average Queue = 3,266'
Required High Demand Queue = 4,247'
Queue Provided = 4,248'



U:\0121\0000000000\Thales Holly Springs\CAD\GIS\BASE.dwg, Tuesday, April 17, 2023 3:10:51 PM, WATLEY, DANIEL

No.	Revision	Date	By

Designer	Scale
Drawn By	Date
Checked By	Job No.

THALES HOLLY SPRINGS
HOLLY SPRINGS
WAKE
NC

EXISTING SCHOOL UPDATED QUEUE

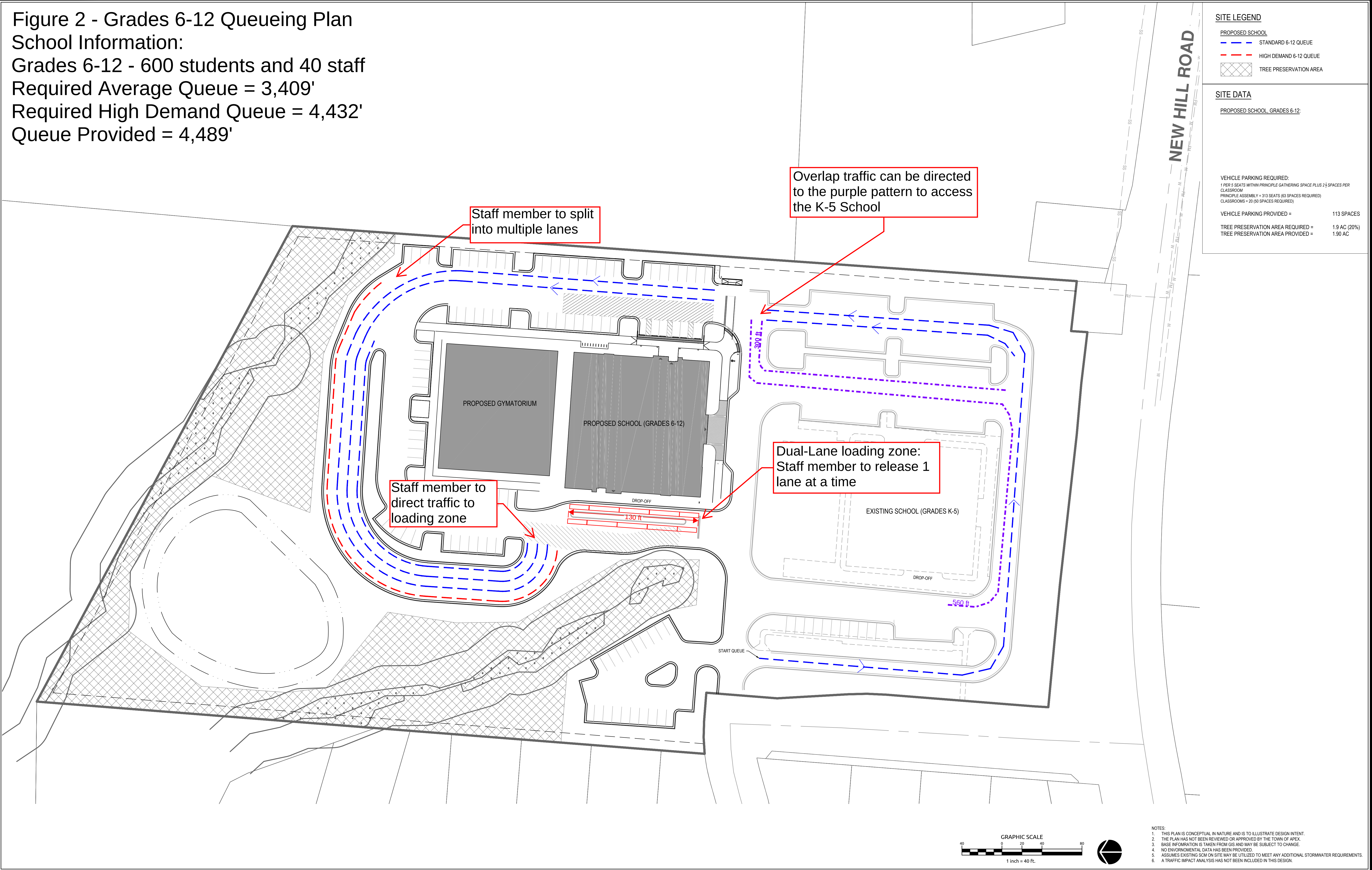
 WithersRavenel Engineers Planners Surveyors
115 MacKenan Drive Cary, NC 27511 t: 919.469.3340 license #: C-0832 www.withersravenel.com

Sheet No.
E-2

NOTES:
1. THIS PLAN IS CONCEPTUAL IN NATURE AND IS TO ILLUSTRATE DESIGN INTENT.
2. THE PLAN HAS NOT BEEN REVIEWED OR APPROVED BY THE TOWN OF APEX.
3. BASE INFORMATION IS TAKEN FROM GIS AND MAY BE SUBJECT TO CHANGE.
4. NO ENVIRONMENTAL DATA HAS BEEN PROVIDED.
5. ASSUMES EXISTING SCM ON SITE MAY BE UTILIZED TO MEET ANY ADDITIONAL STORMWATER REQUIREMENTS.
6. A TRAFFIC IMPACT ANALYSIS HAS NOT BEEN INCLUDED IN THIS DESIGN.

Figure 2 - Grades 6-12 Queueing Plan

School Information:
Grades 6-12 - 600 students and 40 staff
Required Average Queue = 3,409'
Required High Demand Queue = 4,432'
Queue Provided = 4,489'



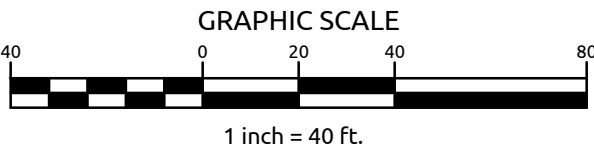
SITE LEGEND	
PROPOSED SCHOOL	
STANDARD 6-12 QUEUE	
HIGH DEMAND 6-12 QUEUE	
TREE PRESERVATION AREA	

SITE DATA	
PROPOSED SCHOOL, GRADES 6-12:	

VEHICLE PARKING REQUIRED:	
1 PER 5 SEATS WITHIN PRINCIPLE GATHERING SPACE PLUS 2 1/2 SPACES PER CLASSROOM	
PRINCIPLE ASSEMBLY = 313 SEATS (63 SPACES REQUIRED)	
CLASSROOMS = 20 (60 SPACES REQUIRED)	
VEHICLE PARKING PROVIDED =	113 SPACES
TREE PRESERVATION AREA REQUIRED =	1.9 AC (20%)
TREE PRESERVATION AREA PROVIDED =	1.90 AC

NEW HILL ROAD

- NOTES:
1. THIS PLAN IS CONCEPTUAL IN NATURE AND IS TO ILLUSTRATE DESIGN INTENT.
 2. THE PLAN HAS NOT BEEN REVIEWED OR APPROVED BY THE TOWN OF APEX.
 3. BASE INFORMATION IS TAKEN FROM GIS AND MAY BE SUBJECT TO CHANGE.
 4. NO ENVIRONMENTAL DATA HAS BEEN PROVIDED.
 5. ASSUMES EXISTING SOM ON SITE MAY BE UTILIZED TO MEET ANY ADDITIONAL STORMWATER REQUIREMENTS.
 6. A TRAFFIC IMPACT ANALYSIS HAS NOT BEEN INCLUDED IN THIS DESIGN.



No.	Revision	Date	By

Designer	Scale
Drawn By	Date
Checked By	Job No.
	2021.04.13
	09-210285

THALES HOLLY SPRINGS
HOLLY SPRINGS WAKE NC

PROPOSED SCHOOL PRELIMINARY LAYOUT

 WithersRavenel Engineers Planners Surveyors
115 MacKenan Drive Cary, NC 27511 t: 919.469.3340 license #: C-0832 www.withersravenel.com

Sheet No.
E-1

Figure 5 Study Area



Figure 4 Site Traffic Distribution

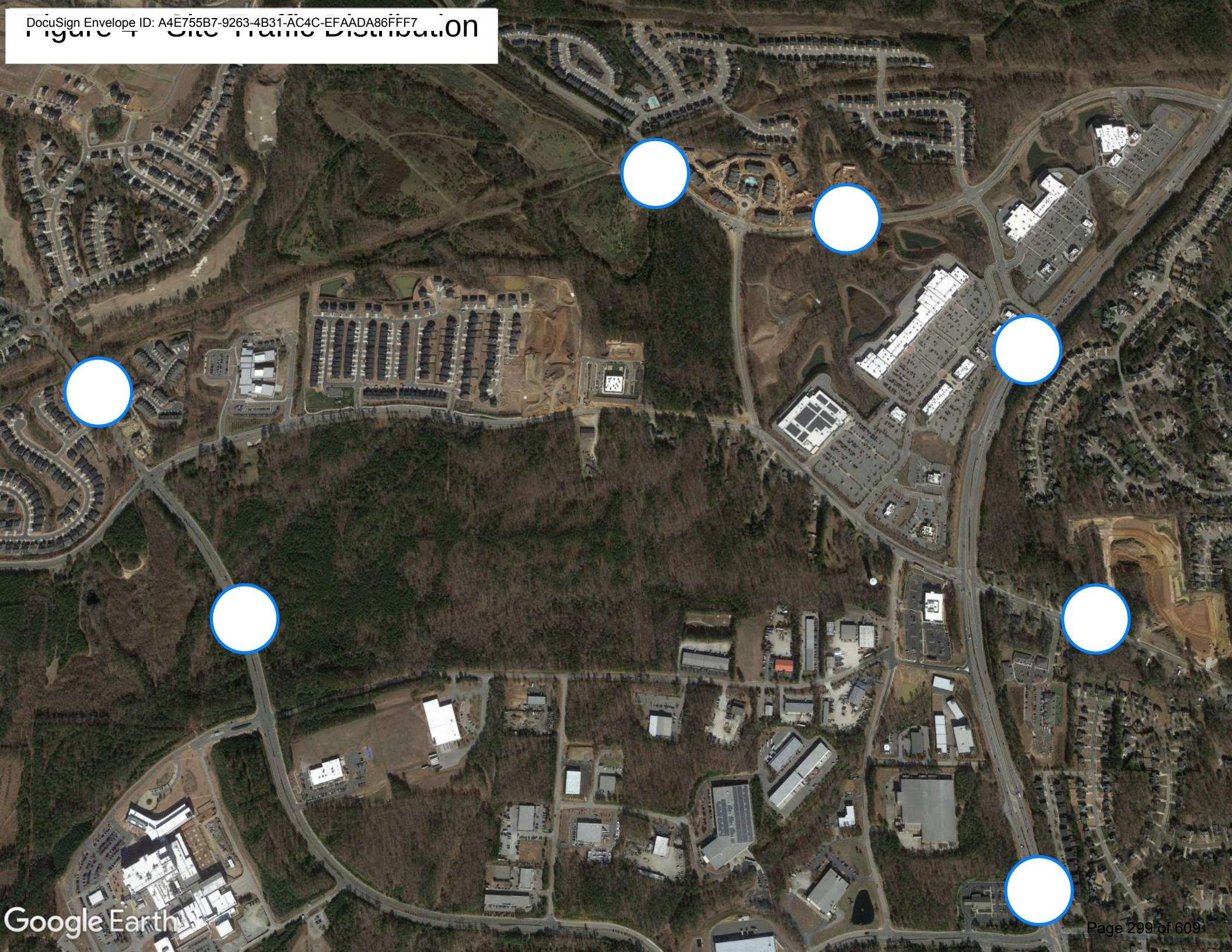


Table 1

MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates

(These numbers do not reflect peak hour traffic volumes)

				School Name: Thales Holly Springs (K-5 + 25% of 6-12 School)				Version: 04012021						
				Type: Urban Charter										
				MSTA School Queue Input				Calculations						
AM Cars / Student	PM Cars / Student	Avg. Car Length	PM At one Time	Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length
55.94%	39.15%	22.19	48.67%	K - 10	712		46		279	136	3018	843	604	30%
52.91%	47.50%	22.19	46.12%			10								3923
				11th	19		2	6	10	5	111	22	22	144
						0								
50.08%	47.58%	22.83	55.71%	12th	19		2		10	6	137	21	22	179
						0		16						
Sum >>					750		50		299	147	3266	886	648	4247
												981		
				Grade K-10										
				AM Trips Generated					PM Trips Generated					
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips		
				IN	398		46	444	279			279		
				OUT	398			398	279		46	325		
				AM K-10 Trips				843	PM K-10 Trips				604	
				Grade 11										
				AM Trips Generated					PM Trips Generated					
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips		
				IN	10		2	12	10			10		
				OUT	10			10	10		2	12		
				AM 11th Trips				22	PM 11th Trips				22	
				Grade 12										
				AM Trips Generated					PM Trips Generated					
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips		
				IN	10		2	12	10			10		
				OUT	10			10	10		2	12		
				AM 12th Trips				21	PM 12th Trips				22	
				All AM TRIPS		In	468	All PM TRIPS		In	299			
						Out	418			Out	349			
						Total	886			Total	648			1534

Table 2

MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates

(These numbers do not reflect peak hour traffic volumes)

				School Name: Thales Holly Springs (25% of K-5 + 6-12 School)				Version: 04012021							
				Type: Urban Charter											
				MSTA School Queue Input				Calculations							
AM Cars / Student	PM Cars / Student	Avg. Car Length	PM At one Time	Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length	
55.94%	39.15%	22.19	48.67%	K - 10	600	8	36		235	115	2552	707	506	30%	
52.91%	47.50%	22.19	46.12%	11th	75	2	6	24	36	17	377	85	78	490	
50.08%	47.58%	22.83	55.71%	12th	75	1	6	64	36	21	479	81	78	624	
Sum >>					750		48		307	153	3409	874	662	4432	
												1023			
				Grade K-10											
				AM Trips Generated				PM Trips Generated							
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
				IN	336		36	372	235			235			
				OUT	336			336	235		36	271			
				AM K-10 Trips				707	PM K-10 Trips				506		
				Grade 11											
				AM Trips Generated				PM Trips Generated							
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
				IN	40		6	46	36			36			
				OUT	40			40	36		6	42			
				AM 11th Trips				85	PM 11th Trips				78		
				Grade 12											
				AM Trips Generated				PM Trips Generated							
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
				IN	38		6	44	36			36			
				OUT	38			38	36		6	42			
				AM 12th Trips				81	PM 12th Trips				78		
				All AM TRIPS				In	461	All PM TRIPS				In	307
								Out	413					Out	355
								Total	874					Total	662
												1536			

NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

Table 3

MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates
(These numbers do not reflect peak hour traffic volumes)

				School Name: Thales Holly Springs (Entire School -1200 Students)				Version: 04012021							
				Type: Urban Charter											
				MSTA School Queue Input				Calculations							
AM Cars / Student	PM Cars / Student	Avg. Car Length	PM At one Time	Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length	
55.94%	39.15%	22.19	48.67%	K - 10	1050	15	68		412	201	4460	1243	892	30%	
52.91%	47.50%	22.19	46.12%	11th	75	2	6	24	36	17	377	85	78	490	
50.08%	47.58%	22.83	55.71%	12th	75	1	6	64	36	21	479	81	78	624	
Sum >>					1200		80		484	239	5317	1409	1048	6913	
												1596			
				Grade K-10											
				AM Trips Generated				PM Trips Generated							
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
				IN	587		68	655	412			412			
				OUT	587			587	412		68	480			
				AM K-10 Trips				1243	PM K-10 Trips				892		
				Grade 11											
				AM Trips Generated				PM Trips Generated							
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
				IN	40		6	46	36			36			
				OUT	40			40	36		6	42			
				AM 11th Trips				85	PM 11th Trips				78		
				Grade 12											
				AM Trips Generated				PM Trips Generated							
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
				IN	38		6	44	36			36			
				OUT	38			38	36		6	42			
				AM 12th Trips				81	PM 12th Trips				78		
				All AM TRIPS				In	745	All PM TRIPS				In	484
								Out	665					Out	564
								Total	1409					Total	1048
												2457			

NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

ADT

2135

163

159

2457

Table 4

MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates
(These numbers do not reflect peak hour traffic volumes)

				School Name: Thales Holly Springs (Grades K-5) - Existing 415 Students					Version: 04012021						
				Type: Urban Charter											
				MSTA School Queue Input					Calculations						
AM Cars / Student	PM Cars / Student	Avg. Car Length	PM At one Time	Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length	
55.94%	39.15%	22.19	48.67%	K - 10	415	6	34		163	80	1775	498	360	30%	
52.91%	47.50%	22.19	46.12%	11th										2308	
50.08%	47.58%	22.83	55.71%	12th											
Sum >>					415		34		163	80	1775	498	360	2308	
									533						
				Grade K-10											
				AM Trips Generated					PM Trips Generated						
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
				IN	232		34	266	163			163			
				OUT	232			232	163		34	197			
				AM K-10 Trips				498	PM K-10 Trips				360		
				Grade 11th											
				AM Trips Generated					PM Trips Generated						
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
				IN											
				OUT											
				AM 11th Trips					PM 11th Trips						
				Grade 12th											
				AM Trips Generated					PM Trips Generated						
				Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips			
				IN											
				OUT											
				AM 12th Trips					PM 12th Trips						
				All AM TRIPS				In 266 Out 232 Total 498	All PM TRIPS				In 163 Out 197 Total 360	858	

NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

Table 5 - Thales Academy Holly Springs - Customized Trip Generation Calculator				
Population on day of counts	415	students	34	staff
Existing Trip Generation Calculations				
	AM		PM	
	In	Out	In	Out
Traffic Counts (collected 7/20/2021)	258	272	124	195
Reduction due to Adj. Dev.	0	0	0	0
Staff Trips	34	0	0	34
Parent Trips	224	272	124	161
Trip generation Rate (trips generated per student)	0.54	0.66	0.30	0.39
Future Trip Generation Calculations				
Remaining of K-5 School + 25 of 6-12 School	335	students	16	staff
	AM		PM	
	In	Out	In	Out
Staff Trips	16	0	0	16
Parent Trips	181	220	100	130
Trips Generated from Custom Calculator	197	220	100	146
Trips Generated from MSTC Calculator	201	186	137	152

Appendix B:

Trip Generation

Table 1 - Thales Academy Holly Springs - Customized Trip Generation Calculator				
Population on day of counts	415	students	34	staff
Existing Trip Generation Calculations				
	AM		PM	
	In	Out	In	Out
Parent Trips from Traffic Counts (collected 7/20/2021)	272	272	178	178
Staff Trips	34	0	0	34
Future Trip Generation Calculations (Lower School)				
	AM		PM	
	In	Out	In	Out
Trips Generated from Proportionally Increasing Counts (600 Student K-5)	393	393	257	257
Staff Trips at K-5 School	40	0	0	40
Existing Traffic Reduction	-306	-272	-178	-212
Trips to assign to the network	127	121	79	85

Appendix C:

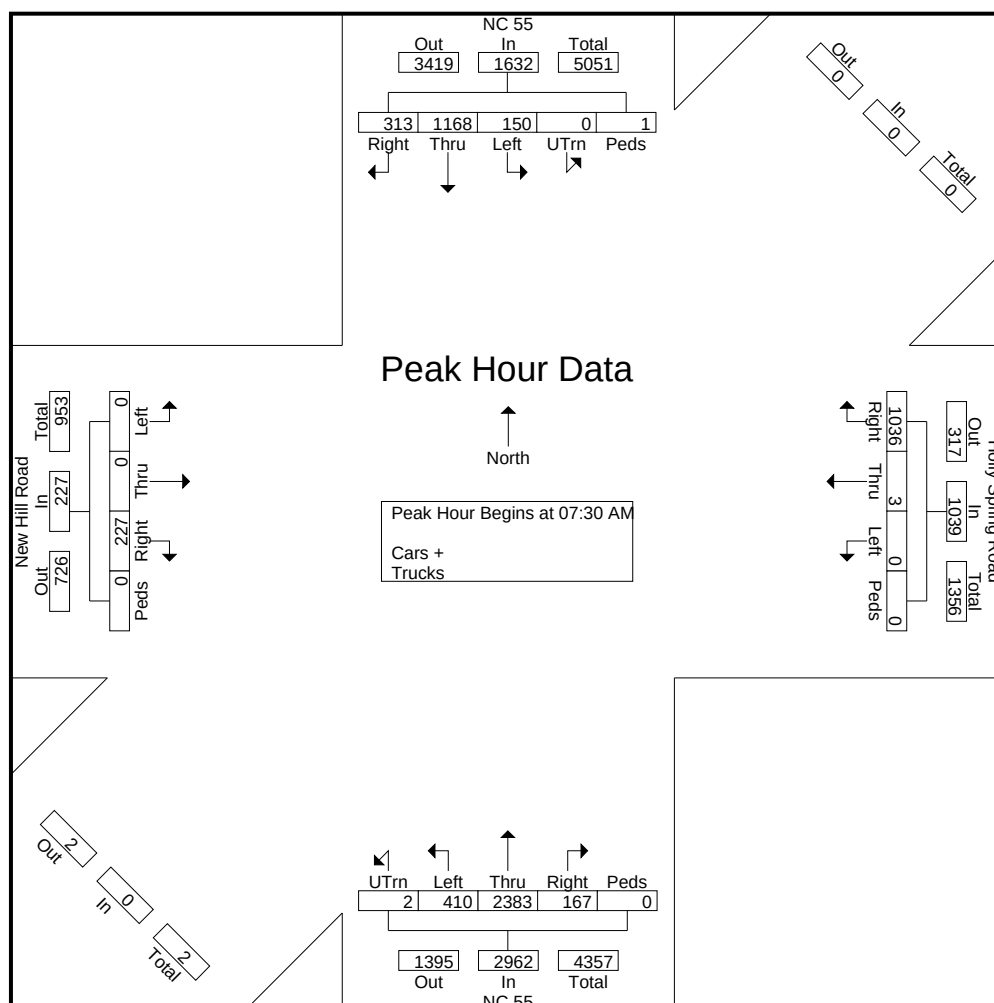
Traffic Count Data



TRAFFIC DATA COLLECTION

File Name : Holly Springs(NC 55 and New Hill) AM Peak
 Site Code :
 Start Date : 5/15/2019
 Page No : 2

	NC 55 Southbound						Holly Spring Road Westbound					NC 55 Northbound						New Hill Road Eastbound						
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total	
Peak Hour Analysis From 07:00 AM to 09:15 AM - Peak 1 of 1																								
Peak Hour for Entire Intersection Begins at 07:30 AM																								
07:30 AM	70	303	33	0	0	406	263	3	0	0	266	43	565	99	0	0	707	63	0	0	0	63	1442	
07:45 AM	74	349	49	0	0	472	278	0	0	0	278	47	596	130	0	0	773	47	0	0	0	47	1570	
08:00 AM	85	256	31	0	0	372	261	0	0	0	261	38	601	94	0	0	733	44	0	0	0	44	1410	
08:15 AM	84	260	37	0	1	382	234	0	0	0	234	39	621	87	2	0	749	73	0	0	0	73	1438	
Total Volume	313	1168	150	0	1	1632	1036	3	0	0	1039	167	2383	410	2	0	2962	227	0	0	0	227	5860	
% App. Total	19.2	71.6	9.2	0	0.1		99.7	0.3	0	0		5.6	80.5	13.8	0.1	0		100	0	0	0			
PHF	.921	.837	.765	.000	.250	.864	.932	.250	.000	.000	.934	.888	.959	.788	.250	.000	.958	.777	.000	.000	.000	.777	.933	



Location: NC 55 Bypass/New Hill
City: Holly Springs
Control: Signalized

Project ID:
Date: 5/30/2018

Data - Total

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
2:00 PM	58	253	37	0	45	276	50	0	0	0	128	0	0	0	58	0	905
2:15 PM	31	240	52	0	53	285	55	0	0	0	101	0	0	0	81	0	898
2:30 PM	46	298	72	0	58	319	57	0	0	0	101	0	0	0	61	0	1012
2:45 PM	48	261	57	0	58	328	48	0	0	0	107	0	0	0	83	0	990
3:00 PM	39	278	40	0	55	384	65	0	0	0	64	0	0	0	72	0	997
3:15 PM	55	284	41	0	42	388	70	0	0	0	108	0	0	0	95	0	1083
3:30 PM	53	309	50	0	47	469	91	0	0	0	115	0	0	0	91	0	1225
3:45 PM	64	240	76	0	34	466	87	0	0	0	164	0	0	0	102	0	1233
TOTAL VOLUMES :	NL 394	NT 2163	NR 425	NU 0	SL 392	ST 2915	SR 523	SU 0	EL 0	ET 0	ER 888	EU 0	WL 0	WT 0	WR 643	WU 0	TOTAL 8343
APPROACH %'s :	13.21%	72.54%	14.25%	0.00%	10.23%	76.11%	13.66%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	211	1111	207	0	178	1707	313	0	0	0	451	0	0	0	360	0	4538
PEAK HR FACTOR :	0.824	0.899	0.681	0.000	0.809	0.910	0.860	0.000	0.000	0.000	0.688	0.000	0.000	0.000	0.882	0.000	0.920
	0.928				0.905				0.688				0.882				

3805
3897
4082
4295
4538



TRAFFIC DATA COLLECTION

File Name : Holly Springs(NC-55 and New Hill NB U-Turn)AM Peak
 Site Code :
 Start Date : 5/15/2019
 Page No : 1

Groups Printed- Cars + - Trucks

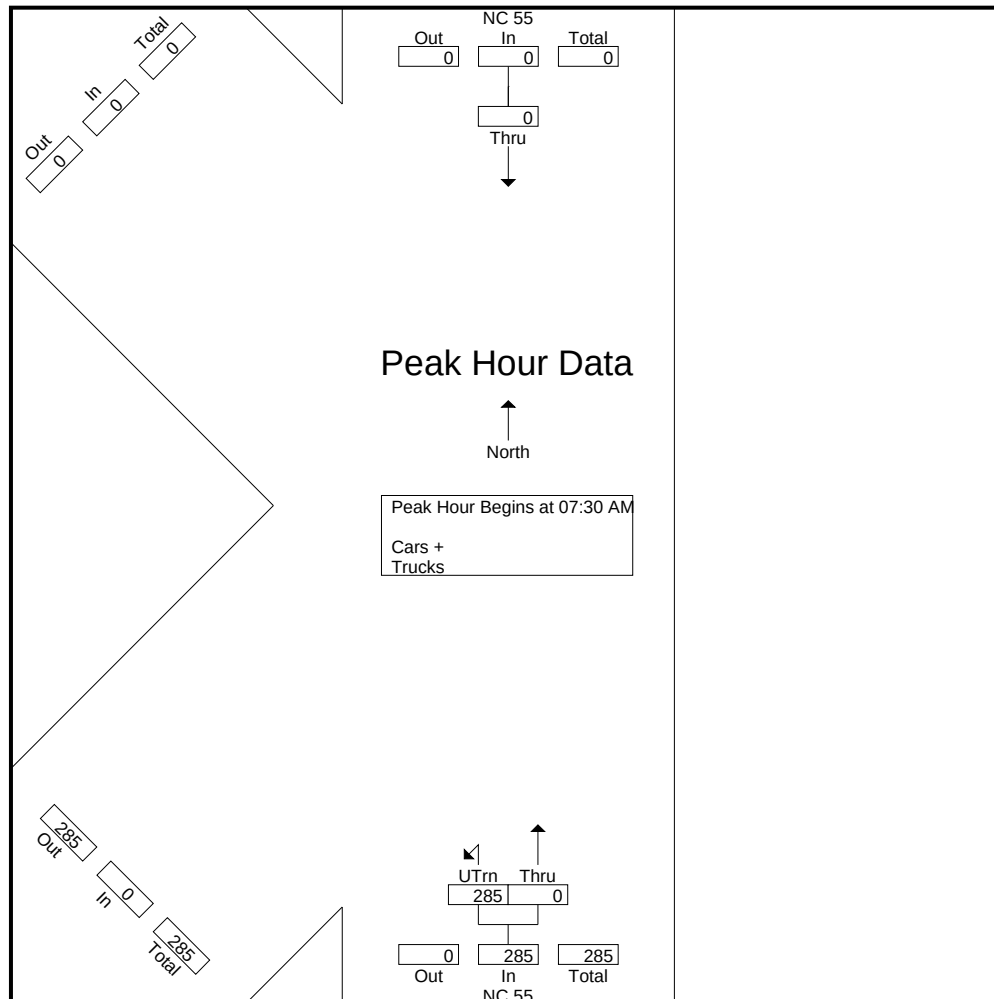
Start Time	NC 55 Southbound		NC 55 Northbound			Int. Total
	Thru	App. Total	Thru	UTrn	App. Total	
07:00 AM	0	0	0	84	84	84
07:15 AM	0	0	0	59	59	59
07:30 AM	0	0	0	62	62	62
07:45 AM	0	0	0	73	73	73
Total	0	0	0	278	278	278
08:00 AM	0	0	0	72	72	72
08:15 AM	0	0	0	78	78	78
08:30 AM	0	0	0	56	56	56
08:45 AM	0	0	0	64	64	64
Total	0	0	0	270	270	270
09:00 AM	0	0	0	52	52	52
09:15 AM	0	0	0	76	76	76
Grand Total	0	0	0	676	676	676
Apprch %	0		0	100		
Total %	0	0	0	100	100	
Cars +	0	0	0	675	675	675
% Cars +	0	0	0	99.9	99.9	99.9
Trucks	0	0	0	1	1	1
% Trucks	0	0	0	0.1	0.1	0.1



TRAFFIC DATA COLLECTION

File Name : Holly Springs(NC-55 and New Hill NB U-Turn)AM Peak
 Site Code :
 Start Date : 5/15/2019
 Page No : 2

	NC 55 Southbound		NC 55 Northbound			
Start Time	Thru	App. Total	Thru	UTrn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:15 AM - Peak 1 of 1						
Peak Hour for Entire Intersection Begins at 07:30 AM						
07:30 AM	0	0	0	62	62	62
07:45 AM	0	0	0	73	73	73
08:00 AM	0	0	0	72	72	72
08:15 AM	0	0	0	78	78	78
Total Volume	0	0	0	285	285	285
% App. Total	0	0	0	100		
PHF	.000	.000	.000	.913	.913	.913



Location: NC 55 Bypass/U-Turn north of New Hill
City: Holly Springs
Control: Signalized

Project ID:
Date: 6/5/2019

Data - Total

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
2:00 PM	0	244	0	39	0	0	0	0	0	0	0	0	0	0	0	0	283
2:15 PM	0	291	0	42	0	0	0	0	0	0	0	0	0	0	0	0	333
2:30 PM	0	351	0	47	0	0	0	0	0	0	0	0	0	0	0	0	398
2:45 PM	0	297	0	47	0	0	0	0	0	0	0	0	0	0	0	0	344
3:00 PM	0	300	0	39	0	0	0	0	0	0	0	0	0	0	0	0	339
3:15 PM	0	294	0	64	0	0	0	0	0	0	0	0	0	0	0	0	358
3:30 PM	0	299	0	62	0	0	0	0	0	0	0	0	0	0	0	0	361
3:45 PM	0	332	0	71	0	0	0	0	0	0	0	0	0	0	0	0	403
TOTAL VOLUMES :	NL 0	NT 2408	NR 0	NU 411	SL 0	ST 0	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 0	WT 0	WR 0	WU 0	TOTAL 2819
APPROACH %'s :	0.00%	85.42%	0.00%	14.58%													
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	1225	0	236	0	0	0	0	0	0	0	0	0	0	0	0	1461
PEAK HR FACTOR :	0.000	0.922	0.000	0.831	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.906

1358
1414
1439
1402
1461



TRAFFIC DATA COLLECTION

File Name : Holly Springs(NC-55 and New Hill SB U-Turn)AM Peak
 Site Code :
 Start Date : 5/15/2019
 Page No : 1

Groups Printed- Cars + - Trucks

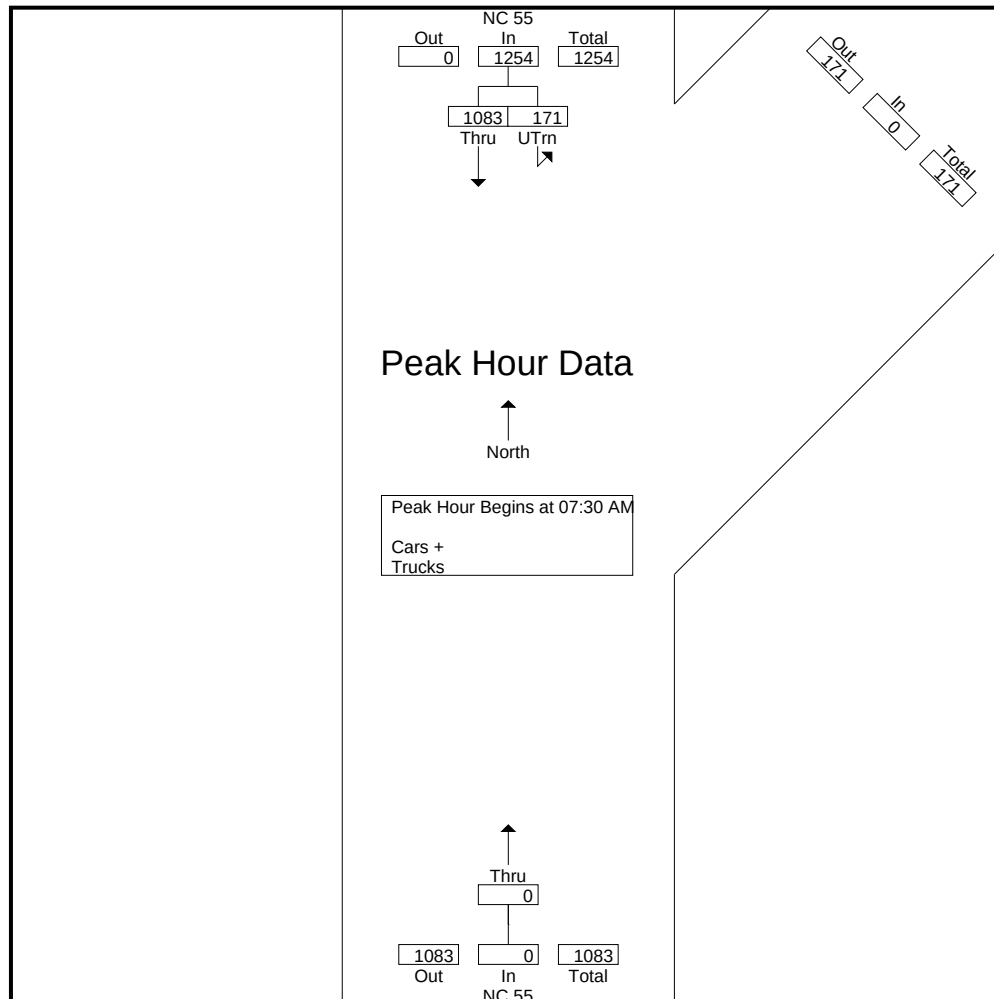
Start Time	NC 55 Southbound			NC 55 Northbound		Int. Total
	Thru	UTrn	App. Total	Thru	App. Total	
07:00 AM	256	33	289	0	0	289
07:15 AM	250	32	282	0	0	282
07:30 AM	279	45	324	0	0	324
07:45 AM	299	35	334	0	0	334
Total	1084	145	1229	0	0	1229
08:00 AM	232	37	269	0	0	269
08:15 AM	273	54	327	0	0	327
08:30 AM	215	52	267	0	0	267
08:45 AM	221	77	298	0	0	298
Total	941	220	1161	0	0	1161
09:00 AM	225	63	288	0	0	288
09:15 AM	215	38	253	0	0	253
Grand Total	2465	466	2931	0	0	2931
Apprch %	84.1	15.9		0		
Total %	84.1	15.9	100	0	0	
Cars +	2379	447	2826	0	0	2826
% Cars +	96.5	95.9	96.4	0	0	96.4
Trucks	86	19	105	0	0	105
% Trucks	3.5	4.1	3.6	0	0	3.6



TRAFFIC DATA COLLECTION

File Name : Holly Springs(NC-55 and New Hill SB U-Turn)AM Peak
 Site Code :
 Start Date : 5/15/2019
 Page No : 2

	NC 55 Southbound			NC 55 Northbound		
Start Time	Thru	UTrn	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:15 AM - Peak 1 of 1						
Peak Hour for Entire Intersection Begins at 07:30 AM						
07:30 AM	279	45	324	0	0	324
07:45 AM	299	35	334	0	0	334
08:00 AM	232	37	269	0	0	269
08:15 AM	273	54	327	0	0	327
Total Volume	1083	171	1254	0	0	1254
% App. Total	86.4	13.6		0		
PHF	.906	.792	.939	.000	.000	.939



Location: NC 55 Bypass/U-Turn south of New Hill
City: Holly Springs
Control: Signalized

Project ID:
Date: 6/5/2019

Data - Total

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
2:00 PM	0	265	0	2	0	357	0	44	0	0	0	0	0	0	0	0	668
2:15 PM	0	341	0	3	0	378	0	40	0	0	0	0	0	0	0	0	762
2:30 PM	0	427	0	9	0	368	0	55	0	0	0	0	0	0	0	0	859
2:45 PM	0	341	0	7	0	377	0	51	0	0	0	0	0	0	0	0	776
3:00 PM	0	356	0	5	0	386	0	62	0	0	0	0	0	0	0	0	809
3:15 PM	0	325	0	3	0	420	0	44	0	0	0	0	0	0	0	0	792
3:30 PM	0	310	0	1	0	585	0	54	0	0	0	0	0	0	0	0	950
3:45 PM	0	356	0	4	0	568	0	75	0	0	0	0	0	0	0	0	1003
TOTAL VOLUMES :	NL 0	NT 2721	NR 0	NU 34	SL 0	ST 3439	SR 0	SU 425	EL 0	ET 0	ER 0	EU 0	WL 0	WT 0	WR 0	WU 0	TOTAL 6619
APPROACH %'s :	0.00%	98.77%	0.00%	1.23%	0.00%	89.00%	0.00%	11.00%									
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	1347	0	13	0	1959	0	235	0	0	0	0	0	0	0	0	3554
PEAK HR FACTOR :	0.000	0.946	0.000	0.650	0.000	0.837	0.000	0.783	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.886
		0.942				0.853											

3065
3206
3236
3327
3554



TRAFFIC DATA COLLECTION

File Name : Holly Springs(New Hill and Old Holly Springs)AM Peak
 Site Code :
 Start Date : 5/21/2019
 Page No : 1

Groups Printed- Cars + - Trucks

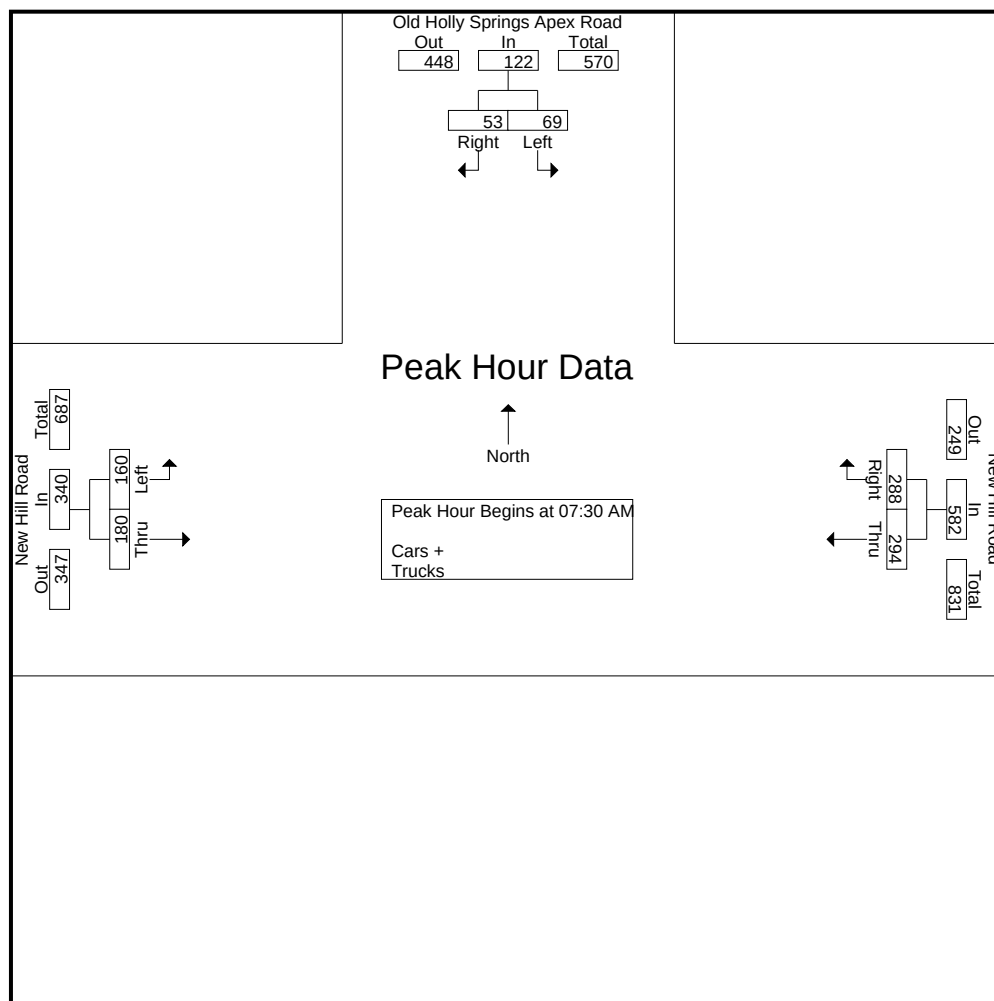
	Old Holly Springs Apex Road Southbound			New Hill Road Westbound			New Hill Road Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
07:00 AM	5	14	19	72	39	111	31	43	74	204
07:15 AM	6	17	23	70	42	112	32	49	81	216
07:30 AM	13	18	31	101	48	149	40	37	77	257
07:45 AM	23	24	47	70	73	143	53	48	101	291
Total	47	73	120	313	202	515	156	177	333	968
08:00 AM	12	15	27	61	76	137	46	41	87	251
08:15 AM	5	12	17	56	97	153	41	34	75	245
08:30 AM	23	18	41	50	83	133	43	27	70	244
08:45 AM	14	15	29	25	110	135	58	40	98	262
Total	54	60	114	192	366	558	188	142	330	1002
09:00 AM	7	13	20	17	80	97	76	35	111	228
09:15 AM	14	11	25	23	53	76	46	19	65	166
Grand Total	122	157	279	545	701	1246	466	373	839	2364
Apprch %	43.7	56.3		43.7	56.3		55.5	44.5		
Total %	5.2	6.6	11.8	23.1	29.7	52.7	19.7	15.8	35.5	
Cars +	119	154	273	543	695	1238	461	370	831	2342
% Cars +	97.5	98.1	97.8	99.6	99.1	99.4	98.9	99.2	99	99.1
Trucks	3	3	6	2	6	8	5	3	8	22
% Trucks	2.5	1.9	2.2	0.4	0.9	0.6	1.1	0.8	1	0.9



TRAFFIC DATA COLLECTION

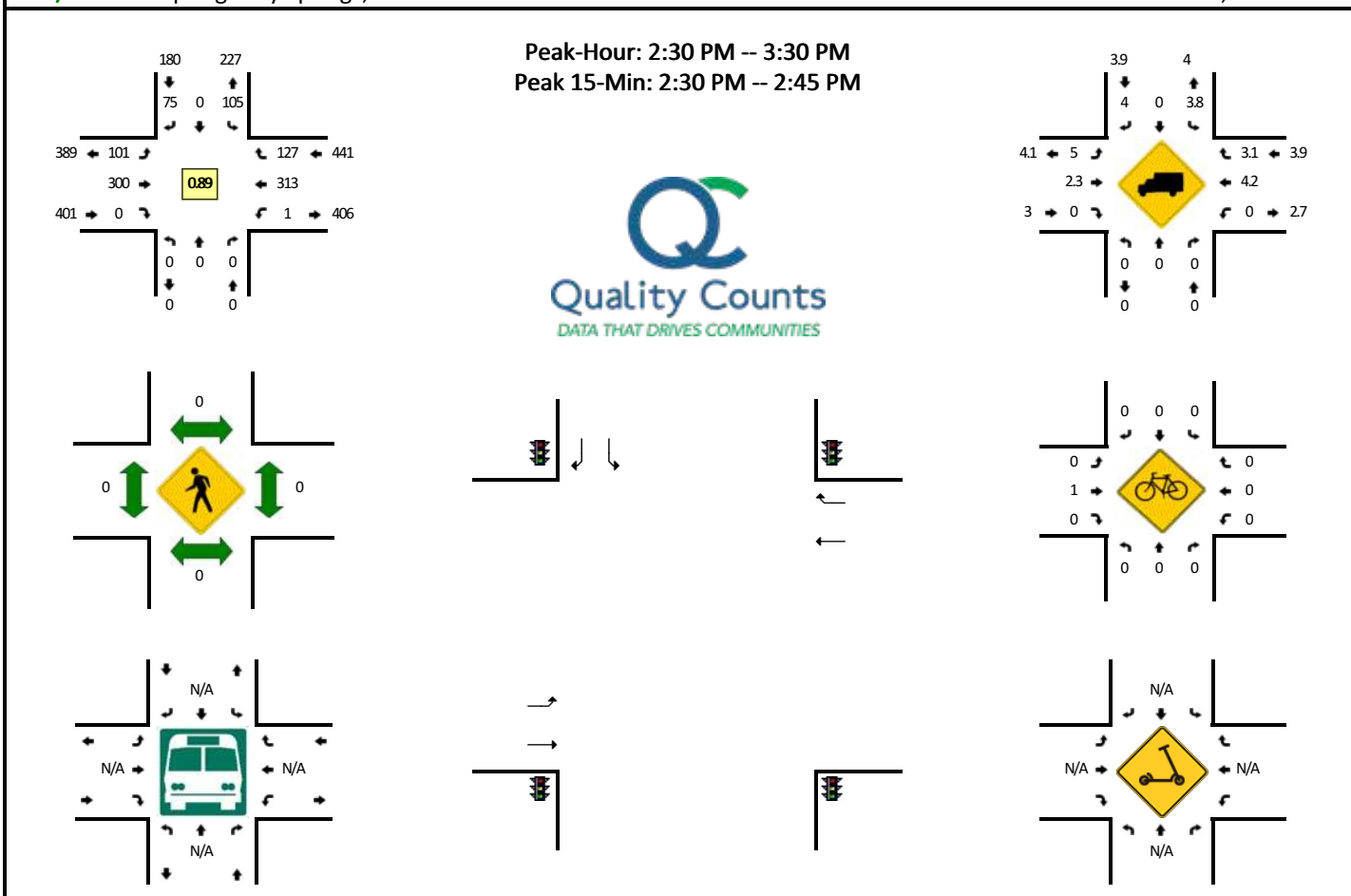
File Name : Holly Springs(New Hill and Old Holly Springs)AM Peak
 Site Code :
 Start Date : 5/21/2019
 Page No : 2

	Old Holly Springs Apex Road Southbound			New Hill Road Westbound			New Hill Road Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	13	18	31	101	48	149	40	37	77	257
07:45 AM	23	24	47	70	73	143	53	48	101	291
08:00 AM	12	15	27	61	76	137	46	41	87	251
08:15 AM	5	12	17	56	97	153	41	34	75	245
Total Volume	53	69	122	288	294	582	180	160	340	1044
% App. Total	43.4	56.6		49.5	50.5		52.9	47.1		
PHF	.576	.719	.649	.713	.758	.951	.849	.833	.842	.897



Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Old Holly Springs Apex Rd -- New Hill Rd**QC JOB #:** 15513302**CITY/STATE:** HSprings olly Springs, NC**DATE:** Tue, Jul 20 2021

15-Min Count Period Beginning At	Old Holly Springs Apex Rd (Northbound)				Old Holly Springs Apex Rd (Southbound)				New Hill Rd (Eastbound)				New Hill Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	22	0	10	0	22	54	0	0	0	73	19	0	200	
2:15 PM	0	0	0	0	21	0	12	0	10	50	0	0	0	114	20	1	228	
2:30 PM	0	0	0	0	27	0	23	0	16	52	0	0	0	135	32	1	286	
2:45 PM	0	0	0	0	29	0	12	0	27	79	0	0	0	21	51	0	219	933
3:00 PM	0	0	0	0	20	0	20	0	21	79	0	1	0	73	23	0	237	970
3:15 PM	0	0	0	0	29	0	20	0	36	90	0	0	0	84	21	0	280	1022
3:30 PM	0	0	0	0	40	0	15	0	24	74	0	0	0	64	28	0	245	981
3:45 PM	0	0	0	0	47	0	15	0	21	77	0	0	0	68	22	0	250	1012
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	108	0	92	0	64	208	0	0	0	540	128	4	1144	
Heavy Trucks	0	0	0	0	0	0	4	0	4	0	0	0	0	8	0	0	16	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scoters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

Report generated on 7/23/2021 9:58 AM

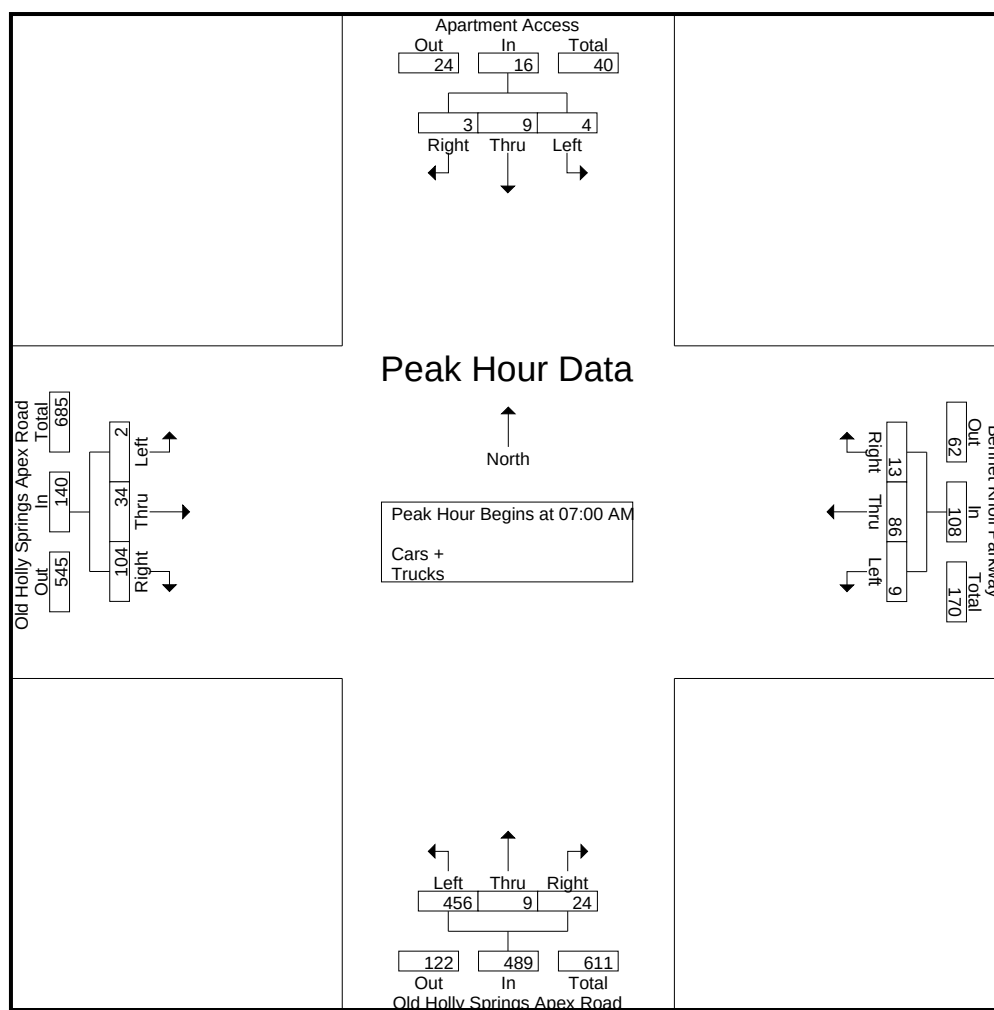
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212



TRAFFIC DATA COLLECTION

File Name : Holly Springs(Old Holly Springs and Bennet)AM Peak
 Site Code :
 Start Date : 5/21/2019
 Page No : 2

	Apartment Access Southbound				Bennet Knoll Parkway Westbound				Old Holly Springs Apex Road Northbound				Old Holly Springs Apex Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	1	2	2	5	6	19	2	27	5	0	110	115	14	8	0	22	169
07:15 AM	2	1	1	4	4	23	2	29	12	1	110	123	20	7	1	28	184
07:30 AM	0	6	1	7	1	20	1	22	2	5	122	129	29	8	0	37	195
07:45 AM	0	0	0	0	2	24	4	30	5	3	114	122	41	11	1	53	205
Total Volume	3	9	4	16	13	86	9	108	24	9	456	489	104	34	2	140	753
% App. Total	18.8	56.2	25		12	79.6	8.3		4.9	1.8	93.3		74.3	24.3	1.4		
PHF	.375	.375	.500	.571	.542	.896	.563	.900	.500	.450	.934	.948	.634	.773	.500	.660	.918

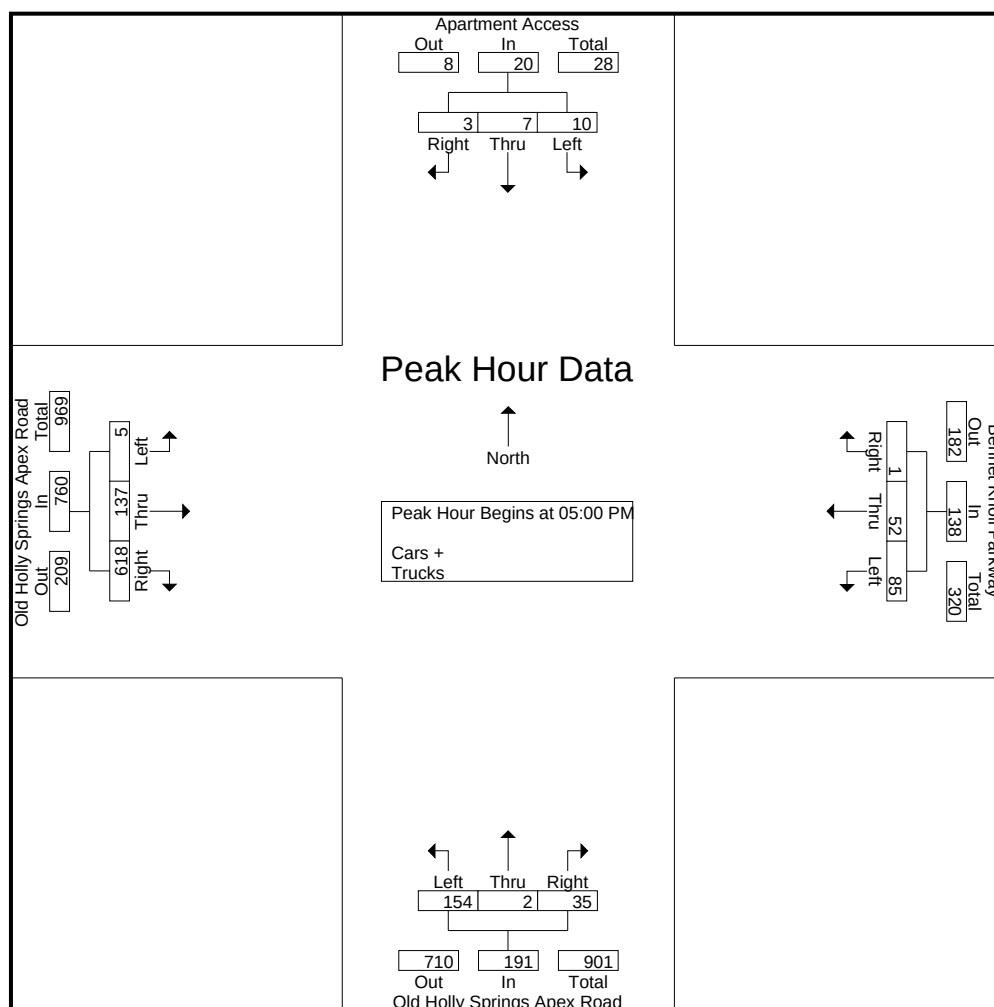




TRAFFIC DATA COLLECTION

File Name : Holly Springs(Old Holly Springs and Bennet)PM Peak
 Site Code :
 Start Date : 5/15/2019
 Page No : 2

	Apartment Access Southbound				Bennet Knoll Parkway Westbound				Old Holly Springs Apex Road Northbound				Old Holly Springs Apex Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 03:15 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	1	2	3	1	10	15	26	11	0	39	50	142	39	3	184	263
05:15 PM	1	3	1	5	0	17	18	35	16	1	42	59	162	34	0	196	295
05:30 PM	1	2	1	4	0	13	29	42	5	0	39	44	167	32	1	200	290
05:45 PM	1	1	6	8	0	12	23	35	3	1	34	38	147	32	1	180	261
Total Volume	3	7	10	20	1	52	85	138	35	2	154	191	618	137	5	760	1109
% App. Total	15	35	50		0.7	37.7	61.6		18.3	1	80.6		81.3	18	0.7		
PHF	.750	.583	.417	.625	.250	.765	.733	.821	.547	.500	.917	.809	.925	.878	.417	.950	.940

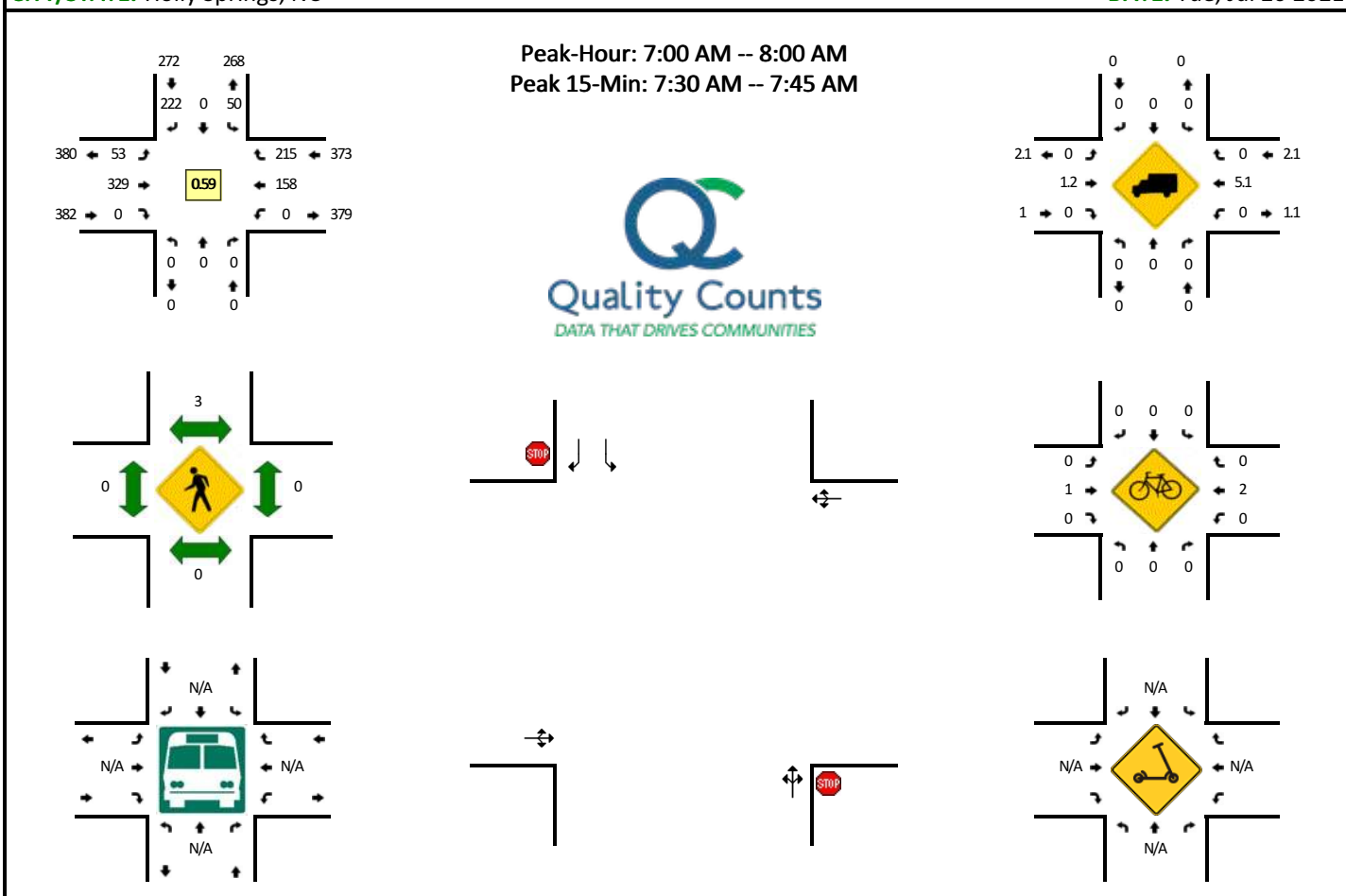


Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Socratic Way -- New Hill Rd**CITY/STATE:** Holly Springs, NC**QC JOB #:** 15513303**DATE:** Tue, Jul 20 2021

Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



15-Min Count Period Beginning At	Socratic Way (Northbound)				Socratic Way (Southbound)				New Hill Rd (Eastbound)				New Hill Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
6:00 AM	0	0	0	0	2	0	0	0	0	16	0	0	1	7	0	0	26	
6:15 AM	0	0	0	0	0	0	0	0	0	25	0	0	0	16	1	0	42	
6:30 AM	0	0	0	0	1	0	0	0	1	14	0	0	0	20	2	0	38	
6:45 AM	0	0	0	0	1	0	0	0	2	34	0	0	1	38	18	0	94	200
7:00 AM	0	0	0	0	3	0	0	0	13	45	0	0	0	33	70	0	164	338
7:15 AM	0	0	0	0	5	0	64	0	25	65	0	0	0	19	29	0	207	503
7:30 AM	0	0	0	0	16	0	116	0	15	133	0	0	0	42	111	0	433	898
7:45 AM	0	0	0	0	26	0	42	0	0	86	0	0	0	64	5	0	223	1027
8:00 AM	0	0	0	0	3	0	1	0	0	67	0	0	0	63	2	0	136	999
8:15 AM	0	0	0	0	3	0	0	0	0	77	0	0	0	65	2	0	147	939
8:30 AM	0	0	0	0	3	0	0	0	0	77	0	0	0	86	0	0	166	672
8:45 AM	0	0	1	0	1	0	0	0	0	87	0	0	0	76	1	0	166	615
9:00 AM	0	0	0	0	1	0	0	0	0	51	0	0	0	72	1	0	125	604
9:15 AM	0	0	0	0	4	0	0	0	2	44	0	0	0	62	0	0	112	569
9:30 AM	0	0	0	0	2	0	0	0	0	43	0	0	1	58	1	0	105	508
9:45 AM	0	0	0	0	3	0	1	0	0	50	0	0	0	49	1	0	104	446
10:00 AM	0	0	0	0	0	0	0	0	1	47	0	0	0	62	0	0	110	431
10:15 AM	0	0	0	0	1	0	0	0	0	41	0	0	0	61	1	0	104	423
10:30 AM	0	0	0	0	1	0	1	0	0	59	0	1	0	58	1	0	121	439
10:45 AM	0	0	0	0	2	0	0	0	0	58	0	0	0	78	2	1	141	476
11:00 AM	0	0	0	0	2	0	1	0	0	71	0	0	0	58	1	0	133	499
11:15 AM	0	0	0	0	3	0	0	0	0	69	0	0	0	44	4	1	121	516
11:30 AM	0	0	0	0	4	0	0	0	3	60	0	0	0	61	11	0	139	534
11:45 AM	0	0	0	0	16	0	7	0	2	85	0	0	0	59	2	0	171	564
12:00 PM	0	0	0	0	0	0	0	0	0	74	0	0	0	95	0	0	169	600
12:15 PM	0	0	0	0	1	0	0	0	1	77	0	0	0	69	2	0	150	629
12:30 PM	0	0	0	0	3	0	0	0	0	73	0	0	2	86	0	2	166	656
12:45 PM	0	0	0	0	1	0	0	0	0	46	0	0	0	82	1	0	130	615
1:00 PM	0	0	0	0	1	0	0	0	0	51	0	0	0	91	0	0	143	589
1:15 PM	0	0	0	0	2	0	0	0	0	71	0	0	0	69	2	0	144	583
1:30 PM	0	0	0	0	2	0	1	0	1	61	0	0	0	88	0	0	153	570
1:45 PM	0	0	0	0	1	0	1	0	0	53	0	1	0	70	2	0	128	568
2:00 PM	0	0	0	0	4	0	0	0	2	71	0	0	1	80	4	0	162	587
2:15 PM	0	0	0	0	1	0	0	0	6	64	0	0	0	89	36	0	196	639
2:30 PM	0	0	0	0	1	0	1	0	4	59	0	0	0	87	24	0	176	662
2:45 PM	0	0	0	0	4	0	34	0	14	100	0	0	0	19	24	0	195	729
3:00 PM	0	0	0	0	14	0	67	0	6	87	0	0	0	65	64	0	303	870
3:15 PM	0	0	0	0	28	0	27	0	4	93	0	0	0	90	8	0	250	924

15-Min Count Period Beginning At	Socratic Way (Northbound)				Socratic Way (Southbound)				New Hill Rd (Eastbound)				New Hill Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:30 PM	0	0	0	0	16	0	5	0	0	82	0	0	0	70	4	0	177	925
3:45 PM	0	0	0	0	11	0	1	0	2	83	1	0	0	78	6	1	183	913
4:00 PM	0	0	0	0	3	0	6	0	2	76	0	0	0	91	5	0	183	793
4:15 PM	0	0	0	0	9	0	0	0	1	59	0	0	2	78	8	0	157	700
4:30 PM	0	0	0	0	10	0	4	0	2	78	0	0	0	92	8	0	194	717
4:45 PM	0	0	0	0	13	0	2	0	2	100	0	0	0	94	10	0	221	755
5:00 PM	0	0	0	0	8	0	4	0	0	93	0	0	0	103	11	0	219	791
5:15 PM	0	0	0	0	9	0	1	0	1	90	0	0	0	122	11	0	234	868
5:30 PM	0	0	0	0	13	0	2	0	1	95	0	0	0	94	5	0	210	884
5:45 PM	0	0	0	0	6	0	2	0	0	77	0	0	0	80	1	1	167	830
6:00 PM	0	0	0	0	1	0	0	0	0	75	0	0	0	93	1	0	170	781
6:15 PM	0	0	0	0	1	0	0	0	0	73	0	0	0	94	1	0	169	716
6:30 PM	0	0	0	0	3	0	0	0	0	65	0	1	0	76	0	0	145	651
6:45 PM	0	0	0	0	2	0	0	0	0	56	0	0	0	66	0	0	124	608
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	64	0	464	0	60	532	0	0	0	168	444	0	1732	
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	8	0		8	
Buses																		
Pedestrians		0				0				0				0			0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scoters																		
Comments:																		

Report generated on 7/23/2021 9:58 AM

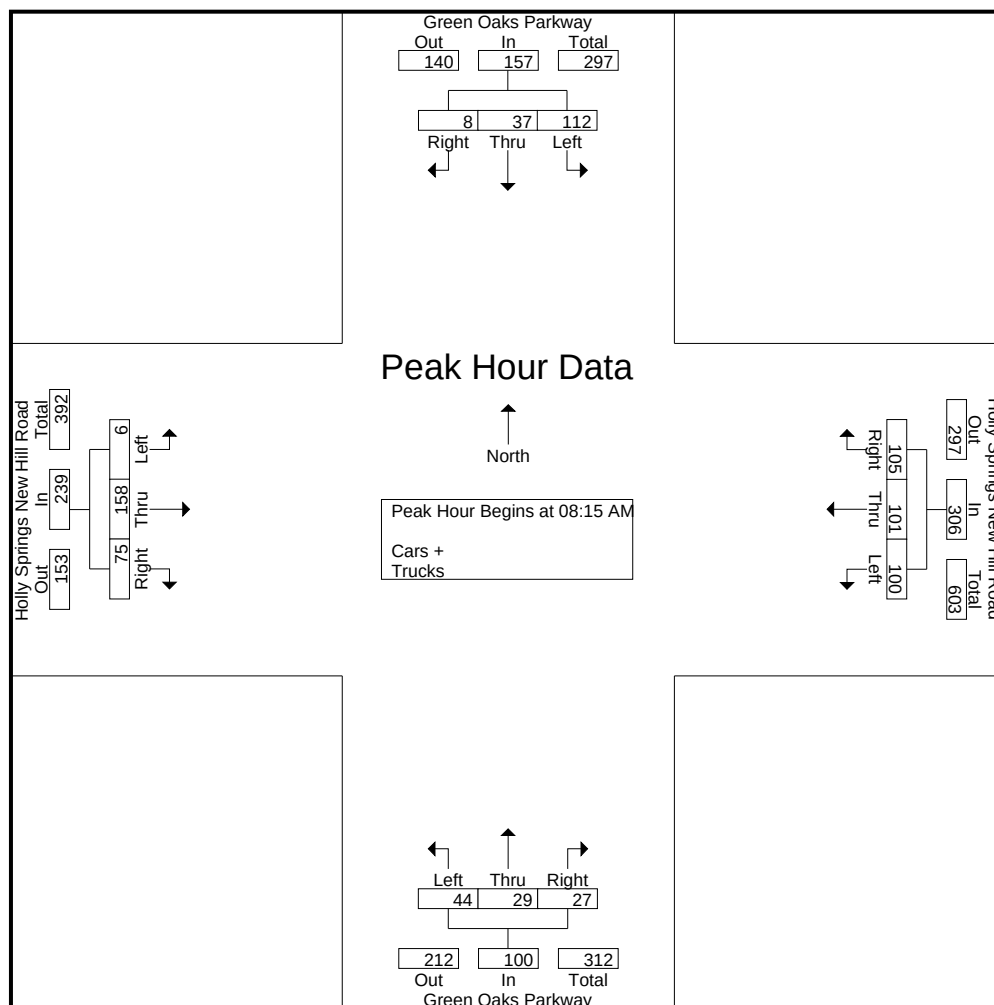
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212



TRAFFIC DATA COLLECTION

File Name : Holly Springs(Holly Springs New Hill and Green oaks)AM Peak
 Site Code :
 Start Date : 5/15/2019
 Page No : 2

	Green Oaks Parkway Southbound				Holly Springs New Hill Road Westbound				Green Oaks Parkway Northbound				Holly Springs New Hill Road Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	3	12	25	40	16	22	17	55	13	12	16	41	30	32	3	65	201
08:30 AM	2	5	23	30	23	23	18	64	5	4	12	21	17	48	1	66	181
08:45 AM	0	10	36	46	29	27	40	96	3	4	7	14	15	45	1	61	217
09:00 AM	3	10	28	41	37	29	25	91	6	9	9	24	13	33	1	47	203
Total Volume	8	37	112	157	105	101	100	306	27	29	44	100	75	158	6	239	802
% App. Total	5.1	23.6	71.3		34.3	33	32.7		27	29	44		31.4	66.1	2.5		
PHF	.667	.771	.778	.853	.709	.871	.625	.797	.519	.604	.688	.610	.625	.823	.500	.905	.924



Location: Holly Springs New Hill Road at Green Oaks Pkwy
City: Holly Springs
Control: Signalized

Project ID:
Date: 3/5/2019

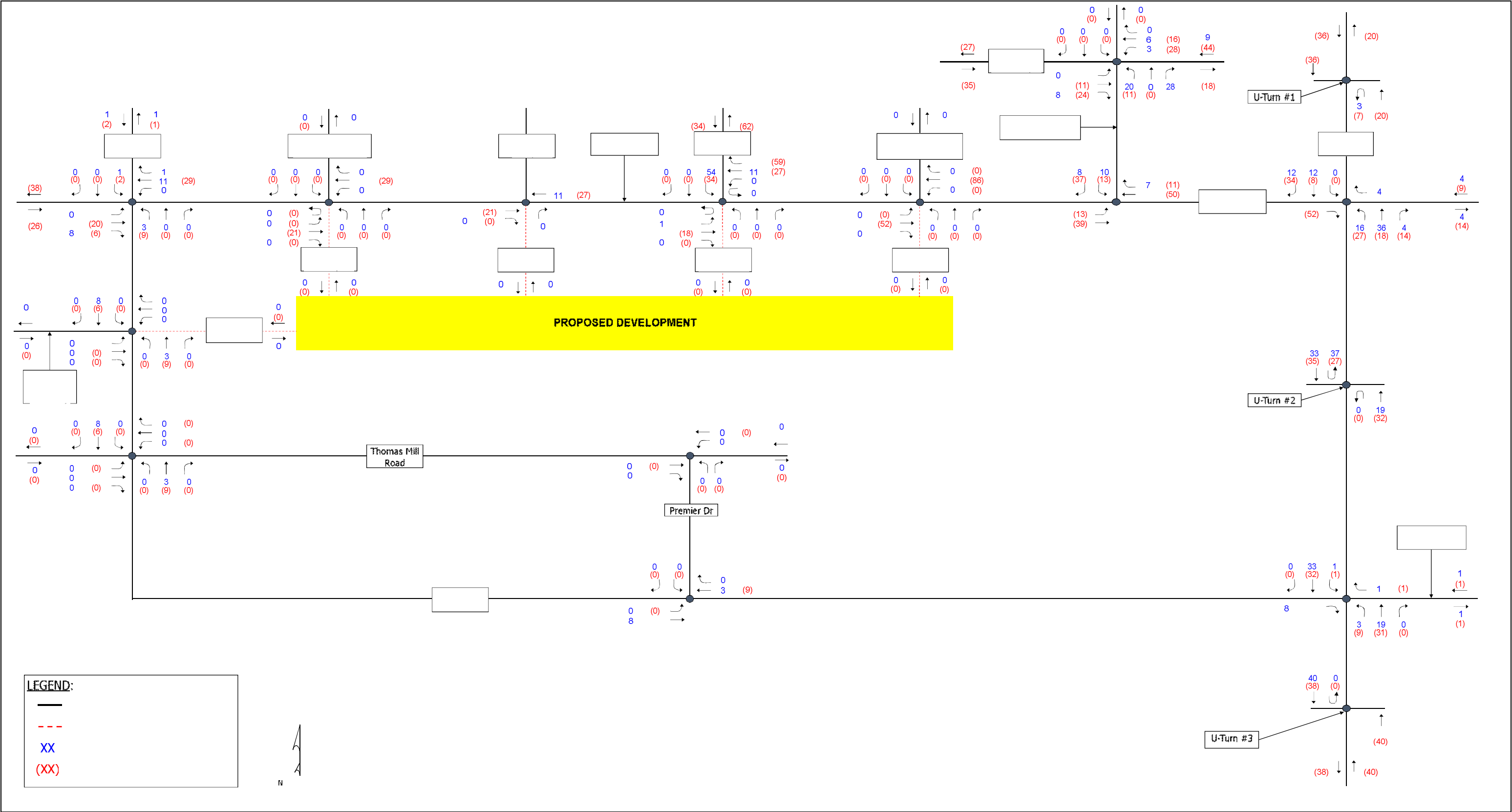
Data - Total

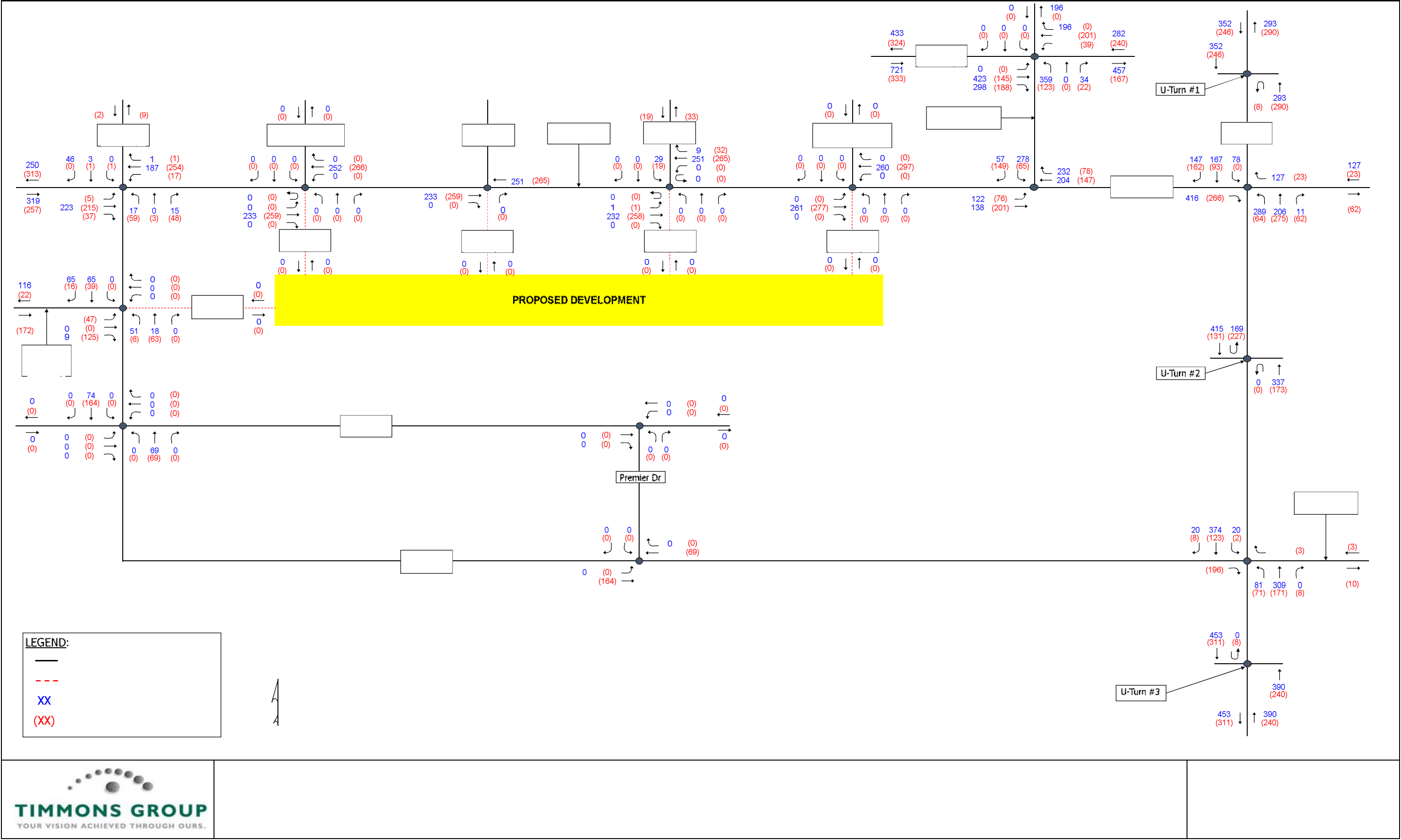
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
2:00 PM	0	21	2	0	7	31	16	0	11	5	0	0	8	7	3	0	111
2:15 PM	0	18	10	0	5	18	18	0	14	9	0	0	12	10	5	1	120
2:30 PM	3	33	10	0	5	20	14	0	10	5	3	0	8	5	2	0	118
2:45 PM	7	30	11	0	9	19	21	0	18	12	0	0	13	8	10	0	158
3:00 PM	5	21	10	0	8	24	26	1	10	4	1	0	10	9	9	0	138
3:15 PM	5	27	14	0	7	14	15	0	21	6	2	0	7	8	3	0	129
3:30 PM	1	28	14	0	10	33	20	0	28	9	3	0	19	15	10	0	190
3:45 PM	0	23	21	0	34	44	50	1	19	6	1	0	14	10	13	0	236
TOTAL VOLUMES :	NL 21	NT 201	NR 92	NU 0	SL 85	ST 203	SR 180	SU 2	EL 131	ET 56	ER 10	EU 0	WL 91	WT 72	WR 55	WU 1	TOTAL 1200
APPROACH %'s :	6.69%	64.01%	29.30%	0.00%	18.09%	43.19%	38.30%	0.43%	66.50%	28.43%	5.08%	0.00%	41.55%	32.88%	25.11%	0.46%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	11	99	59	0	59	115	111	2	78	25	7	0	50	42	35	0	693
PEAK HR FACTOR :	0.550	0.884	0.702	0.000	0.434	0.653	0.555	0.500	0.696	0.694	0.583	0.000	0.658	0.700	0.673	0.000	0.734
		0.918				0.556				0.688				0.722			

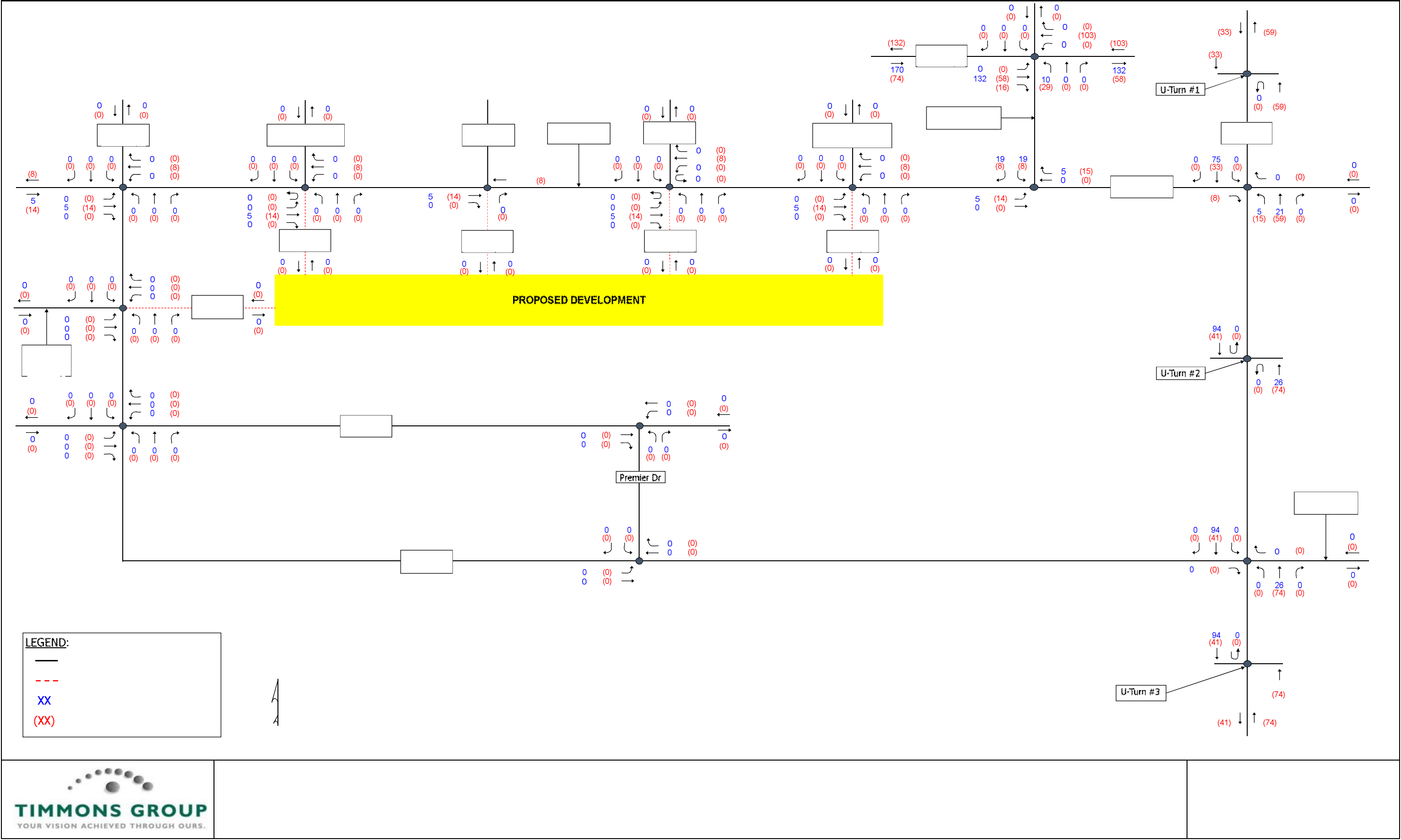
507
534
543
615
693

Appendix D:

Approved Development Data







Appendix E:

Intersection Spreadsheets

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Full Access Site Driveway
Ct. Date	5/30/2018 & 5/15/2019
N/S Street:	NC 55 Bypass
E/W Street:	New Hill Road/Holly Springs Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.93

Weighted Buildout PHF:		0.89			0.92			0.91			0.93			0.88			0.93			0.93			0.90		
		New Hill Road			Holly Springs Road			NC 55 Bypass			NC 55 Bypass														
		Eastbound			Westbound			Northbound			Southbound														
Description		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right				Left	Through	Right						
2019 Traffic Volumes		0	0	227	0	0	1036	410	2383	167	150	1168	313												
Grow to Existing Year		0	0	23	0	0	106	42	244	17	15	120	32												
2021 Approved Development		0	0	58	0	0	4	16	36	4	0	12	12												
2021 Existing Traffic		0	0	308	0	0	1146	468	2663	188	165	1300	357												
Growth Factor (0.05 per year)		0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276												
2026 Background Growth		0	0	85	0	0	317	129	736	52	46	359	99												
Approved Development																									
2024 Approved Development		0	0	416	0	0	127	289	206	11	78	167	147												
2026 Approved Development		0	0	19	0	0	0	5	21	0	0	75	0												
Total AD Traffic		0	0	435	0	0	127	294	227	11	78	242	147												
2026 Background Traffic		0	0	828	0	0	1590	891	3626	251	289	1901	603												
Project Traffic																									
Percent Assignment Inbound		0%	0%	0%	0%	0%	30%	30%	0%	0%	0%	0%	40%												
Inbound Project Traffic		0	0	0	0	0	38	38	0	0	0	0	51												
Percent Assignment Outbound		0%	0%	70%	0%	0%	0%	0%	10%	30%	0%	0%	0%												
Outbound Project Traffic		0	0	85	0	0	0	0	12	36	0	0	0												
Total Project Traffic		0	0	85	0	0	38	38	12	36	0	0	51												
2026 Buildout Total		0	0	913	0	0	1628	929	3638	287	289	1901	654												
Percent Impact (Approach)		9.3%			2.3%			1.8%			1.8%														
Overall Percent Impact		2.5%			3.96%																				

SCHOOL PM PEAK HOUR
PM PHF = 0.92

Weighted Buildout PHF:		0.90			0.90			0.90			0.92			0.89			0.92			0.92			0.90		
		New Hill Road			Holly Springs Road			NC 55 Bypass			NC 55 Bypass														
		Eastbound			Westbound			Northbound			Southbound														
Description		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right				Left	Through	Right						
2018 Traffic Count		0	0	451	0	0	360	211	1111	207	178	1707	313												
Grow to Existing Year		0	0	71	0	0	57	33	175	33	28	269	49												
2021 Approved Development		0	0	52	0	0	9	27	18	14	0	8	34												
2021 Existing Traffic		0	0	574	0	0	426	271	1304	254	206	1984	396												
Growth Factor (0.05 per year)		0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276												
2026 Background Growth		0	0	159	0	0	118	75	360	70	57	548	109												
Approved Development																									
2024 Approved Development		0	0	266	0	0	23	64	275	62	0	93	162												
2026 Approved Development		0	0	8	0	0	0	15	59	0	0	33	0												
Total AD Traffic		0	0	274	0	0	23	79	334	62	0	126	162												
2026 Background Traffic		0	0	1007	0	0	567	425	1998	386	263	2658	667												
Project Traffic																									
Percent Assignment Inbound		0%	0%	0%	0%	0%	30%	30%	0%	0%	0%	0%	40%												
Inbound Project Traffic		0	0	0	0	0	24	24	0	0	0	0	32												
Percent Assignment Outbound		0%	0%	70%	0%	0%	0%	0%	10%	30%	0%	0%	0%												
Outbound Project Traffic		0	0	60	0	0	0	0	9	25	0	0	0												
Total Project Traffic		0	0	60	0	0	24	24	9	25	0	0	32												
2026 Buildout Total		0	0	1067	0	0	591	449	2007	411	263	2658	699												
Percent Impact (Approach)		5.6%			4.1%			2.0%			0.9%														
Overall Percent Impact		2.1%			5.24%																				

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Full Access Site Driveway
Ct. Date	5/15/2019 and 6/5/2019
N/S Street:	NC 55 Bypass
E/W Street:	U-Turn North of W. Holly Springs Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.91

Weighted Buildout PHF:

Weighted Buildout PHF:							0.88	0.91	0.91				
Description		U-Turn North of W. Holly Springs			U-Turn North of W. Holly Springs			NC 55 Bypass			NC 55 Bypass		
		Eastbound			Westbound			Northbound			Southbound		
		Left	Through	Right	Left	Through	Right	U-Turn	Through	Right	Left	Through	Right
2019	Traffic Volumes	0	0	0	0	0	0	285	3134	0	0	1346	0
	Grow to Existing Year	0	0	0	0	0	0	29	321	0	0	138	0
	2021 Approved Development	0	0	0	0	0	0	3	37	0	0	21	0
2021	Existing Traffic	0	0	0	0	0	0	317	3492	0	0	1505	0
Growth Factor (0.05 per year)		0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026	Background Growth	0	0	0	0	0	0	88	965	0	0	416	0
Approved Development													
	2024 Approved Development	0	0	0	0	0	0	40	293	0	0	352	0
	2026 Approved Development	0	0	0	0	0	0	0	21	0	0	75	0
Total AD Traffic		0	0	0	0	0	0	40	314	0	0	427	0
2026	Background Traffic	0	0	0	0	0	0	445	4771	0	0	2348	0
Project Traffic													
	Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%	10%	0%
	Inbound Project Traffic	0	0	0	0	0	0	38	0	0	0	13	0
	Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%
	Outbound Project Traffic	0	0	0	0	0	0	0	12	0	0	0	0
Total Project Traffic		0	0	0	0	0	0	38	12	0	0	13	0
2026	Buildout Total	0	0	0	0	0	0	483	4783	0	0	2361	0
Percent Impact (Approach)		-			-			0.9%			0.6%		
Overall Percent Impact		0.8%											

SCHOOL PM PEAK HOUR
PM PHF = 0.91

Weighted Buildout PHF:

Weighted Buildout PHF:							0.88	0.91	0.91				
Description		U-Turn North of W. Holly Springs			U-Turn North of W. Holly Springs			NC 55 Bypass			NC 55 Bypass		
		Eastbound			Westbound			Northbound			Southbound		
		Left	Through	Right	Left	Through	Right	U-Turn	Through	Right	Left	Through	Right
2019	Traffic Count	0	0	0	0	0	0	236	1225	0	0	0	0
	Grow to Existing Year	0	0	0	0	0	0	24	126	0	0	2284	0
	2021 Approved Development	0	0	0	0	0	0	7	20	0	0	36	0
2021	Existing Traffic	0	0	0	0	0	0	267	1371	0	0	2320	0
Growth Factor (0.05 per year)		0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026	Background Growth	0	0	0	0	0	0	74	379	0	0	641	0
Approved Development													
	2024 Approved Development	0	0	0	0	0	0	8	290	0	0	246	0
	2026 Approved Development	0	0	0	0	0	0	0	59	0	0	33	0
Total AD Traffic		0	0	0	0	0	0	8	349	0	0	279	0
2026	Background Traffic	0	0	0	0	0	0	349	2099	0	0	3240	0
Project Traffic													
	Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%	10%	0%
	Inbound Project Traffic	0	0	0	0	0	0	24	0	0	0	8	0
	Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%
	Outbound Project Traffic	0	0	0	0	0	0	0	9	0	0	0	0
Total Project Traffic		0	0	0	0	0	0	24	9	0	0	8	0
2026	Buildout Total	0	0	0	0	0	0	373	2108	0	0	3248	0
Percent Impact (Approach)		-			-			1.3%			0.2%		
Overall Percent Impact		0.7%											

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Full Access Site Driveway
Ct. Date	5/15/2019 and 6/5/2019
N/S Street:	NC 55 Bypass
E/W Street:	U-Turn South of New Hill Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.94

Weighted Buildout PHF:

Description	U-Turn South of New Hill Road			U-Turn South of New Hill Road			NC 55 Bypass			NC 55 Bypass		
	Eastbound			Westbound			Northbound			Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	U-Turn	Through	Right
2019 Traffic Volumes	0	0	0	0	0	0	0	2649	0	171	1083	0
Grow to Existing Year	0	0	0	0	0	0	0	272	0	18	111	0
2021 Approved Development	0	0	0	0	0	0	0	19	0	37	33	0
2021 Existing Traffic	0	0	0	0	0	0	0	2940	0	226	1227	0
Growth Factor (0.05 per year)	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026 Background Growth	0	0	0	0	0	0	0	812	0	62	339	0
Approved Development												
2024 Approved Development	0	0	0	0	0	0	0	337	0	169	415	0
2026 Approved Development	0	0	0	0	0	0	0	26	0	0	94	0
Total AD Traffic	0	0	0	0	0	0	0	363	0	169	509	0
2026 Background Traffic	0	0	0	0	0	0	0	4115	0	457	2075	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	38	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	30%	0%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	48	37	0
Total Project Traffic	0	0	0	0	0	0	0	38	0	48	37	0
2026 Buildout Total	0	0	0	0	0	0	0	4153	0	505	2112	0
Percent Impact (Approach)	-	-	-	-	-	-	-	0.9%	-	-	3.2%	-
Overall Percent Impact	1.8%											

SCHOOL PM PEAK HOUR
PM PHF = 0.89

Weighted Buildout PHF:

Description	U-Turn South of New Hill Road			U-Turn South of New Hill Road			NC 55 Bypass			NC 55 Bypass		
	Eastbound			Westbound			Northbound			Southbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	U-Turn	Through	Right
2019 Traffic Count	0	0	0	0	0	0	0	1347	0	235	1959	0
Grow to Existing Year	0	0	0	0	0	0	0	138	0	24	201	0
2021 Approved Development	0	0	0	0	0	0	0	32	0	27	35	0
2021 Existing Traffic	0	0	0	0	0	0	0	1517	0	286	2195	0
Growth Factor (0.05 per year)	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026 Background Growth	0	0	0	0	0	0	0	419	0	79	606	0
Approved Development												
2024 Approved Development	0	0	0	0	0	0	0	173	0	227	131	0
2026 Approved Development	0	0	0	0	0	0	0	74	0	0	41	0
Total AD Traffic	0	0	0	0	0	0	0	247	0	227	172	0
2026 Background Traffic	0	0	0	0	0	0	0	2183	0	592	2973	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	24	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	30%	0%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	34	26	0
Total Project Traffic	0	0	0	0	0	0	0	24	0	34	26	0
2026 Buildout Total	0	0	0	0	0	0	0	2207	0	626	2999	0
Percent Impact (Approach)	-	-	-	-	-	-	-	1.1%	-	-	1.7%	-
Overall Percent Impact	1.4%											

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Full Access Site Driveway
Ct. Date	5/21/2019 & 7/20/2021
N/S Street:	Old Holly Springs Apex Road
E/W Street:	New Hill Road

AM In	AM Out	PM In	PM Out
Net New Trips: 127	121	79	85
Pass-By Trips: 0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.90

Weighted Buildout PHF:		0.88	0.84	0.85			0.90	0.90			0.86		
		New Hill Road Eastbound			New Hill Road Westbound			Old Holly Springs Apex Road Northbound			Old Holly Springs Apex Road Southbound		
Description		Left	Through	Right	U-Turn	Through	Right	Left	Through	Right	Left	Through	Right
2019	Traffic Volumes	160	180	0	0	294	288	0	0	0	69	0	53
Grow to Existing Year		16	18	0	0	30	30	0	0	0	7	0	5
2021 Approved Development		31	48	0	0	20	7	0	0	0	10	0	8
2021	Existing Traffic	207	246	0	0	344	325	0	0	0	86	0	66
Growth Factor (0.05 per year)		0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026	Background Growth	57	68	0	0	95	90	0	0	0	24	0	18
Approved Development													
2024 Approved Development		122	138	0	0	204	232	0	0	0	278	0	57
2026 Approved Development		5	0	0	0	0	5	0	0	0	19	0	19
Total AD Traffic		127	138	0	0	204	237	0	0	0	297	0	76
2026	Background Traffic	391	452	0	0	643	652	0	0	0	407	0	160
Project Traffic													
Percent Assignment Inbound		0%	0%	0%	0%	70%	0%	0%	0%	0%	0%	0%	15%
Inbound Project Traffic		0	0	0	0	89	0	0	0	0	0	0	19
Percent Assignment Outbound		15%	70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic		18	85	0	0	0	0	0	0	0	0	0	0
Total Project Traffic		18	85	0	0	89	0	0	0	0	0	0	19
2026	Buildout Total	409	537	0	0	732	652	0	0	0	407	0	179
Percent Impact (Approach)		10.9%			6.4%			-			3.2%		
Overall Percent Impact		7.2%											

SCHOOL PM PEAK HOUR
PM PHF = 0.89

Weighted Buildout PHF:		0.87	0.86	0.86			0.89	0.89			0.89	0.88	
		New Hill Road Eastbound			New Hill Road Westbound			Old Holly Springs Apex Road Northbound			Old Holly Springs Apex Road Southbound		
Description		Left	Through	Right	U-Turn	Through	Right	Left	Through	Right	Left	Through	Right
2021 Traffic Count Grow to Existing Year		101	300	0	0	313	127	0	0	0	105	0	75
		0	0	0	0	0	0	0	0	0	0	0	0
	2021 Approved Development	13	39	0	0	50	11	0	0	0	13	0	37
2021 Existing Traffic		114	339	0	0	363	138	0	0	0	118	0	112
Growth Factor (0.05 per year)		0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026 Background Growth		31	94	0	0	100	38	0	0	0	33	0	31
Approved Development													
2024 Approved Development		76	201	0	0	147	78	0	0	0	65	0	149
2026 Approved Development		14	0	0	0	0	15	0	0	0	8	0	8
Total AD Traffic		90	201	0	0	147	93	0	0	0	73	0	157
2026 Background Traffic		235	634	0	0	610	269	0	0	0	224	0	300
Project Traffic													
Percent Assignment Inbound		0%	0%	0%	0%	70%	0%	0%	0%	0%	0%	0%	15%
Inbound Project Traffic		0	0	0	0	56	0	0	0	0	0	0	11
Percent Assignment Outbound		15%	70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic		13	60	0	0	0	0	0	0	0	0	0	0
Total Project Traffic		13	60	0	0	56	0	0	0	0	0	0	11
2026 Buildout Total		248	694	0	0	666	269	0	0	0	224	0	311
Percent Impact (Approach)		7.7%			6.0%			-			2.1%		
Overall Percent Impact		5.8%											

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Full Access Site Driveway
Ct. Date	5/21/2019
N/S Street:	Old Holly Springs Apex Rd/Woodlark Ln
E/W Street:	Old Holly Springs Apex Rd/Bennett Knoll Pkwy

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.92

Weighted Buildout PHF:	0.92	0.92	0.91	0.79	0.92	0.92	0.92	0.92	0.88	0.92	0.92	0.92
	Old Holly Springs Apex Rd			Bennett Knoll Pkwy			Old Holly Springs Apex Rd/Woodlark			Woodlark Ln		
	Eastbound			Westbound			Northbound			Southbound		
Description	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Volumes	2	34	104	9	86	13	456	9	24	4	9	3
Grow to Existing Year	0	3	11	1	9	1	47	1	2	0	1	0
2021 Approved Development	0	15	8	3	6	0	20	0	28	0	0	0
2021 Existing Traffic	2	52	123	13	101	14	523	10	54	4	10	3
Growth Factor (0.05 per year)	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026 Background Growth	1	14	34	4	28	4	144	3	15	1	3	1
Approved Development												
2024 Approved Development	0	423	298	12	74	196	359	0	34	0	0	0
2026 Approved Development	0	132	38	0	37	0	10	0	0	0	0	0
Total AD Traffic	0	555	336	12	111	196	369	0	34	0	0	0
2026 Background Traffic	3	621	493	29	240	214	1036	13	103	5	13	4
Project Traffic												
Percent Assignment Inbound	0%	0%	5%	10%	0%	0%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	0	6	13	0	0	0	0	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	5%	0%	10%	0%	0%	0%
Outbound Project Traffic	0	0	0	0	0	0	6	0	12	0	0	0
Total Project Traffic	0	0	6	13	0	0	6	0	12	0	0	0
2026 Buildout Total	3	621	499	42	240	214	1042	13	115	5	13	4
Percent Impact (Approach)		0.5%			2.6%			1.5%			0.0%	
Overall Percent Impact	1.3%											

SCHOOL PM PEAK HOUR
PM PHF = 0.94

Weighted Buildout PHF:	0.94	0.94	0.94	0.91	0.94	0.94	0.94	0.94	0.89	0.94	0.94	0.94
	Old Holly Springs Apex Rd			Bennett Knoll Pkwy			Old Holly Springs Apex Rd/Woodlark			Woodlark Ln		
	Eastbound			Westbound			Northbound			Southbound		
Description	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019 Traffic Count	5	137	618	85	52	1	154	2	35	10	7	3
Count Balancing	0	0	-461	-63	0	0	0	0	0	0	-5	0
2021 Approved Development	0	11	24	28	16	0	11	0	7	0	0	0
2021 Existing Traffic	5	148	181	50	68	1	165	2	42	10	2	3
Growth Factor (0.05 per year)	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026 Background Growth	1	41	50	14	19	0	46	1	12	3	1	1
Approved Development												
2024 Approved Development	0	145	188	39	201	0	123	0	22	0	0	0
2026 Approved Development	0	58	16	0	103	0	29	0	0	0	0	0
Total AD Traffic	0	203	204	39	304	0	152	0	22	0	0	0
2026 Background Traffic	6	392	435	103	391	1	363	3	76	13	3	4
Project Traffic												
Percent Assignment Inbound	0%	0%	5%	10%	0%	0%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic	0	0	4	7	0	0	0	0	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	5%	0%	10%	0%	0%	0%
Outbound Project Traffic	0	0	0	0	0	0	4	0	9	0	0	0
Total Project Traffic	0	0	4	7	0	0	4	0	9	0	0	0
2026 Buildout Total	6	392	439	110	391	1	367	3	85	13	3	4
Percent Impact (Approach)		0.5%			1.4%			2.9%			0.0%	
Overall Percent Impact	1.3%											

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Full Access Site Driveway
Ct. Date	7/20/2021 and Balanced with New Hill @ OHSA
N/S Street:	Socratic Way
E/W Street:	New Hill Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR													
AM PHF = 0.59 (Non-School), 0.50 (School)													
Weighted Background PHF:		0.53	0.62		0.62	0.48				0.48		0.48	
Weighted Buildout PHF:		0.52	0.61		0.62	0.49				0.48		0.49	
Description		New Hill Road			New Hill Road			Socratic Way			Socratic Way		
		Eastbound			Westbound			Northbound			Southbound		
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2021	Traffic Volumes	53	0	0	0	0	215	0	0	0	50	0	222
	Count Balancing	0	324	0	0	167	0	0	0	0	0	0	0
	2021 Approved Development	0	79	0	0	28	0	0	0	0	0	0	0
2021	Existing Traffic	53	403	0	0	195	215	0	0	0	50	0	222
	Growth Factor (0.05 per year)	0.051	0.276	0.276	0.276	0.276	0.051	0.276	0.276	0.276	0.051	0.276	0.051
2026	Background Growth	3	111	0	0	54	11	0	0	0	3	0	11
	Approved Development												
	2024 Approved Development	0	260	0	0	261	0	0	0	0	0	0	0
	2026 Approved Development	0	5	0	0	19	0	0	0	0	0	0	0
	Total AD Traffic	0	265	0	0	280	0	0	0	0	0	0	0
2026	Background Traffic	56	779	0	0	529	226	0	0	0	53	0	233
	Project Traffic												
	Percent Assignment Inbound	15%	0%	0%	0%	0%	85%	0%	0%	0%	0%	0%	0%
	Inbound Project Traffic	19	0	0	0	0	108	0	0	0	0	0	0
	Percent Assignment Outbound	0%	85%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
	Outbound Project Traffic	0	103	0	0	0	0	0	0	0	0	0	121
	Total Project Traffic	19	103	0	0	0	108	0	0	0	0	0	121
2026	Buildout Total	75	882	0	0	529	334	0	0	0	53	0	354
	Percent Impact (Approach)		12.7%			12.5%		-				29.7%	
Overall Percent Impact		15.8%											

SCHOOL PM PEAK HOUR													
PM PHF = 0.76 (Non-School), 0.50 (School)													
Weighted Background PHF:		0.42	0.91		0.68	0.39				0.55		0.50	
Weighted Buildout PHF:		0.45	0.88		0.68	0.43				0.55		0.50	
Description		New Hill Road			New Hill Road			Socratic Way			Socratic Way		
		Eastbound			Westbound			Northbound			Southbound		
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2021	Traffic Count	24	362	0	0	244	100	0	0	0	62	0	133
	Count Balancing	0	0	0	0	44	0	0	0	0	0	0	0
	2021 Approved Development	0	52	0	0	87	0	0	0	0	0	0	0
2021	Existing Traffic	24	414	0	0	375	100	0	0	0	62	0	133
Growth Factor (0.05 per year)		0.051	0.276	0.276	0.276	0.276	0.051	0.276	0.276	0.276	0.051	0.276	0.051
2026	Background Growth	1	114	0	0	104	5	0	0	0	3	0	7
Approved Development													
	2024 Approved Development	0	277	0	0	296	0	0	0	0	0	0	0
	2026 Approved Development	0	14	0	0	8	0	0	0	0	0	0	0
Total AD Traffic		0	291	0	0	304	0	0	0	0	0	0	0
2026	Background Traffic	25	819	0	0	783	105	0	0	0	65	0	140
Project Traffic													
	Percent Assignment Inbound	15%	0%	0%	0%	0%	85%	0%	0%	0%	0%	0%	0%
	Inbound Project Traffic	12	0	0	0	0	67	0	0	0	0	0	0
	Percent Assignment Outbound	0%	85%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
	Outbound Project Traffic	0	73	0	0	0	0	0	0	0	0	0	85
Total Project Traffic		12	73	0	0	0	67	0	0	0	0	0	85
2026	Buildout Total	37	892	0	0	783	172	0	0	0	65	0	225
Percent Impact (Approach)			9.1%			7.0%		-				29.3%	
Overall Percent Impact		10.9%											

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Full Access Site Driveway
Ct. Date	3/5/2019 & 5/15/2019
N/S Street:	Green Oaks Parkway
E/W Street:	New Hill Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.92

Weighted Buildout PHF:		0.92	0.91	0.92	0.50	0.92	0.91	0.88	0.92	0.92	0.92	0.88	0.92	0.92	
		New Hill Road Eastbound			New Hill Road Westbound				Green Oaks Parkway Northbound				Green Oaks Parkway Southbound		
Description		Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	Left	Through	Right
2019	Traffic Volumes	6	158	75	0	100	101	105	0	44	29	27	112	37	8
	Grow to Existing Year	1	16	8	0	10	10	11	0	5	3	3	11	4	1
2021	Approved Development	0	27	8	0	0	11	1	0	3	0	0	1	0	0
2021	Existing Traffic	7	201	91	0	110	122	117	0	52	32	30	124	41	9
Growth Factor (0.05 per year)		0.000	0.276	0.276	0.276	0.276	0.276	0.000	0.276	0.276	0.000	0.276	0.000	0.000	0.000
2026	Background Growth	0	56	25	0	30	34	0	0	14	0	8	0	0	0
Approved Development															
	2024 Approved Development	35	223	61	0	66	187	1	0	17	0	15	0	3	46
	2026 Approved Development	0	5	0	0	0	19	0	0	0	0	0	0	0	0
Total AD Traffic		35	228	61	0	66	206	1	0	17	0	15	0	3	46
2026	Background Traffic	42	485	177	0	206	362	118	0	83	32	53	124	44	55
Project Traffic															
Percent Assignment Inbound		0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Inbound Project Traffic		0	6	0	0	0	0	0	0	0	0	0	13	0	0
Percent Assignment Outbound		0%	0%	0%	85%	0%	5%	10%	0%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic		0	0	0	103	0	6	12	0	0	0	0	0	0	0
Total Project Traffic		0	6	0	103	0	6	12	0	0	0	0	13	0	0
2026	Buildout Total	42	491	177	103	206	368	130	0	83	32	53	137	44	55
Percent Impact (Approach)			0.8%			15.0%				0.0%				5.5%	
Overall Percent Impact		7.3%													

SCHOOL PM PEAK HOUR
PM PHF = 0.73

Weighted Buildout PHF:		0.73	0.73	0.73	0.50	0.73	0.73	0.69	0.73	0.73	0.73	0.70	0.73	0.73	
Description		New Hill Road Eastbound			New Hill Road Westbound				Green Oaks Parkway Northbound				Green Oaks Parkway Southbound		
		Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	Left	Through	Right
2019	Traffic Count	78	25	7	0	50	42	35	0	11	99	59	59	115	111
	Grow to Existing Year	8	3	1	0	5	4	4	0	1	10	6	6	12	11
2021	Approved Development	0	20	6	0	0	29	1	0	9	0	0	2	0	0
2021	Existing Traffic	78	45	13	0	50	71	36	0	20	99	59	61	115	111
	Growth Factor (0.05 per year)	0.000	0.276	0.276	0.276	0.276	0.276	0.000	0.276	0.276	0.000	0.276	0.000	0.000	0.000
2026	Background Growth	0	12	4	0	14	20	0	0	6	0	16	0	0	0
Approved Development															
	2024 Approved Development	5	215	37	0	17	254	1	0	59	3	48	1	1	0
	2026 Approved Development	0	14	0	0	0	8	0	0	0	0	0	0	0	0
Total AD Traffic		5	229	37	0	17	262	1	0	59	3	48	1	1	0
2026	Background Traffic	83	286	54	0	81	353	37	0	85	102	123	62	116	111
Project Traffic															
Percent Assignment Inbound		0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Inbound Project Traffic		0	4	0	0	0	0	0	0	0	0	0	8	0	0
Percent Assignment Outbound		0%	0%	0%	85%	0%	5%	10%	0%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic		0	0	0	73	0	4	8	0	0	0	0	0	0	0
Total Project Traffic		0	4	0	73	0	4	8	0	0	0	0	8	0	0
2026	Buildout Total	83	290	54	73	81	357	45	0	85	102	123	70	116	111
	Percent Impact (Approach)		0.9%			15.3%				0.0%				2.7%	
Overall Percent Impact		6.1%													

\\kimley-horn.com\se_dur\al_tpto\traffic\011822014 thales holly springs\4 - analysis\revised_thalesexpansionhollysprings-tiadata (45 min stagger).xls\int. #8

2/1/22

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Right-Out Only Site Driveway
Ct. Date	5/30/2018 & 5/15/2019
N/S Street:	NC 55 Bypass
E/W Street:	New Hill Road/Holly Springs Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.93

Weighted Buildout PHF:				0.89			0.92			0.91			0.93			0.88			0.93			0.93			0.90			
Description		New Hill Road			Holly Springs Road			NC 55 Bypass			NC 55 Bypass																	
		Eastbound			Westbound			Northbound			Southbound																	
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right			
2019	Traffic Volumes	0	0	227	0	0	1036	410	2383	167	150	1168	313															
	Grow to Existing Year	0	0	23	0	0	106	42	244	17	15	120	32															
	2021 Approved Development	0	0	58	0	0	4	16	36	4	0	12	12															
2021	Existing Traffic	0	0	308	0	0	1146	468	2663	188	165	1300	357															
	Growth Factor (0.05 per year)	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276															
2026	Background Growth	0	0	85	0	0	317	129	736	52	46	359	99															
	Approved Development																											
	2024 Approved Development	0	0	416	0	0	127	289	206	11	78	167	147															
	2026 Approved Development	0	0	19	0	0	0	5	21	0	0	75	0															
	Total AD Traffic	0	0	435	0	0	127	294	227	11	78	242	147															
2026	Background Traffic	0	0	828	0	0	1590	891	3626	251	289	1901	603															
	Project Traffic																											
	Percent Assignment Inbound	0%	0%	0%	0%	0%	30%	30%	0%	0%	0%	0%	40%															
	Inbound Project Traffic	0	0	0	0	0	38	38	0	0	0	0	51															
	Percent Assignment Outbound	0%	0%	70%	0%	0%	0%	0%	10%	30%	0%	0%	0%															
	Outbound Project Traffic	0	0	85	0	0	0	0	12	36	0	0	0															
	Total Project Traffic	0	0	85	0	0	38	38	12	36	0	0	51															
	Traffic Diversions	0	0	0	0	0	0	0	0	0	0	0	0															
2026	Buildout Total	0	0	913	0	0	1628	929	3638	287	289	1901	654															
	Percent Impact (Approach)	9.3%			2.3%			1.8%			1.8%																	
Overall Percent Impact		2.5%																										

SCHOOL PM PEAK HOUR
PM PHF = 0.92

Weighted Buildout PHF:		0.90			0.90			0.90			0.92			0.89			0.92			0.92			0.90		
		New Hill Road Eastbound			Holly Springs Road Westbound			NC 55 Bypass Northbound			NC 55 Bypass Southbound														
Description		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right			
2018	Traffic Count	0	0	451	0	0	360	211	1111	207	178	1707	313												
	Grow to Existing Year	0	0	71	0	0	57	33	175	33	28	269	49												
	2021 Approved Development	0	0	52	0	0	9	27	18	14	0	8	34												
2021	Existing Traffic	0	0	574	0	0	426	271	1304	254	206	1984	396												
Growth Factor (0.05 per year)		0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276												
2026	Background Growth	0	0	159	0	0	118	75	360	70	57	548	109												
Approved Development																									
2024 Approved Development		0	0	266	0	0	23	64	275	62	0	93	162												
2026 Approved Development		0	0	8	0	0	0	15	59	0	0	33	0												
Total AD Traffic		0	0	274	0	0	23	79	334	62	0	126	162												
2026	Background Traffic	0	0	1007	0	0	567	425	1998	386	263	2658	667												
Project Traffic																									
Percent Assignment Inbound		0%	0%	0%	0%	0%	30%	30%	0%	0%	0%	0%	40%												
Inbound Project Traffic		0	0	0	0	0	24	24	0	0	0	0	32												
Percent Assignment Outbound		0%	0%	70%	0%	0%	0%	0%	10%	30%	0%	0%	0%												
Outbound Project Traffic		0	0	60	0	0	0	0	9	25	0	0	0												
Total Project Traffic		0	0	60	0	0	24	24	9	25	0	0	32												
Traffic Diversions		0	0	0	0	0	0	0	0	0	0	0	0												
2026	Buildout Total	0	0	1067	0	0	591	449	2007	411	263	2658	699												
Percent Impact (Approach)		5.6%			4.1%			2.0%			0.9%														
Overall Percent Impact		2.1%																							

INTERSECTION ANALYSIS SHEET

Project: Thales Academy Expansion Holly Springs
Location: Holly Springs, NC
Scenario: Right-Out Only Site Driveway
Ct. Date: 5/15/2019 and 6/5/2019
N/S Street: NC 55 Bypass
E/W Street: U-Turn North of W. Holly Springs Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.91

Weighted Buildout PHF:

Description	U-Turn North of W. Holly Springs Eastbound			U-Turn North of W. Holly Springs Westbound			NC 55 Bypass Northbound			NC 55 Bypass Southbound		
	Left	Through	Right	Left	Through	Right	U-Turn	Through	Right	Left	Through	Right
2019 Traffic Volumes	0	0	0	0	0	0	285	3134	0	0	1346	0
Grow to Existing Year	0	0	0	0	0	0	29	321	0	0	138	0
2021 Approved Development	0	0	0	0	0	0	3	37	0	0	21	0
2021 Existing Traffic	0	0	0	0	0	0	317	3492	0	0	1505	0
Growth Factor (0.05 per year)	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026 Background Growth	0	0	0	0	0	0	88	965	0	0	416	0
Approved Development												
2024 Approved Development	0	0	0	0	0	0	40	293	0	0	352	0
2026 Approved Development	0	0	0	0	0	0	0	21	0	0	75	0
Total AD Traffic	0	0	0	0	0	0	40	314	0	0	427	0
2026 Background Traffic	0	0	0	0	0	0	445	4771	0	0	2348	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%	10%	0%
Inbound Project Traffic	0	0	0	0	0	0	38	0	0	0	13	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	0	0	0	0	12	0	0	0	0
Total Project Traffic	0	0	0	0	0	0	38	12	0	0	13	0
Traffic Diversions	0	0	0	0	0	0	0	0	0	0	0	0
2026 Buildout Total	0	0	0	0	0	0	483	4783	0	0	2361	0
Percent Impact (Approach)	-	-	-	-	-	-	0.9%			0.6%		
Overall Percent Impact	0.8%											

SCHOOL PM PEAK HOUR
PM PHF = 0.91

Weighted Buildout PHF:

Description	U-Turn North of W. Holly Springs Eastbound			U-Turn North of W. Holly Springs Westbound			NC 55 Bypass Northbound			NC 55 Bypass Southbound		
	Left	Through	Right	Left	Through	Right	U-Turn	Through	Right	Left	Through	Right
2019 Traffic Count	0	0	0	0	0	0	236	1225	0	0	0	0
Grow to Existing Year	0	0	0	0	0	0	24	126	0	0	2284	0
2021 Approved Development	0	0	0	0	0	0	7	20	0	0	36	0
2021 Existing Traffic	0	0	0	0	0	0	267	1371	0	0	2320	0
Growth Factor (0.05 per year)	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026 Background Growth	0	0	0	0	0	0	74	379	0	0	641	0
Approved Development												
2024 Approved Development	0	0	0	0	0	0	8	290	0	0	246	0
2026 Approved Development	0	0	0	0	0	0	0	59	0	0	33	0
Total AD Traffic	0	0	0	0	0	0	8	349	0	0	279	0
2026 Background Traffic	0	0	0	0	0	0	349	2099	0	0	3240	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%	10%	0%
Inbound Project Traffic	0	0	0	0	0	0	24	0	0	0	8	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%
Outbound Project Traffic	0	0	0	0	0	0	0	9	0	0	0	0
Total Project Traffic	0	0	0	0	0	0	24	9	0	0	8	0
Traffic Diversions	0	0	0	0	0	0	0	0	0	0	0	0
2026 Buildout Total	0	0	0	0	0	0	373	2108	0	0	3248	0
Percent Impact (Approach)	-	-	-	-	-	-	1.3%			0.2%		
Overall Percent Impact	0.7%											

\\kimley-horn.com\se_dur\ral_tpto_traffic\011822014_thales_holly_springs\t4 - analysis\revised_thalesexpansionhollysprings-tiadata_right-out only (45 min stagger).xls\int. #3

2/1/22

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Right-Out Only Site Driveway
Ct. Date	5/15/2019 and 6/5/2019
N/S Street:	NC 55 Bypass
E/W Street:	U-Turn South of New Hill Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.94

Weighted Buildout PHF:

Description	U-Turn South of New Hill Road Eastbound			U-Turn South of New Hill Road Westbound			NC 55 Bypass Northbound			NC 55 Bypass Southbound		
	Left Through Right			Left Through Right			Left Through Right			U-Turn Through Right		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	U-Turn	Through	Right
2019 Traffic Volumes	0	0	0	0	0	0	0	2649	0	171	1083	0
Grow to Existing Year	0	0	0	0	0	0	0	272	0	18	111	0
2021 Approved Development	0	0	0	0	0	0	0	19	0	37	33	0
2021 Existing Traffic	0	0	0	0	0	0	0	2940	0	226	1227	0
Growth Factor (0.05 per year)	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026 Background Growth	0	0	0	0	0	0	0	812	0	62	339	0
Approved Development												
2024 Approved Development	0	0	0	0	0	0	0	337	0	169	415	0
2026 Approved Development	0	0	0	0	0	0	0	26	0	0	94	0
Total AD Traffic	0	0	0	0	0	0	0	363	0	169	509	0
2026 Background Traffic	0	0	0	0	0	0	0	4115	0	457	2075	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	38	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	30%	0%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	48	37	0
Total Project Traffic	0	0	0	0	0	0	0	38	0	48	37	0
Traffic Diversions	0	0	0	0	0	0	0	0	0	0	0	0
2026 Buildout Total	0	0	0	0	0	0	0	4153	0	505	2112	0
Percent Impact (Approach)	-	-	-	-	-	-	-	0.9%	-	-	3.2%	-
Overall Percent Impact	1.8%											

SCHOOL PM PEAK HOUR
PM PHF = 0.89

Weighted Buildout PHF:

Description	U-Turn South of New Hill Road Eastbound			U-Turn South of New Hill Road Westbound			NC 55 Bypass Northbound			NC 55 Bypass Southbound		
	Left Through Right			Left Through Right			Left Through Right			U-Turn Through Right		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	U-Turn	Through	Right
2019 Traffic Count	0	0	0	0	0	0	0	1347	0	235	1959	0
Grow to Existing Year	0	0	0	0	0	0	0	138	0	24	201	0
2021 Approved Development	0	0	0	0	0	0	0	32	0	27	35	0
2021 Existing Traffic	0	0	0	0	0	0	0	1517	0	286	2195	0
Growth Factor (0.05 per year)	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026 Background Growth	0	0	0	0	0	0	0	419	0	79	606	0
Approved Development												
2024 Approved Development	0	0	0	0	0	0	0	173	0	227	131	0
2026 Approved Development	0	0	0	0	0	0	0	74	0	0	41	0
Total AD Traffic	0	0	0	0	0	0	0	247	0	227	172	0
2026 Background Traffic	0	0	0	0	0	0	0	2183	0	592	2973	0
Project Traffic												
Percent Assignment Inbound	0%	0%	0%	0%	0%	0%	0%	30%	0%	0%	0%	0%
Inbound Project Traffic	0	0	0	0	0	0	0	24	0	0	0	0
Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	30%	0%
Outbound Project Traffic	0	0	0	0	0	0	0	0	0	34	26	0
Total Project Traffic	0	0	0	0	0	0	0	24	0	34	26	0
Traffic Diversions	0	0	0	0	0	0	0	0	0	0	0	0
2026 Buildout Total	0	0	0	0	0	0	0	2207	0	626	2999	0
Percent Impact (Approach)	-	-	-	-	-	-	-	1.1%	-	-	1.7%	-
Overall Percent Impact	1.4%											

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Right-Out Only Site Driveway
Ct. Date	5/21/2019 & 7/20/2021
N/S Street:	Old Holly Springs Apex Road
E/W Street:	New Hill Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.90

Weighted Buildout PHF:		0.88	0.84		0.85	0.90		0.90		0.86			
		New Hill Road			New Hill Road			Old Holly Springs Apex Road			Old Holly Springs Apex Road		
		Eastbound			Westbound			Northbound			Southbound		
Description		Left	Through	Right	U-Turn	Through	Right	Left	Through	Right	Left	Through	Right
2019	Traffic Volumes	160	180	0	0	294	288	0	0	0	69	0	53
Grow to Existing Year		16	18	0	0	30	30	0	0	0	7	0	5
2021 Approved Development		31	48	0	0	20	7	0	0	0	10	0	8
2021	Existing Traffic	207	246	0	0	344	325	0	0	0	86	0	66
Growth Factor (0.05 per year)		0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026	Background Growth	57	68	0	0	95	90	0	0	0	24	0	18
Approved Development													
2024 Approved Development		122	138	0	0	204	232	0	0	0	278	0	57
2026 Approved Development		5	0	0	0	0	5	0	0	0	19	0	19
Total AD Traffic		127	138	0	0	204	237	0	0	0	297	0	76
2026	Background Traffic	391	452	0	0	643	652	0	0	0	407	0	160
Project Traffic													
Percent Assignment Inbound		0%	0%	0%	0%	70%	0%	0%	0%	0%	0%	0%	15%
Inbound Project Traffic		0	0	0	0	89	0	0	0	0	0	0	19
Percent Assignment Outbound		15%	70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic		18	85	0	0	0	0	0	0	0	0	0	0
Total Project Traffic		18	85	0	0	89	0	0	0	0	0	0	19
Traffic Diversions		0	0	0	0	0	0	0	0	0	0	0	0
2026	Buildout Total	409	537	0	0	732	652	0	0	0	407	0	179
Percent Impact (Approach)			10.9%			6.4%		-			3.2%		
Overall Percent Impact		7.2%											

SCHOOL PM PEAK HOUR
PM PHF = 0.89

Weighted Buildout PHF:		0.87	0.86		0.86	0.89		0.89	0.88				
		New Hill Road <u>Eastbound</u>			New Hill Road <u>Westbound</u>			Old Holly Springs Apex Road <u>Northbound</u>			Old Holly Springs Apex Road <u>Southbound</u>		
Description		Left	Through	Right	U-Turn	Through	Right	Left	Through	Right	Left	Through	Right
2021	Traffic Count	101	300	0	0	313	127	0	0	0	105	0	75
Grow to Existing Year		0	0	0	0	0	0	0	0	0	0	0	0
2021 Approved Development		13	39	0	0	50	11	0	0	0	13	0	37
2021	Existing Traffic	114	339	0	0	363	138	0	0	0	118	0	112
Growth Factor (0.05 per year)		0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026	Background Growth	31	94	0	0	100	38	0	0	0	33	0	31
Approved Development													
2024 Approved Development		76	201	0	0	147	78	0	0	0	65	0	149
2026 Approved Development		14	0	0	0	0	15	0	0	0	8	0	8
Total AD Traffic		90	201	0	0	147	93	0	0	0	73	0	157
2026	Background Traffic	235	634	0	0	610	269	0	0	0	224	0	300
Project Traffic													
Percent Assignment Inbound		0%	0%	0%	0%	70%	0%	0%	0%	0%	0%	0%	15%
Inbound Project Traffic		0	0	0	0	56	0	0	0	0	0	0	11
Percent Assignment Outbound		15%	70%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic		13	60	0	0	0	0	0	0	0	0	0	0
Total Project Traffic		13	60	0	0	56	0	0	0	0	0	0	11
Traffic Diversions		0	0	0	0	0	0	0	0	0	0	0	0
2026	Buildout Total	248	694	0	0	666	269	0	0	0	224	0	311
Percent Impact (Approach)			7.7%			6.0%		-			2.1%		
Overall Percent Impact		5.8%											

\\kimley-horn.com\se_dur\ral_tpto_traffic\011822014_thales_holly_springs\t4 - analysis\revised_thalesexpansionhollysprings-tiadata_right-out only (45 min stagger).xls\int.#5

2/1/22

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Right-Out Only Site Driveway
Ct. Date	5/21/2019
N/S Street:	Old Holly Springs Apex Rd/Woodlark Ln
E/W Street:	Old Holly Springs Apex Rd/Bennett Knoll Pkwy

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.92

Weighted Buildout PHF:		0.92	0.92	0.91	0.79	0.92	0.92	0.92	0.92	0.88	0.92	0.92	0.92
		Old Holly Springs Apex Rd			Bennett Knoll Pkwy			Old Holly Springs Apex Rd/Woodlark			Woodlark Ln		
		Eastbound			Westbound			Northbound			Southbound		
Description		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019	Traffic Volumes	2	34	104	9	86	13	456	9	24	4	9	3
	Grow to Existing Year	0	3	11	1	9	1	47	1	2	0	1	0
	2021 Approved Development	0	15	8	3	6	0	20	0	28	0	0	0
2021	Existing Traffic	2	52	123	13	101	14	523	10	54	4	10	3
	Growth Factor (0.05 per year)	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026	Background Growth	1	14	34	4	28	4	144	3	15	1	3	1
Approved Development													
	2024 Approved Development	0	423	298	12	74	196	359	0	34	0	0	0
	2026 Approved Development	0	132	38	0	37	0	10	0	0	0	0	0
Total AD Traffic		0	555	336	12	111	196	369	0	34	0	0	0
2026	Background Traffic	3	621	493	29	240	214	1036	13	103	5	13	4
Project Traffic													
	Percent Assignment Inbound	0%	0%	5%	10%	0%	0%	0%	0%	0%	0%	0%	0%
	Inbound Project Traffic	0	0	6	13	0	0	0	0	0	0	0	0
	Percent Assignment Outbound	0%	0%	0%	0%	0%	0%	5%	0%	10%	0%	0%	0%
	Outbound Project Traffic	0	0	0	0	0	0	6	0	12	0	0	0
Total Project Traffic		0	0	6	13	0	0	6	0	12	0	0	0
Traffic Diversions		0	0	0	0	0	0	0	0	0	0	0	0
2026	Buildout Total	3	621	499	42	240	214	1042	13	115	5	13	4
Percent Impact (Approach)		0.5%			2.6%			1.5%			0.0%		
Overall Percent Impact		1.3%											

SCHOOL PM PEAK HOUR
PM PHF = 0.94

Weighted Buildout PHF:		0.94	0.94	0.94	0.91	0.94	0.94	0.94	0.94	0.89	0.94	0.94	0.94
		Old Holly Springs Apex Rd			Bennett Knoll Pkwy			Old Holly Springs Apex Rd/Woodlark			Woodlark Ln		
		Eastbound			Westbound			Northbound			Southbound		
Description		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
2019	Traffic Count	5	137	618	85	52	1	154	2	35	10	7	3
	Count Balancing	0	0	-461	-63	0	0	0	0	0	0	-5	0
2021 Approved Development		0	11	24	28	16	0	11	0	7	0	0	0
2021	Existing Traffic	5	148	181	50	68	1	165	2	42	10	2	3
Growth Factor (0.05 per year)		0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276	0.276
2026	Background Growth	1	41	50	14	19	0	46	1	12	3	1	1
Approved Development													
2024 Approved Development		0	145	188	39	201	0	123	0	22	0	0	0
2026 Approved Development		0	58	16	0	103	0	29	0	0	0	0	0
Total AD Traffic		0	203	204	39	304	0	152	0	22	0	0	0
2026	Background Traffic	6	392	435	103	391	1	363	3	76	13	3	4
Project Traffic													
Percent Assignment Inbound		0%	0%	5%	10%	0%	0%	0%	0%	0%	0%	0%	0%
Inbound Project Traffic		0	0	4	7	0	0	0	0	0	0	0	0
Percent Assignment Outbound		0%	0%	0%	0%	0%	0%	5%	0%	10%	0%	0%	0%
Outbound Project Traffic		0	0	0	0	0	0	4	0	9	0	0	0
Total Project Traffic		0	0	4	7	0	0	4	0	9	0	0	0
Traffic Diversions		0	0	0	0	0	0	0	0	0	0	0	0
2026	Buildout Total	6	392	439	110	391	1	367	3	85	13	3	4
Percent Impact (Approach)		0.5%			1.4%			2.9%			0.0%		
Overall Percent Impact		1.3%											

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Right-Out Only Site Driveway
Ct. Date:	7/20/2021 and Balanced with New Hill @ OHSA
N/S Street:	Socratic Way
E/W Street:	New Hill Road

	AM In	AM Out	PM In	PM Out
Net New Trips:	127	121	79	85
Pass-By Trips:	0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR											
AM PHF = 0.59 (Non-School), 0.50 (School)											
Weighted Background PHF:	0.53	0.62		0.62	0.48				0.48		0.48
Weighted Buildout PHF:	0.52	0.60		0.62	0.49				#DIV/0!		0.49
Description	New Hill Road Eastbound			New Hill Road Westbound			Socratic Way Northbound			Socratic Way Southbound	
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through
2021 Traffic Volumes	53	0	0	0	0	215	0	0	0	50	0
Count Balancing	0	324	0	0	167	0	0	0	0	0	0
2021 Approved Development	0	79	0	0	28	0	0	0	0	0	0
2021 Existing Traffic	53	403	0	0	195	215	0	0	0	50	0
Growth Factor (0.05 per year)	0.051	0.276	0.276	0.276	0.276	0.051	0.276	0.276	0.276	0.051	0.276
2026 Background Growth	3	111	0	0	54	11	0	0	0	3	0
Approved Development											
2024 Approved Development	0	260	0	0	261	0	0	0	0	0	0
2026 Approved Development	0	5	0	0	19	0	0	0	0	0	0
Total AD Traffic	0	265	0	0	280	0	0	0	0	0	0
2026 Background Traffic	56	779	0	0	529	226	0	0	0	53	0
Project Traffic											
Percent Assignment Inbound	15%	0%	0%	0%	0%	85%	0%	0%	0%	0%	0%
Inbound Project Traffic	19	0	0	0	0	108	0	0	0	0	0
Percent Assignment Outbound	0%	85%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Outbound Project Traffic	0	103	0	0	0	0	0	0	0	0	121
Total Project Traffic	19	103	0	0	0	108	0	0	0	0	121
Traffic Diversions	0	53	0	0	0	0	0	0	0	-53	53
2026 Buildout Total	75	935	0	0	529	334	0	0	0	0	407
Percent Impact (Approach)		12.1%			12.5%		-			29.7%	
Overall Percent Impact 15.4%											

SCHOOL PM PEAK HOUR											
PM PHF = 0.76 (Non-School), 0.50 (School)											
Weighted Background PHF:	0.42	0.91		0.68	0.39					0.55	0.50
Weighted Buildout PHF:	0.45	0.85		0.68	0.43					#DIV/0!	0.51
Description	New Hill Road Eastbound			New Hill Road Westbound			Socratic Way Northbound			Socratic Way Southbound	
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through
2021 Traffic Count	24	362	0	0	244	100	0	0	0	62	0
Count Balancing	0	0	0	0	44	0	0	0	0	0	0
2021 Approved Development	0	52	0	0	87	0	0	0	0	0	0
2021 Existing Traffic	24	414	0	0	375	100	0	0	0	62	0
Growth Factor (0.05 per year)	0.051	0.276	0.276	0.276	0.276	0.051	0.276	0.276	0.276	0.051	0.276
2026 Background Growth	1	114	0	0	104	5	0	0	0	3	0
Approved Development											
2024 Approved Development	0	277	0	0	296	0	0	0	0	0	0
2026 Approved Development	0	14	0	0	8	0	0	0	0	0	0
Total AD Traffic	0	291	0	0	304	0	0	0	0	0	0
2026 Background Traffic	25	819	0	0	783	105	0	0	0	65	0
Project Traffic											
Percent Assignment Inbound	15%	0%	0%	0%	0%	85%	0%	0%	0%	0%	0%
Inbound Project Traffic	12	0	0	0	0	67	0	0	0	0	0
Percent Assignment Outbound	0%	85%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Outbound Project Traffic	0	73	0	0	0	0	0	0	0	0	85
Total Project Traffic	12	73	0	0	0	67	0	0	0	0	85
Traffic Diversions	0	65	0	0	0	0	0	0	0	-65	65
2026 Buildout Total	37	957	0	0	783	172	0	0	0	0	290
Percent Impact (Approach)		8.6%			7.0%		-			29.3%	
Overall Percent Impact 10.6%											

INTERSECTION ANALYSIS SHEET

Project:	Thales Academy Expansion Holly Springs
Location:	Holly Springs, NC
Scenario:	Right-Out Only Site Driveway
Ct. Date	3/5/2019 & 5/15/2019
N/S Street:	Green Oaks Parkway
E/W Street:	New Hill Road

AM In	AM Out	PM In	PM Out
Net New Trips: 127	121	79	85
Pass-By Trips: 0	0	0	0

Annual Growth Rate:	5.0%	Existing Year:	2021
Growth Factor:	0.276282	Buildout Year:	2026

AM PEAK HOUR
AM PHF = 0.92

Weighted Buildout PHF:		0.92	0.91	0.92	0.49	0.92	0.91	0.88	0.92	0.92	0.92	0.88	0.92	0.92	
		New Hill Road Eastbound			New Hill Road Westbound			Green Oaks Parkway Northbound				Green Oaks Parkway Southbound			
Description		Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	Left	Through	Right
2019	Traffic Volumes	6	158	75	0	100	101	105	0	44	29	27	112	37	8
	Grow to Existing Year	1	16	8	0	10	10	11	0	5	3	3	11	4	1
	2021 Approved Development	0	27	8	0	0	11	1	0	3	0	0	1	0	0
2021	Existing Traffic	7	201	91	0	110	122	117	0	52	32	30	124	41	9
Growth Factor (0.05 per year)		0.000	0.276	0.276	0.276	0.276	0.276	0.000	0.276	0.276	0.000	0.276	0.000	0.000	0.000
2026	Background Growth	0	56	25	0	30	34	0	0	14	0	8	0	0	0
Approved Development															
	2024 Approved Development	35	223	61	0	66	187	1	0	17	0	15	0	3	46
	2026 Approved Development	0	5	0	0	0	19	0	0	0	0	0	0	0	0
Total AD Traffic		35	228	61	0	66	206	1	0	17	0	15	0	3	46
2026	Background Traffic	42	485	177	0	206	362	118	0	83	32	53	124	44	55
Project Traffic															
Percent Assignment Inbound		0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Inbound Project Traffic		0	6	0	0	0	0	0	0	0	0	0	13	0	0
Percent Assignment Outbound		0%	0%	0%	85%	0%	5%	10%	0%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic		0	0	0	103	0	6	12	0	0	0	0	0	0	0
Total Project Traffic		0	6	0	103	0	6	12	0	0	0	0	13	0	0
Traffic Diversions		0	0	0	53	0	0	0	0	0	0	0	0	0	0
2026	Buildout Total	42	491	177	156	206	368	130	0	83	32	53	137	44	55
Percent Impact (Approach)			0.8%				14.1%			0.0%				5.5%	
Overall Percent Impact		7.1%													

SCHOOL PM PEAK HOUR
PM PHF = 0.73

Weighted Buildout PHF:		0.73	0.73	0.73	0.52	0.73	0.73	0.69	0.73	0.73	0.73	0.70	0.73	0.73	
		New Hill Road Eastbound			New Hill Road Westbound				Green Oaks Parkway Northbound				Green Oaks Parkway Southbound		
Description		Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	Left	Through	Right
2019	Traffic Count	78	25	7	0	50	42	35	0	11	99	59	59	115	111
	Grow to Existing Year	8	3	1	0	5	4	4	0	1	10	6	6	12	11
2021	Approved Development	0	20	6	0	0	29	1	0	9	0	0	2	0	0
2021	Existing Traffic	78	45	13	0	50	71	36	0	20	99	59	61	115	111
Growth Factor (0.05 per year)		0.000	0.276	0.276	0.276	0.276	0.276	0.000	0.276	0.276	0.000	0.276	0.000	0.000	0.000
2026	Background Growth	0	12	4	0	14	20	0	0	6	0	16	0	0	0
Approved Development															
2024	Approved Development	5	215	37	0	17	254	1	0	59	3	48	1	1	0
2026	Approved Development	0	14	0	0	0	8	0	0	0	0	0	0	0	0
Total AD Traffic		5	229	37	0	17	262	1	0	59	3	48	1	1	0
2026	Background Traffic	83	286	54	0	81	353	37	0	85	102	123	62	116	111
Project Traffic															
Percent Assignment Inbound		0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%
Inbound Project Traffic		0	4	0	0	0	0	0	0	0	0	0	8	0	0
Percent Assignment Outbound		0%	0%	0%	85%	0%	5%	10%	0%	0%	0%	0%	0%	0%	0%
Outbound Project Traffic		0	0	0	73	0	4	8	0	0	0	0	0	0	0
Total Project Traffic		0	4	0	73	0	4	8	0	0	0	0	8	0	0
Traffic Diversions		0	0	0	65	0	0	0	0	0	0	0	0	0	0
2026	Buildout Total	83	290	54	138	81	357	45	0	85	102	123	70	116	111
Percent Impact (Approach)			0.9%				13.7%			0.0%				2.7%	
Overall Percent Impact		5.9%													

\\kimley-horn.com\se_dur\ra\tpo\traffic\011822014 thales holly springs\4 - analysis\revised_thalesexpansionhollysprings-tiadata_right-out only (45 min stagger).xls\int.#8

2/1/22

Appendix F:

Signal Warrant Analysis

Thales Academy - Holly Springs

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Holly Springs New Hill Road at Socratic Way

COUNT DATE: 20-Jul-21

INTERSECTION CONDITION: Existing

MAJOR STREET: Holly Springs New Hill Road

OF APPROACH LANES: 1

MINOR STREET: Socratic Way

OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

				MAJOR ST BOTH APPROACHES	HIGHEST HOUR MINOR ST HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
						MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B				
												MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES						500	150		750	75		400	120		600	60			
06:00 AM	TO	07:00 AM	175	4								Y	Y	Y		Y			
07:00 AM	TO	08:00 AM	540	161	Y	Y	Y		Y			Y	Y	Y					
08:00 AM	TO	09:00 AM	598	11	Y							Y							
09:00 AM	TO	10:00 AM	432	11								Y							
10:00 AM	TO	11:00 AM	465	5								Y							
11:00 AM	TO	12:00 PM	512	29	Y							Y							
12:00 PM	TO	01:00 PM	605	5	Y							Y			Y				
01:00 PM	TO	02:00 PM	555	7	Y							Y							
02:00 PM	TO	03:00 PM	596	28	Y							Y							
03:00 PM	TO	04:00 PM	660	119	Y					Y		Y		Y	Y	Y			
04:00 PM	TO	05:00 PM	677	41	Y							Y			Y				
05:00 PM	TO	06:00 PM	756	41	Y			Y				Y			Y				
06:00 PM	TO	07:00 PM	598	7	Y							Y							
07:00 PM	TO	08:00 PM	0	0															
08:00 PM	TO	09:00 PM	0	0															
09:00 PM	TO	10:00 PM	0	0															
				7,169	469	1			0			11						0	0
						8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED						4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Signal Warrant Analysis\Signal Warrant Spreadsheet - Holly Springs New Hill at Socratic - 1-31-22.xls\Existing Warrant

1/31/2022 9:27

Thales Academy - Holly Springs

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Holly Springs New Hill Road at Socratic Way

COUNT DATE: 20-Jul-21

INTERSECTION CONDITION: No-Build

MAJOR STREET: Holly Springs New Hill Road

OF APPROACH LANES: 1

MINOR STREET: Socratic Way

OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

				MAJOR ST BOTH APPROACHES	HIGHEST HOUR MINOR ST HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
						MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B				
												MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES					500	150		750	75		400	120		600	60				
06:00 AM	TO	07:00 AM	242	5															
07:00 AM	TO	08:00 AM	725	206	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y			
08:00 AM	TO	09:00 AM	792	14	Y			Y			Y		Y		Y				
09:00 AM	TO	10:00 AM	573	14	Y						Y								
10:00 AM	TO	11:00 AM	617	6	Y						Y		Y						
11:00 AM	TO	12:00 PM	678	37	Y						Y		Y						
12:00 PM	TO	01:00 PM	799	6	Y			Y			Y		Y						
01:00 PM	TO	02:00 PM	736	9	Y						Y		Y						
02:00 PM	TO	03:00 PM	791	36	Y			Y			Y		Y						
03:00 PM	TO	04:00 PM	875	152	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			
04:00 PM	TO	05:00 PM	906	53	Y			Y			Y		Y						
05:00 PM	TO	06:00 PM	1,009	52	Y			Y			Y		Y						
06:00 PM	TO	07:00 PM	797	9	Y			Y			Y		Y						
07:00 PM	TO	08:00 PM	24	0															
08:00 PM	TO	09:00 PM	22	0															
09:00 PM	TO	10:00 PM	15	0															
			9,601	599	2			1			2			2			2	0	
					8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED						4 HRS NEEDED NOT SATISFIED	1 HR NEEDED NOT SATISFIED	

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Signal Warrant Analysis\Signal Warrant Spreadsheet - Holly Springs New Hill at Socratic - 1-31-22.xls\Full No-Build Warrant

1/31/2022 9:27

Thales Academy - Holly Springs

TRAFFIC SIGNAL VOLUME WARRANT ANALYSIS

INTERSECTION NAME: Holly Springs New Hill Road at Socratic Way

COUNT DATE: 20-Jul-21

INTERSECTION CONDITION: Build

MAJOR STREET: Holly Springs New Hill Road

OF APPROACH LANES: 1

MINOR STREET: Socratic Way

OF APPROACH LANES: 1

ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000 (Y OR N): N

85TH PERCENTILE SPEED GREATER THAN 40 MPH ON MAJOR STREET (Y OR N): N

				MAJOR ST BOTH APPROACHES	HIGHEST HOUR MINOR ST HIGHEST APPROACH	WARRANT 1, Condition A			WARRANT 1, Condition B			WARRANT 1, Combination Warrant						WARRANT 2	WARRANT 3
						MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET	CONDITION A			CONDITION B				
												MAJOR STREET	MINOR STREET	BOTH MET	MAJOR STREET	MINOR STREET	BOTH MET		
THRESHOLD VALUES					500	150		750	75		400	120		600	60				
06:00 AM	TO	07:00 AM	421	5							Y								
07:00 AM	TO	08:00 AM	1,224	267	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
08:00 AM	TO	09:00 AM	1,176	14	Y			Y			Y		Y		Y				
09:00 AM	TO	10:00 AM	861	14	Y			Y			Y		Y						
10:00 AM	TO	11:00 AM	942	6	Y			Y			Y		Y						
11:00 AM	TO	12:00 PM	1,092	37	Y			Y			Y		Y						
12:00 PM	TO	01:00 PM	1,272	6	Y			Y			Y		Y						
01:00 PM	TO	02:00 PM	1,172	9	Y			Y			Y		Y						
02:00 PM	TO	03:00 PM	1,246	36	Y			Y			Y		Y						
03:00 PM	TO	04:00 PM	1,442	195	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
04:00 PM	TO	05:00 PM	1,485	53	Y			Y			Y		Y		Y				
05:00 PM	TO	06:00 PM	1,524	52	Y			Y			Y		Y						
06:00 PM	TO	07:00 PM	1,190	9	Y			Y			Y		Y						
07:00 PM	TO	08:00 PM	312	0															
08:00 PM	TO	09:00 PM	258	0															
09:00 PM	TO	10:00 PM	188	0															
				15,805	703	2			2			2						2	2
						8 HOURS NEEDED NOT SATISFIED			8 HOURS NEEDED NOT SATISFIED			8 HOURS OF BOTH COND. A AND COND. B NEEDED NOT SATISFIED						4 HRS NEEDED NOT SATISFIED	1 HR NEEDED SATISFIED

WARRANT 1 -- Eight-Hour Vehicular Volume Warrant

Condition A : Minimum Vehicular Volume

Condition B : Interruption of Continuous Traffic

Combination : Combination of Condition A and Condition B

WARRANT 2 -- Four-Hour Vehicular Volume Warrant

WARRANT 3 -- Peak Hour Warrant

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Signal Warrant Analysis\Signal Warrant Spreadsheet - Holly Springs New Hill at Socratic - 1-31-22.xls\Build Warrant

1/31/2022 9:27

Appendix G:
Synchro & SimTraffic Output:
Existing (2021)

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Existing AM (2021)
10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	308	0	468	0	0	0	0	0	1300	357
Future Volume (vph)	0	0	308	0	468	0	0	0	0	0	1300	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			0%			0%			1%	
Storage Length (ft)	750		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Flt Permitted												
Satd. Flow (perm)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)			61									137
Link Speed (mph)		35			55			55			55	
Link Distance (ft)		1787			560			1413			473	
Travel Time (s)		34.8			6.9			17.5			5.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	331	0	503	0	0	0	0	0	1398	384
Turn Type			Prot		NA						NA	Perm
Protected Phases			3		3						6	
Permitted Phases												6
Detector Phase			3		3						6	6
Switch Phase												
Minimum Initial (s)			7.0		7.0						14.0	14.0
Minimum Split (s)			31.0		31.0						39.0	39.0
Total Split (s)			29.0		29.0						46.0	46.0
Total Split (%)			38.7%		38.7%						61.3%	61.3%
Yellow Time (s)			3.0		3.0						5.1	5.1
All-Red Time (s)			4.0		4.0						1.8	1.8
Lost Time Adjust (s)			-2.0		-2.0						-1.9	-1.9
Total Lost Time (s)			5.0		5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode			None		None						C-Max	C-Max
Act Effct Green (s)			17.1		17.1						47.9	47.9
Actuated g/C Ratio			0.23		0.23						0.64	0.64
v/c Ratio			0.49		0.63						0.62	0.36
Control Delay			22.2		24.9						8.2	3.8
Queue Delay			0.0		0.0						0.0	0.0
Total Delay			22.2		24.9						8.2	3.8
LOS			C		C						A	A
Approach Delay		22.2			24.9						7.3	
Approach LOS		C			C						A	
Queue Length 50th (ft)			61		121						270	43
Queue Length 95th (ft)			93		m95						297	82
Internal Link Dist (ft)		1707			480			1333			393	
Turn Bay Length (ft)												
Base Capacity (vph)			928		1132						2251	1056
Starvation Cap Reductn			0		0						0	0
Spillback Cap Reductn			0		0						0	0
Storage Cap Reductn			0		0						0	0
Reduced v/c Ratio			0.36		0.44						0.62	0.36

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Existing AM (2021)
10/13/2021

Offset: 64 (85%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 12.6	Intersection LOS: B
Intersection Capacity Utilization 95.7%	ICU Level of Service F
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: NC 55 Bypass SB & New Hill Road



Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Existing AM (2021)
10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	165	0	0	0	1146	0	2663	188	0	0	0
Future Volume (vph)	0	165	0	0	0	1146	0	2663	188	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			-4%			0%			0%	
Storage Length (ft)	0		0	400		0	0		175	0		0
Storage Lanes	0		0	1		2	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						29			77			
Link Speed (mph)		55			35			55			55	
Link Distance (ft)		486			877			542			909	
Travel Time (s)		6.0			17.1			6.7			11.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	177	0	0	0	1232	0	2863	202	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		7				7		2				
Permitted Phases									2			
Detector Phase		7				7		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		14.0	14.0			
Minimum Split (s)		34.0				34.0		34.2	34.2			
Total Split (s)		45.0				45.0		105.0	105.0			
Total Split (%)		30.0%				30.0%		70.0%	70.0%			
Yellow Time (s)		3.0				3.0		5.2	5.2			
All-Red Time (s)		3.7				3.7		1.8	1.8			
Lost Time Adjust (s)		-1.7				-1.7		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		40.0				40.0		100.0	100.0			
Actuated g/C Ratio		0.27				0.27		0.67	0.67			
v/c Ratio		0.36				1.58		1.21	0.19			
Control Delay		41.3				302.9		117.4	2.9			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		41.3				302.9		117.4	2.9			
LOS		D				F		F	A			
Approach Delay		41.3			302.9			109.8				
Approach LOS		D			F			F				
Queue Length 50th (ft)		141				~965		~1499	21			
Queue Length 95th (ft)		m190				#1119		m804	m13			
Internal Link Dist (ft)		406			797			462			829	
Turn Bay Length (ft)									175			
Base Capacity (vph)		494				779		2359	1081			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.36				1.58		1.21	0.19			

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Existing AM (2021)
10/13/2021

Offset: 38 (25%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.58	
Intersection Signal Delay: 160.3	Intersection LOS: F
Intersection Capacity Utilization 122.0%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: NC 55 Bypass NB & W Holly Springs Road



Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Existing AM (2021)
10/13/2021

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	317	0	0	0	0	1505
Future Volume (vph)	317	0	0	0	0	1505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			3%
Storage Length (ft)	0	0		0	0	
Storage Lanes	2	0		0	0	
Taper Length (ft)	100				100	
Satd. Flow (prot)	3433	0	0	0	0	3486
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3486
Right Turn on Red	No	Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (mph)	55		55			55
Link Distance (ft)	56		443			765
Travel Time (s)	0.7		5.5			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	348	0	0	0	0	1654
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					14.0
Minimum Split (s)	15.0					22.0
Total Split (s)	27.0					48.0
Total Split (%)	36.0%					64.0%
Yellow Time (s)	3.0					4.9
All-Red Time (s)	3.9					1.0
Lost Time Adjust (s)	-1.9					-0.9
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None					C-Max
Act Effct Green (s)	13.9					51.1
Actuated g/C Ratio	0.19					0.68
v/c Ratio	0.55					0.70
Control Delay	18.8					9.7
Queue Delay	0.0					0.0
Total Delay	18.8					9.7
LOS	B					A
Approach Delay	18.8					9.7
Approach LOS	B					A
Queue Length 50th (ft)	80					206
Queue Length 95th (ft)	m43					328
Internal Link Dist (ft)	1		363			685
Turn Bay Length (ft)						
Base Capacity (vph)	1007					2377
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.35					0.70

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Existing AM (2021)
10/13/2021

Offset: 50 (67%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 11.3	Intersection LOS: B
Intersection Capacity Utilization 145.6%	ICU Level of Service H
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: NC 55 Bypass SB & Holly Springs Road U-Turn



Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Existing AM (2021)
10/13/2021

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	226	0	0	2940	0	0
Future Volume (vph)	226	0	0	2940	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			2%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	3433	0	0	3504	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	3504	0	0
Right Turn on Red	No	Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	55			55	55	
Link Distance (ft)	49			757	857	
Travel Time (s)	0.6			9.4	10.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	240	0	0	3128	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			14.0		
Minimum Split (s)	15.0			22.0		
Total Split (s)	34.0			116.0		
Total Split (%)	22.7%			77.3%		
Yellow Time (s)	3.0			5.0		
All-Red Time (s)	4.2			1.0		
Lost Time Adjust (s)	-2.2			-1.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			C-Max		
Act Effct Green (s)	17.1			122.9		
Actuated g/C Ratio	0.11			0.82		
v/c Ratio	0.62			1.09		
Control Delay	50.1			62.7		
Queue Delay	0.0			0.0		
Total Delay	50.1			62.7		
LOS	D			E		
Approach Delay	50.1			62.7		
Approach LOS	D			E		
Queue Length 50th (ft)	72			~1806		
Queue Length 95th (ft)	91			#1958		
Internal Link Dist (ft)	1			677	777	
Turn Bay Length (ft)						
Base Capacity (vph)	663			2871		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.36			1.09		

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Existing AM (2021)
10/13/2021

Offset: 10 (7%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 61.8	Intersection LOS: E
Intersection Capacity Utilization 122.7%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 4: NC 55 Bypass NB & New Hill Road U-Turn



Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Existing AM (2021)
10/13/2021

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	207	246	344	325	86	66
Future Volume (vph)	207	246	344	325	86	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	-1%		3%	
Storage Length (ft)	225			0	300	0
Storage Lanes	1			1	1	1
Taper Length (ft)	100				125	
Satd. Flow (prot)	1770	1863	1872	1591	1743	1560
Flt Permitted	0.532				0.950	
Satd. Flow (perm)	991	1863	1872	1591	1743	1560
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						73
Link Speed (mph)		35	35		35	
Link Distance (ft)		936	1787		1686	
Travel Time (s)		18.2	34.8		32.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	230	273	382	361	96	73
Turn Type	Perm	NA	NA	pm+ov	Prot	Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	60.0	60.0	60.0	25.0	25.0	25.0
Total Split (%)	70.6%	70.6%	70.6%	29.4%	29.4%	29.4%
Yellow Time (s)	3.8	3.8	3.9	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.3	3.4	3.4	3.4
Lost Time Adjust (s)	-0.7	-0.7	-0.2	-1.4	-1.4	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	None	None
Act Effct Green (s)	14.3	14.3	14.3	33.5	8.9	8.9
Actuated g/C Ratio	0.43	0.43	0.43	1.00	0.27	0.27
v/c Ratio	0.54	0.34	0.48	0.23	0.21	0.16
Control Delay	12.4	7.5	8.9	0.3	12.5	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	7.5	8.9	0.3	12.5	5.2
LOS	B	A	A	A	B	A
Approach Delay		9.7	4.7		9.4	
Approach LOS		A	A		A	
Queue Length 50th (ft)	26	28	42	0	12	0
Queue Length 95th (ft)	71	63	91	0	47	22
Internal Link Dist (ft)		856	1707		1606	
Turn Bay Length (ft)	225				300	
Base Capacity (vph)	991	1863	1872	1591	1064	981
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.15	0.20	0.23	0.09	0.07

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 33.5

Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Existing AM (2021)
10/13/2021

Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 7.1	Intersection LOS: A
Intersection Capacity Utilization 47.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: New Hill Road & Old Holly Springs Apex Rd.

 Ø2	 Ø4
60 s	25 s
 Ø6	
60 s	

Thales Academy Holly Springs

Existing AM (2021)

6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	52	123	13	101	14	523	10	54	4	10	4
Future Volume (vph)	4	52	123	13	101	14	523	10	54	4	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			3%			-4%			3%	
Storage Length (ft)	150		0	150		0	325		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1761	1659	0	1743	1802	0	1805	1661	0	1743	1761	0
Flt Permitted	0.677			0.637			0.748			0.711		
Satd. Flow (perm)	1255	1659	0	1169	1802	0	1421	1661	0	1305	1761	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		134			15			59			4	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1166			1135			1686			224	
Travel Time (s)		22.7			22.1			32.8			4.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	191	0	14	125	0	568	70	0	4	15	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	17.0	17.0		35.0	35.0		40.0	40.0		15.0	15.0	
Total Split (s)	60.0	60.0		60.0	60.0		25.0	25.0		25.0	25.0	
Total Split (%)	70.6%	70.6%		70.6%	70.6%		29.4%	29.4%		29.4%	29.4%	
Yellow Time (s)	3.8	3.8		3.7	3.7		4.1	4.1		3.7	3.7	
All-Red Time (s)	2.2	2.2		1.7	1.7		2.2	2.2		2.8	2.8	
Lost Time Adjust (s)	-1.0	-1.0		-0.4	-0.4		-1.3	-1.3		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	11.0	11.0		11.0	11.0		20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.49	0.49		0.49	0.49	
v/c Ratio	0.01	0.35		0.04	0.25		0.82	0.08		0.01	0.02	
Control Delay	11.2	7.0		11.7	12.3		22.6	2.8		5.5	4.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.2	7.0		11.7	12.3		22.6	2.8		5.5	4.9	
LOS	B	A		B	B		C	A		A	A	
Approach Delay		7.1			12.2			20.4			5.0	
Approach LOS		A			B			C			A	
Queue Length 50th (ft)	1	10		2	20		99	1		1	1	
Queue Length 95th (ft)	6	45		12	49		#255	14		3	7	
Internal Link Dist (ft)		1086			1055			1606			144	
Turn Bay Length (ft)	150			150			325					
Base Capacity (vph)	1255	1659		1169	1802		693	840		636	861	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.00	0.12		0.01	0.07		0.82	0.08		0.01	0.02	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 41

Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 16.4	Intersection LOS: B
Intersection Capacity Utilization 54.8%	ICU Level of Service A
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

 Ø2	 Ø4
60 s	25 s
 Ø6	 Ø8
60 s	25 s

Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Existing AM (2021)
10/13/2021

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	53	403	195	215	50	222
Future Volume (vph)	53	403	195	215	50	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	100			100	200	0
Storage Lanes	1			1	1	1
Taper Length (ft)	125				100	
Satd. Flow (prot)	1805	1863	3539	1615	1805	1615
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1805	1863	3539	1615	1805	1615
Link Speed (mph)		35	35		10	
Link Distance (ft)		3211	373		386	
Travel Time (s)		62.6	7.3		26.3	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.53	0.62	0.62	0.48	0.48	0.48
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	650	315	448	104	463
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 31.2%				ICU Level of Service A		
Analysis Period (min) 15						

Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Existing AM (2021)
10/13/2021

Intersection						
Int Delay, s/veh	6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	53	403	195	215	50	222
Future Vol, veh/h	53	403	195	215	50	222
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	200	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	53	62	62	48	48	48
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	100	650	315	448	104	463
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	763	0	-	0	1165	158
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	850	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	859	-	-	-	203	866
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	422	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	859	-	-	-	179	866
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	422	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.3	0		20.4		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	859	-	-	-	179	866
HCM Lane V/C Ratio	0.116	-	-	-	0.582	0.534
HCM Control Delay (s)	9.7	-	-	-	49.9	13.8
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.4	-	-	-	3.1	3.2

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Existing AM (2021)
10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	201	91	110	122	117	52	32	30	124	41	9
Future Volume (vph)	7	201	91	110	122	117	52	32	30	124	41	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		75	150		0	150		0	0		50
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	125			100			100			50		
Satd. Flow (prot)	1770	1863	1583	1770	3281	0	1703	1792	1524	1770	1812	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1770	3281	0	1703	1792	1524	1770	1812	0
Link Speed (mph)		35			35			35			20	
Link Distance (ft)		1984			3211			1999			620	
Travel Time (s)		38.6			62.6			38.9			21.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	218	99	120	260	0	57	35	33	135	55	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 40.2%												
ICU Level of Service A												
Analysis Period (min) 15												

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Existing AM (2021)
10/13/2021

Intersection												
Int Delay, s/veh	8.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	201	91	110	122	117	52	32	30	124	41	9
Future Vol, veh/h	7	201	91	110	122	117	52	32	30	124	41	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	75	150	-	-	150	-	0	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	6	6	6	2	2	2
Mvmt Flow	8	218	99	120	133	127	57	35	33	135	45	10
Major/Minor	Major1	Major2		Minor1		Minor2						
Conflicting Flow All	260	0	0	317	0	0	563	734	218	755	770	130
Stage 1	-	-	-	-	-	-	234	234	-	437	437	-
Stage 2	-	-	-	-	-	-	329	500	-	318	333	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.39	6.59	6.29	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.19	5.59	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.59	5.59	-	6.13	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.557	4.057	3.357	3.519	4.019	3.319
Pot Cap-1 Maneuver	1303	-	-	1241	-	-	415	340	810	311	330	896
Stage 1	-	-	-	-	-	-	758	702	-	569	578	-
Stage 2	-	-	-	-	-	-	649	534	-	693	643	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	1303	-	-	1241	-	-	335	305	810	252	296	896
Mov Cap-2 Maneuver	-	-	-	-	-	-	335	305	-	252	296	-
Stage 1	-	-	-	-	-	-	753	698	-	566	522	-
Stage 2	-	-	-	-	-	-	530	482	-	628	639	-
Approach	EB	WB		NB		SB						
HCM Control Delay, s	0.2	2.6		15.8		29.7						
HCM LOS				C		D						
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	335	305	810	1303	-	-	1241	-	-	252	337	
HCM Lane V/C Ratio	0.169	0.114	0.04	0.006	-	-	0.096	-	-	0.535	0.161	
HCM Control Delay (s)	17.9	18.3	9.6	7.8	-	-	8.2	-	-	34.6	17.7	
HCM Lane LOS	C	C	A	A	-	-	A	-	-	D	C	
HCM 95th %tile Q(veh)	0.6	0.4	0.1	0	-	-	0.3	-	-	2.9	0.6	

Queuing and Blocking Report

Existing AM (2021)

10/13/2021

Intersection: 1: NC 55 Bypass SB & New Hill Road

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	R	R	T	T	T	T	R
Maximum Queue (ft)	185	96	277	350	202	201	126
Average Queue (ft)	94	35	105	104	100	111	48
95th Queue (ft)	154	76	207	229	165	175	94
Link Distance (ft)		1692	225	225	279	279	279
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	750						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: NC 55 Bypass NB & W Holly Springs Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	R	R	T	T	R
Maximum Queue (ft)	195	500	837	537	545	192
Average Queue (ft)	101	498	809	509	521	77
95th Queue (ft)	176	504	824	560	533	208
Link Distance (ft)	310		791	192	192	
Upstream Blk Time (%)			65	28	31	0
Queuing Penalty (veh)			0	401	441	0
Storage Bay Dist (ft)		400				175
Storage Blk Time (%)		66	73		31	0
Queuing Penalty (veh)		379	418		59	4

Intersection: 3: NC 55 Bypass SB & Holly Springs Road U-Turn

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	62	90	201	197
Average Queue (ft)	52	73	98	73
95th Queue (ft)	67	86	181	159
Link Distance (ft)	4	4	736	736
Upstream Blk Time (%)	43	49		
Queuing Penalty (veh)	68	77		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Existing AM (2021)

10/13/2021

Intersection: 4: NC 55 Bypass NB & New Hill Road U-Turn

Movement	EB	EB	NB	NB
Directions Served	L	L	T	T
Maximum Queue (ft)	60	88	782	780
Average Queue (ft)	50	73	748	746
95th Queue (ft)	60	83	774	773
Link Distance (ft)	-1	-1	728	728
Upstream Blk Time (%)			46	37
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: New Hill Road & Old Holly Springs Apex Rd.

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	162	107	143	70	84	79
Average Queue (ft)	76	35	47	24	33	29
95th Queue (ft)	133	84	109	57	68	59
Link Distance (ft)		850	1692	1692		1585
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225				300	
Storage Blk Time (%)	0					
Queuing Penalty (veh)	0					

Intersection: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	22	87	36	82	237	65	20	31
Average Queue (ft)	2	37	8	29	129	21	2	7
95th Queue (ft)	13	70	28	63	200	50	13	27
Link Distance (ft)		1124		1094		1585	182	182
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150		150		325			
Storage Blk Time (%)		0			0			
Queuing Penalty (veh)		0			0			

Queuing and Blocking Report

Existing AM (2021)

10/13/2021

Intersection: 7: New Hill Road & Socratic Way

Movement	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (ft)	65	9	6	8	38	84	125
Average Queue (ft)	17	0	0	0	2	28	70
95th Queue (ft)	50	9	4	6	17	66	118
Link Distance (ft)		3115	300	300			294
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100				100	200	
Storage Blk Time (%)	0	0					
Queuing Penalty (veh)	0	0					

Intersection: 8: Green Oaks Pkwy. & New Hill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	23	5	10	47	7	9	63	63	63	112	86
Average Queue (ft)	2	0	0	15	0	0	24	21	21	50	31
95th Queue (ft)	12	3	5	37	7	8	51	50	50	90	67
Link Distance (ft)		1938			3115	3115		1942	1942	575	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100		75	150			150				50
Storage Blk Time (%)										10	2
Queuing Penalty (veh)										5	2

Zone Summary

Zone wide Queuing Penalty: 1853

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Existing PM (2021)
10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	574	0	271	0	0	0	0	0	1984	396
Future Volume (vph)	0	0	574	0	271	0	0	0	0	0	1984	396
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			0%			0%			1%	
Storage Length (ft)	750		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Flt Permitted												
Satd. Flow (perm)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)			27									246
Link Speed (mph)		35			55			55			55	
Link Distance (ft)		1787			560			1413			473	
Travel Time (s)		34.8			6.9			17.5			5.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	624	0	295	0	0	0	0	0	2157	430
Turn Type			Prot		NA						NA	Perm
Protected Phases			3		3						6	
Permitted Phases												6
Detector Phase			3		3						6	6
Switch Phase												
Minimum Initial (s)			7.0		7.0						14.0	14.0
Minimum Split (s)			31.0		31.0						39.0	39.0
Total Split (s)			56.0		56.0						104.0	104.0
Total Split (%)			35.0%		35.0%						65.0%	65.0%
Yellow Time (s)			3.0		3.0						5.1	5.1
All-Red Time (s)			4.0		4.0						1.8	1.8
Lost Time Adjust (s)			-2.0		-2.0						-1.9	-1.9
Total Lost Time (s)			5.0		5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode			None		None						C-Max	C-Max
Act Effct Green (s)			41.6		41.6						108.4	108.4
Actuated g/C Ratio			0.26		0.26						0.68	0.68
v/c Ratio			0.84		0.32						0.90	0.38
Control Delay			64.2		41.8						21.8	2.9
Queue Delay			0.0		0.0						0.0	0.0
Total Delay			64.2		41.8						21.8	2.9
LOS			E		D						C	A
Approach Delay		64.2			41.8						18.6	
Approach LOS		E			D						B	
Queue Length 50th (ft)			339		98						765	17
Queue Length 95th (ft)			394		105						717	m26
Internal Link Dist (ft)		1707			480			1333			393	
Turn Bay Length (ft)												
Base Capacity (vph)			902		1128						2385	1146
Starvation Cap Reductn			0		0						0	0
Spillback Cap Reductn			0		0						0	0
Storage Cap Reductn			0		0						0	0
Reduced v/c Ratio			0.69		0.26						0.90	0.38
Intersection Summary												
Area Type:	Other											
Cycle Length: 160												
Actuated Cycle Length: 160												

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\Revision\2-Existing PM (2021).syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Existing PM (2021)
10/13/2021

Offset: 31 (19%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 28.7	Intersection LOS: C
Intersection Capacity Utilization 83.3%	ICU Level of Service E
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: NC 55 Bypass SB & New Hill Road



Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Existing PM (2021)
10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	206	0	0	0	426	0	1304	254	0	0	0
Future Volume (vph)	0	206	0	0	0	426	0	1304	254	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			-4%			0%			0%	
Storage Length (ft)	0		0	400		0	0		175	0		0
Storage Lanes	0		0	1		2	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						55			266			
Link Speed (mph)		55			35			55			55	
Link Distance (ft)		486			877			542			909	
Travel Time (s)		6.0			17.1			6.7			11.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	224	0	0	0	463	0	1417	276	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		7				7		2				
Permitted Phases									2			
Detector Phase		7				7		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		14.0	14.0			
Minimum Split (s)		34.0				34.0		34.2	34.2			
Total Split (s)		35.0				35.0		45.0	45.0			
Total Split (%)		43.8%				43.8%		56.3%	56.3%			
Yellow Time (s)		3.0				3.0		5.2	5.2			
All-Red Time (s)		3.7				3.7		1.8	1.8			
Lost Time Adjust (s)		-1.7				-1.7		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		19.4				19.4		50.6	50.6			
Actuated g/C Ratio		0.24				0.24		0.63	0.63			
v/c Ratio		0.50				0.64		0.63	0.25			
Control Delay		24.0				27.3		8.7	1.5			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		24.0				27.3		8.7	1.5			
LOS		C				C		A	A			
Approach Delay		24.0			27.3			7.5				
Approach LOS		C			C			A				
Queue Length 50th (ft)		102				102		286	14			
Queue Length 95th (ft)		m100				139		228	12			
Internal Link Dist (ft)		406			797			462			829	
Turn Bay Length (ft)									175			
Base Capacity (vph)		694				1100		2240	1099			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.32				0.42		0.63	0.25			
Intersection Summary												
Area Type:	Other											
Cycle Length: 80												
Actuated Cycle Length: 80												

Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Existing PM (2021)
10/13/2021

Offset: 74 (93%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 12.9	Intersection LOS: B
Intersection Capacity Utilization 59.3%	ICU Level of Service B
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: NC 55 Bypass NB & W Holly Springs Road



Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Existing PM (2021)
10/13/2021

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	267	0	0	0	0	2320
Future Volume (vph)	267	0	0	0	0	2320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			3%
Storage Length (ft)	0	0		0	0	
Storage Lanes	2	0		0	0	
Taper Length (ft)	100				100	
Satd. Flow (prot)	3433	0	0	0	0	3486
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3486
Right Turn on Red	No	Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (mph)	55		55			55
Link Distance (ft)	56		443			765
Travel Time (s)	0.7		5.5			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	293	0	0	0	0	2549
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					14.0
Minimum Split (s)	15.0					22.0
Total Split (s)	36.0					124.0
Total Split (%)	22.5%					77.5%
Yellow Time (s)	3.0					4.9
All-Red Time (s)	3.9					1.0
Lost Time Adjust (s)	-1.9					-0.9
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None					C-Max
Act Effct Green (s)	19.9					130.1
Actuated g/C Ratio	0.12					0.81
v/c Ratio	0.69					0.90
Control Delay	54.4					16.8
Queue Delay	0.0					0.0
Total Delay	54.4					16.8
LOS	D					B
Approach Delay	54.4					16.8
Approach LOS	D					B
Queue Length 50th (ft)	143					829
Queue Length 95th (ft)	175					1159
Internal Link Dist (ft)	1		363			685
Turn Bay Length (ft)						
Base Capacity (vph)	665					2834
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.44					0.90

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Existing PM (2021)
10/13/2021

Offset: 10 (6%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 20.7	Intersection LOS: C
Intersection Capacity Utilization 109.5%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 3: NC 55 Bypass SB & Holly Springs Road U-Turn



Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Existing PM (2021)
10/13/2021

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	286	0	0	1517	0	0
Future Volume (vph)	286	0	0	1517	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			2%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	3433	0	0	3504	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	3504	0	0
Right Turn on Red	No	Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	55			55	55	
Link Distance (ft)	49			757	857	
Travel Time (s)	0.6			9.4	10.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	321	0	0	1704	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			14.0		
Minimum Split (s)	15.0			22.0		
Total Split (s)	29.0			51.0		
Total Split (%)	36.3%			63.8%		
Yellow Time (s)	3.0			5.0		
All-Red Time (s)	4.2			1.0		
Lost Time Adjust (s)	-2.2			-1.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			C-Max		
Act Effct Green (s)	14.1			55.9		
Actuated g/C Ratio	0.18			0.70		
v/c Ratio	0.53			0.70		
Control Delay	25.3			9.5		
Queue Delay	0.0			0.0		
Total Delay	25.3			9.5		
LOS	C			A		
Approach Delay	25.3			9.5		
Approach LOS	C			A		
Queue Length 50th (ft)	171			220		
Queue Length 95th (ft)	208			336		
Internal Link Dist (ft)	1			677	777	
Turn Bay Length (ft)						
Base Capacity (vph)	1029			2450		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.31			0.70		
Intersection Summary						
Area Type:	Other					
Cycle Length: 80						
Actuated Cycle Length: 80						

Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Existing PM (2021)
10/13/2021

Offset: 53 (66%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 12.0	Intersection LOS: B
Intersection Capacity Utilization 110.1%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 4: NC 55 Bypass NB & New Hill Road U-Turn



Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Existing PM (2021)
10/13/2021

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	114	339	363	138	118	112
Future Volume (vph)	114	339	363	138	118	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	-1%		3%	
Storage Length (ft)	225			0	300	0
Storage Lanes	1			1	1	1
Taper Length (ft)	100				125	
Satd. Flow (prot)	1770	1863	1872	1591	1743	1560
Flt Permitted	0.500				0.950	
Satd. Flow (perm)	931	1863	1872	1591	1743	1560
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						126
Link Speed (mph)		35	35		35	
Link Distance (ft)		936	1787		1686	
Travel Time (s)		18.2	34.8		32.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	381	408	155	133	126
Turn Type	Perm	NA	NA	pm+ov	Prot	Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	60.0	60.0	60.0	25.0	25.0	25.0
Total Split (%)	70.6%	70.6%	70.6%	29.4%	29.4%	29.4%
Yellow Time (s)	3.8	3.8	3.9	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.3	3.4	3.4	3.4
Lost Time Adjust (s)	-0.7	-0.7	-0.2	-1.4	-1.4	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Min	Min	Min	None	None	None
Act Effct Green (s)	13.8	13.8	13.8	33.0	9.1	9.1
Actuated g/C Ratio	0.42	0.42	0.42	1.00	0.28	0.28
v/c Ratio	0.33	0.49	0.52	0.10	0.28	0.24
Control Delay	9.4	9.6	10.0	0.1	11.7	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	9.6	10.0	0.1	11.7	4.3
LOS	A	A	B	A	B	A
Approach Delay		9.5	7.3		8.1	
Approach LOS		A	A		A	
Queue Length 50th (ft)	13	41	45	0	16	0
Queue Length 95th (ft)	40	95	102	0	52	25
Internal Link Dist (ft)		856	1707		1606	
Turn Bay Length (ft)	225				300	
Base Capacity (vph)	931	1863	1872	1591	1069	1006
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.20	0.22	0.10	0.12	0.13

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 33

Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 8.3	Intersection LOS: A
Intersection Capacity Utilization 46.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: New Hill Road & Old Holly Springs Apex Rd.

 Ø2	 Ø4
60 s	25 s
 Ø6	
60 s	

Thales Academy Holly Springs
6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Existing PM (2021)
10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	148	181	50	68	4	165	4	42	10	4	4
Future Volume (vph)	5	148	181	50	68	4	165	4	42	10	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			3%			-4%			3%	
Storage Length (ft)	150		0	150		0	325		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1761	1700	0	1743	1820	0	1805	1638	0	1743	1697	0
Flt Permitted	0.708			0.551			0.752			0.725		
Satd. Flow (perm)	1312	1700	0	1011	1820	0	1429	1638	0	1330	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148			4			45			4	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1166			1135			1686			224	
Travel Time (s)		22.7			22.1			32.8			4.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	350	0	53	76	0	176	49	0	11	8	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	17.0	17.0		35.0	35.0		40.0	40.0		15.0	15.0	
Total Split (s)	60.0	60.0		60.0	60.0		25.0	25.0		25.0	25.0	
Total Split (%)	70.6%	70.6%		70.6%	70.6%		29.4%	29.4%		29.4%	29.4%	
Yellow Time (s)	3.8	3.8		3.7	3.7		4.1	4.1		3.7	3.7	
All-Red Time (s)	2.2	2.2		1.7	1.7		2.2	2.2		2.8	2.8	
Lost Time Adjust (s)	-1.0	-1.0		-0.4	-0.4		-1.3	-1.3		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	16.4	16.4		16.4	16.4		9.9	9.9		9.9	9.9	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.30	0.30		0.30	0.30	
v/c Ratio	0.01	0.38		0.10	0.08		0.41	0.09		0.03	0.02	
Control Delay	6.8	6.0		7.7	6.9		12.4	4.4		8.4	7.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	6.8	6.0		7.7	6.9		12.4	4.4		8.4	7.0	
LOS	A	A		A	A		B	A		A	A	
Approach Delay		6.1			7.3			10.6			7.8	
Approach LOS		A			A			B			A	
Queue Length 50th (ft)	1	21		5	7		21	1		1	1	
Queue Length 95th (ft)	4	69		21	25		63	14		8	6	
Internal Link Dist (ft)		1086			1055			1606			144	
Turn Bay Length (ft)	150			150			325					
Base Capacity (vph)	1312	1700		1011	1820		887	1034		826	1055	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.00	0.21		0.05	0.04		0.20	0.05		0.01	0.01	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 32.5

Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 55.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.



Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Existing PM (2021)
10/13/2021

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	414	375	100	62	133
Future Volume (vph)	24	414	375	100	62	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	100			100	200	0
Storage Lanes	1			1	1	1
Taper Length (ft)	125				100	
Satd. Flow (prot)	1805	1863	3539	1615	1805	1615
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1805	1863	3539	1615	1805	1615
Link Speed (mph)		35	35		10	
Link Distance (ft)		3211	373		386	
Travel Time (s)		62.6	7.3		26.3	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.42	0.91	0.68	0.39	0.55	0.50
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	455	551	256	113	266
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 31.9%				ICU Level of Service A		
Analysis Period (min) 15						

Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Existing PM (2021)
10/13/2021

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	414	375	100	62	133
Future Vol, veh/h	24	414	375	100	62	133
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	200	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	42	91	68	39	55	50
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	57	455	551	256	113	266
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	807	0	-	0	1120	276
Stage 1	-	-	-	-	551	-
Stage 2	-	-	-	-	569	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	827	-	-	-	217	727
Stage 1	-	-	-	-	547	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	827	-	-	-	202	727
Mov Cap-2 Maneuver	-	-	-	-	202	-
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	570	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.1	0		21.8		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	827	-	-	-	202	727
HCM Lane V/C Ratio	0.069	-	-	-	0.558	0.366
HCM Control Delay (s)	9.7	-	-	-	43.2	12.8
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.2	-	-	-	3	1.7

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Existing PM (2021)
10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	45	13	50	71	36	20	99	59	61	115	111
Future Volume (vph)	78	45	13	50	71	36	20	99	59	61	115	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		75	150		0	150		0	0		50
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	125			100			100			50		
Satd. Flow (prot)	1736	1827	1553	1770	3362	0	1736	1827	1553	1770	1725	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1736	1827	1553	1770	3362	0	1736	1827	1553	1770	1725	0
Link Speed (mph)		35			35			35			20	
Link Distance (ft)		1984			3211			1999			620	
Travel Time (s)		38.6			62.6			38.9			21.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	62	18	68	146	0	27	136	81	84	310	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 34.3%												
ICU Level of Service A												
Analysis Period (min) 15												

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Existing PM (2021)
10/13/2021

Intersection												
Int Delay, s/veh	13.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	78	45	13	50	71	36	20	99	59	61	115	111
Future Vol, veh/h	78	45	13	50	71	36	20	99	59	61	115	111
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	75	150	-	-	150	-	0	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	73	73	73	73	73	73	73	73	73
Heavy Vehicles, %	4	4	4	2	2	2	4	4	4	2	2	2
Mvmt Flow	107	62	18	68	97	49	27	136	81	84	158	152
Major/Minor	Major1	Major2		Minor1		Minor2						
Conflicting Flow All	146	0	0	80	0	0	540	558	62	652	552	73
Stage 1	-	-	-	-	-	-	276	276	-	258	258	-
Stage 2	-	-	-	-	-	-	264	282	-	394	294	-
Critical Hdwy	4.16	-	-	4.13	-	-	7.36	6.56	6.26	7.33	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.53	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.13	5.53	-
Follow-up Hdwy	2.238	-	-	2.219	-	-	3.538	4.038	3.338	3.519	4.019	3.319
Pot Cap-1 Maneuver	1421	-	-	1517	-	-	435	434	996	367	441	975
Stage 1	-	-	-	-	-	-	724	677	-	725	694	-
Stage 2	-	-	-	-	-	-	714	673	-	630	669	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1421	-	-	1517	-	-	231	383	996	224	389	975
Mov Cap-2 Maneuver	-	-	-	-	-	-	231	383	-	224	389	-
Stage 1	-	-	-	-	-	-	670	626	-	671	663	-
Stage 2	-	-	-	-	-	-	439	643	-	419	619	-
Approach	EB	WB		NB		SB						
HCM Control Delay, s	4.4	2.4		16.3		21.8						
HCM LOS				C		C						
Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	231	383	996	1421	-	-	1517	-	-	224	552	
HCM Lane V/C Ratio	0.119	0.354	0.081	0.075	-	-	0.045	-	-	0.373	0.561	
HCM Control Delay (s)	22.7	19.5	8.9	7.7	-	-	7.5	-	-	30.3	19.5	
HCM Lane LOS	C	C	A	A	-	-	A	-	-	D	C	
HCM 95th %tile Q(veh)	0.4	1.6	0.3	0.2	-	-	0.1	-	-	1.6	3.4	

Queuing and Blocking Report

Existing PM (2021)

10/13/2021

Intersection: 1: NC 55 Bypass SB & New Hill Road

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	R	R	T	T	T	T	R
Maximum Queue (ft)	370	339	205	202	470	474	146
Average Queue (ft)	238	202	114	104	340	359	57
95th Queue (ft)	341	310	183	177	522	537	113
Link Distance (ft)		1692	225	225	279	279	279
Upstream Blk Time (%)			0	0	15	18	
Queuing Penalty (veh)			0	0	125	146	
Storage Bay Dist (ft)	750						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: NC 55 Bypass NB & W Holly Springs Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	R	R	T	T	R
Maximum Queue (ft)	283	215	132	299	384	192
Average Queue (ft)	107	112	59	152	180	84
95th Queue (ft)	211	188	116	250	307	201
Link Distance (ft)	310		791	192	192	
Upstream Blk Time (%)				3	5	0
Queuing Penalty (veh)				24	39	0
Storage Bay Dist (ft)		400				175
Storage Blk Time (%)					7	0
Queuing Penalty (veh)					17	2

Intersection: 3: NC 55 Bypass SB & Holly Springs Road U-Turn

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	66	84	706	717
Average Queue (ft)	52	73	320	309
95th Queue (ft)	69	84	708	707
Link Distance (ft)	4	4	736	736
Upstream Blk Time (%)	64	75	4	4
Queuing Penalty (veh)	86	100	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Existing PM (2021)

10/13/2021

Intersection: 4: NC 55 Bypass NB & New Hill Road U-Turn

Movement	EB	EB	NB	NB
Directions Served	L	L	T	T
Maximum Queue (ft)	58	76	235	222
Average Queue (ft)	40	60	114	86
95th Queue (ft)	70	93	200	177
Link Distance (ft)	-1	-1	728	728
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: New Hill Road & Old Holly Springs Apex Rd.

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	101	131	175	47	93	72
Average Queue (ft)	49	56	65	14	41	34
95th Queue (ft)	88	111	136	40	77	61
Link Distance (ft)		850	1692	1692		1585
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225				300	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	20	123	58	49	123	56	32	31
Average Queue (ft)	2	50	20	14	55	23	6	6
95th Queue (ft)	12	97	46	39	93	48	24	26
Link Distance (ft)		1124		1094		1585	182	182
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150		150		325			
Storage Blk Time (%)		0						
Queuing Penalty (veh)		0						

Queuing and Blocking Report

Existing PM (2021)

10/13/2021

Intersection: 7: New Hill Road & Socratic Way

Movement	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	46	3	5	16	100	118
Average Queue (ft)	9	0	0	1	35	49
95th Queue (ft)	34	0	5	8	80	95
Link Distance (ft)		300	300			294
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100			100	200	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 8: Green Oaks Pkwy. & New Hill Road

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	L	T	R	L	TR
Maximum Queue (ft)	49	22	41	81	59	126	98
Average Queue (ft)	9	3	13	37	27	37	57
95th Queue (ft)	33	14	34	65	48	80	93
Link Distance (ft)				1942	1942	575	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	100	150	150				50
Storage Blk Time (%)						2	10
Queuing Penalty (veh)						5	7

Zone Summary

Zone wide Queuing Penalty: 551

Appendix H:
Synchro & SimTraffic Output:
Background (2026)

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Background AM (2026)

10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	828	0	891	0	0	0	0	0	1901	603
Future Volume (vph)	0	0	828	0	891	0	0	0	0	0	1901	603
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			0%			0%			1%	
Storage Length (ft)	750		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Flt Permitted												
Satd. Flow (perm)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)			57									58
Link Speed (mph)		35			55			55			55	
Link Distance (ft)		1787			560			1413			473	
Travel Time (s)		34.8			6.9			17.5			5.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	890	0	958	0	0	0	0	0	2044	648
Turn Type			Prot		NA						NA	Perm
Protected Phases			3		3						6	
Permitted Phases												6
Detector Phase			3		3						6	6
Switch Phase												
Minimum Initial (s)			7.0		7.0						14.0	14.0
Minimum Split (s)			31.0		31.0						39.0	39.0
Total Split (s)			31.0		31.0						44.0	44.0
Total Split (%)			41.3%		41.3%						58.7%	58.7%
Yellow Time (s)			3.0		3.0						5.1	5.1
All-Red Time (s)			4.0		4.0						1.8	1.8
Lost Time Adjust (s)			-2.0		-2.0						-1.9	-1.9
Total Lost Time (s)			5.0		5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode			None		None						C-Max	C-Max
Act Effct Green (s)			25.7		25.7						39.3	39.3
Actuated g/C Ratio			0.34		0.34						0.52	0.52
v/c Ratio			0.90		0.79						1.11	0.76
Control Delay			35.9		20.6						68.6	10.6
Queue Delay			0.0		0.0						0.0	0.0
Total Delay			35.9		20.6						68.6	10.6
LOS			D		C						E	B
Approach Delay		35.9			20.6						54.6	
Approach LOS		D			C						D	
Queue Length 50th (ft)			206		244						~832	127
Queue Length 95th (ft)			#331		m128						m#515	m124
Internal Link Dist (ft)		1707			480			1333			393	
Turn Bay Length (ft)												
Base Capacity (vph)			998		1226						1844	852
Starvation Cap Reductn			0		0						0	0
Spillback Cap Reductn			0		0						0	0
Storage Cap Reductn			0		0						0	0
Reduced v/c Ratio			0.89		0.78						1.11	0.76

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Background AM (2026)
10/13/2021

Offset: 64 (85%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 43.8	Intersection LOS: D
Intersection Capacity Utilization 136.4%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: NC 55 Bypass SB & New Hill Road



Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Background AM (2026)

10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	289	0	0	0	1590	0	3626	251	0	0	0
Future Volume (vph)	0	289	0	0	0	1590	0	3626	251	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			-4%			0%			0%	
Storage Length (ft)	0		0	400		0	0		175	0		0
Storage Lanes	0		0	1		2	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						29			58			
Link Speed (mph)		55			35			55			55	
Link Distance (ft)		486			877			542			909	
Travel Time (s)		6.0			17.1			6.7			11.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	311	0	0	0	1710	0	3899	270	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		7				7		2				
Permitted Phases									2			
Detector Phase		7				7		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		14.0	14.0			
Minimum Split (s)		34.0				34.0		34.2	34.2			
Total Split (s)		60.0				60.0		90.0	90.0			
Total Split (%)		40.0%				40.0%		60.0%	60.0%			
Yellow Time (s)		3.0				3.0		5.2	5.2			
All-Red Time (s)		3.7				3.7		1.8	1.8			
Lost Time Adjust (s)		-1.7				-1.7		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		55.0				55.0		85.0	85.0			
Actuated g/C Ratio		0.37				0.37		0.57	0.57			
v/c Ratio		0.46				1.61		1.94	0.29			
Control Delay		28.5				312.2		446.8	10.4			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		28.5				312.2		446.8	10.4			
LOS		C				F		F	B			
Approach Delay		28.5			312.2			418.5				
Approach LOS		C			F			F				
Queue Length 50th (ft)		172				~1359		~2708	66			
Queue Length 95th (ft)		m154				#1509		m#1336	m25			
Internal Link Dist (ft)		406			797			462		829		
Turn Bay Length (ft)									175			
Base Capacity (vph)		679				1060		2005	922			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.46				1.61		1.94	0.29			

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Background AM (2026)
10/13/2021

Offset: 38 (25%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.94	
Intersection Signal Delay: 369.5	Intersection LOS: F
Intersection Capacity Utilization 164.2%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: NC 55 Bypass NB & W Holly Springs Road



Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Background AM (2026)
10/13/2021

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	445	0	0	0	0	2348
Future Volume (vph)	445	0	0	0	0	2348
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			3%
Storage Length (ft)	0	0		0	0	
Storage Lanes	2	0		0	0	
Taper Length (ft)	100				100	
Satd. Flow (prot)	3433	0	0	0	0	3486
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3486
Right Turn on Red	No	Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (mph)	55		55			55
Link Distance (ft)	56		443			765
Travel Time (s)	0.7		5.5			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	489	0	0	0	0	2580
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					14.0
Minimum Split (s)	15.0					22.0
Total Split (s)	20.0					55.0
Total Split (%)	26.7%					73.3%
Yellow Time (s)	3.0					4.9
All-Red Time (s)	3.9					1.0
Lost Time Adjust (s)	-1.9					-0.9
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None					C-Max
Act Effct Green (s)	14.5					50.5
Actuated g/C Ratio	0.19					0.67
v/c Ratio	0.74					1.10
Control Delay	37.9					67.9
Queue Delay	0.0					0.0
Total Delay	37.9					67.9
LOS	D					E
Approach Delay	37.9					67.9
Approach LOS	D					E
Queue Length 50th (ft)	224					~736
Queue Length 95th (ft)	m115					#873
Internal Link Dist (ft)	1		363			685
Turn Bay Length (ft)						
Base Capacity (vph)	686					2346
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.71					1.10

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Background AM (2026)
10/13/2021

Offset: 50 (67%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.10	
Intersection Signal Delay: 63.1	Intersection LOS: E
Intersection Capacity Utilization 204.3%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: NC 55 Bypass SB & Holly Springs Road U-Turn



Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Background AM (2026)
10/13/2021

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	457	0	0	4115	0	0
Future Volume (vph)	457	0	0	4115	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			2%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	3433	0	0	3504	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	3504	0	0
Right Turn on Red	No	Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	55			55	55	
Link Distance (ft)	49			757	857	
Travel Time (s)	0.6			9.4	10.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	486	0	0	4378	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			14.0		
Minimum Split (s)	15.0			22.0		
Total Split (s)	30.0			120.0		
Total Split (%)	20.0%			80.0%		
Yellow Time (s)	3.0			5.0		
All-Red Time (s)	4.2			1.0		
Lost Time Adjust (s)	-2.2			-1.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			C-Max		
Act Effct Green (s)	24.5			115.5		
Actuated g/C Ratio	0.16			0.77		
v/c Ratio	0.87			1.62		
Control Delay	50.5			302.5		
Queue Delay	0.0			0.0		
Total Delay	50.5			302.5		
LOS	D			F		
Approach Delay	50.5			302.5		
Approach LOS	D			F		
Queue Length 50th (ft)	219			~3240		
Queue Length 95th (ft)	m244			#3284		
Internal Link Dist (ft)	1			677	777	
Turn Bay Length (ft)						
Base Capacity (vph)	572			2699		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.85			1.62		

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Background AM (2026)
10/13/2021

Offset: 10 (7%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.62	
Intersection Signal Delay: 277.3	Intersection LOS: F
Intersection Capacity Utilization 178.6%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: NC 55 Bypass NB & New Hill Road U-Turn



Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Background AM (2026)

10/13/2021

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	391	452	643	652	407	160
Future Volume (vph)	391	452	643	652	407	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	-1%		3%	
Storage Length (ft)	225			0	300	0
Storage Lanes	1			1	1	1
Taper Length (ft)	100				125	
Satd. Flow (prot)	1770	1863	1872	1591	1743	1560
Flt Permitted	0.078				0.950	
Satd. Flow (perm)	145	1863	1872	1591	1743	1560
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				125		117
Link Speed (mph)		35	35		35	
Link Distance (ft)		936	1787		1686	
Travel Time (s)		18.2	34.8		32.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	434	502	714	724	452	178
Turn Type	D.P+P	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	6			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	14.0	23.0	23.0	23.0	23.0	14.0
Total Split (s)	35.0	95.0	60.0	35.0	35.0	35.0
Total Split (%)	26.9%	73.1%	46.2%	26.9%	26.9%	26.9%
Yellow Time (s)	5.0	3.8	3.9	3.0	3.0	5.0
All-Red Time (s)	2.0	1.9	1.3	3.4	3.4	2.0
Lost Time Adjust (s)	-2.0	-0.7	-0.2	-1.4	-1.4	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	78.4	83.5	49.6	84.9	30.2	63.4
Actuated g/C Ratio	0.63	0.68	0.40	0.69	0.24	0.51
v/c Ratio	0.93	0.40	0.95	0.64	1.06	0.21
Control Delay	63.2	9.9	59.0	11.8	107.1	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.2	9.9	59.0	11.8	107.1	7.3
LOS	E	A	E	B	F	A
Approach Delay		34.6	35.2		78.9	
Approach LOS		C	D		E	
Queue Length 50th (ft)	302	162	553	250	~439	26
Queue Length 95th (ft)	#504	223	#797	368	#649	67
Internal Link Dist (ft)		856	1707		1606	
Turn Bay Length (ft)	225				300	
Base Capacity (vph)	489	1363	837	1130	425	872
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.37	0.85	0.64	1.06	0.20

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 123.7

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\Revision\3-Background AM (2026).syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Background AM (2026)
10/13/2021

Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.06	
Intersection Signal Delay: 44.2	Intersection LOS: D
Intersection Capacity Utilization 90.6%	ICU Level of Service E
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 5: New Hill Road & Old Holly Springs Apex Rd.



Thales Academy Holly Springs
6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Background AM (2026)

10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	621	493	29	240	214	1036	13	103	5	13	4
Future Volume (vph)	4	621	493	29	240	214	1036	13	103	5	13	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			3%			-4%			3%	
Storage Length (ft)	150		0	150		0	325		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1761	1731	0	1743	1705	0	1805	1647	0	1743	1774	0
Flt Permitted	0.242			0.068			0.746			0.675		
Satd. Flow (perm)	449	1731	0	125	1705	0	1417	1647	0	1238	1774	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			35			112			4	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1166			1135			1686			224	
Travel Time (s)		22.7			22.1			32.8			4.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1211	0	32	494	0	1126	126	0	5	18	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	17.0	17.0		35.0	35.0		40.0	40.0		15.0	15.0	
Total Split (s)	64.0	64.0		64.0	64.0		86.0	86.0		86.0	86.0	
Total Split (%)	42.7%	42.7%		42.7%	42.7%		57.3%	57.3%		57.3%	57.3%	
Yellow Time (s)	3.8	3.8		3.7	3.7		4.1	4.1		3.7	3.7	
All-Red Time (s)	2.2	2.2		1.7	1.7		2.2	2.2		2.8	2.8	
Lost Time Adjust (s)	-1.0	-1.0		-0.4	-0.4		-1.3	-1.3		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	59.0	59.0		59.0	59.0		81.0	81.0		81.0	81.0	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.54	0.54		0.54	0.54	
v/c Ratio	0.02	1.73		0.65	0.71		1.47	0.13		0.01	0.02	
Control Delay	28.5	364.7		95.6	42.4		248.4	4.0		16.0	13.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.5	364.7		95.6	42.4		248.4	4.0		16.0	13.6	
LOS	C	F		F	D		F	A		B	B	
Approach Delay		363.6			45.6			223.8			14.1	
Approach LOS		F			D			F			B	
Queue Length 50th (ft)	2	~1741		25	379		~1508	6		2	6	
Queue Length 95th (ft)	11	#2011		#92	521		#1772	38		9	19	
Internal Link Dist (ft)		1086			1055			1606			144	
Turn Bay Length (ft)	150			150			325					
Base Capacity (vph)	176	699		49	691		765	940		668	959	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	1.73		0.65	0.71		1.47	0.13		0.01	0.02	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\Revision\3-Background AM (2026).syn
Kimley-Horn

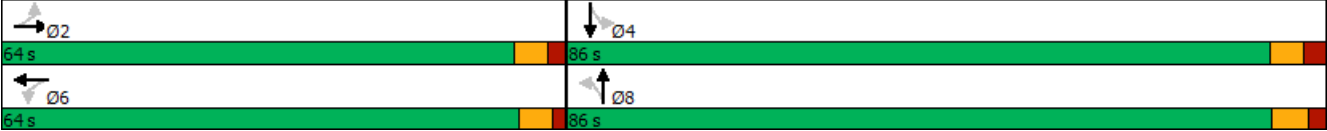
Synchro 10 Report

Thales Academy Holly Springs
6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Background AM (2026)
10/13/2021

Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.73	
Intersection Signal Delay: 247.5	Intersection LOS: F
Intersection Capacity Utilization 135.2%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.



Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Background AM (2026)
10/13/2021

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	56	779	529	226	53	233
Future Volume (vph)	56	779	529	226	53	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	100			100	200	0
Storage Lanes	1			1	1	1
Taper Length (ft)	125				100	
Satd. Flow (prot)	1805	1863	3539	1615	1805	1615
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1805	1863	3539	1615	1805	1615
Link Speed (mph)		35	35		10	
Link Distance (ft)		3211	373		386	
Travel Time (s)		62.6	7.3		26.3	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.53	0.62	0.62	0.48	0.48	0.48
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	1256	853	471	110	485
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 51.0%				ICU Level of Service A		
Analysis Period (min) 15						

Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Background AM (2026)
10/13/2021

Intersection						
Int Delay, s/veh	55.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	56	779	529	226	53	233
Future Vol, veh/h	56	779	529	226	53	233
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	200	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	53	62	62	48	48	48
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	106	1256	853	471	110	485
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1324	0	-	0	2321	427
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	1468	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	528	-	-	-	~ 37	582
Stage 1	-	-	-	-	383	-
Stage 2	-	-	-	-	214	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	528	-	-	-	~ 30	582
Mov Cap-2 Maneuver	-	-	-	-	~ 30	-
Stage 1	-	-	-	-	306	-
Stage 2	-	-	-	-	214	-
Approach	EB	WB		SB		
HCM Control Delay, s	1	0		\$ 302.3		
HCM LOS	F					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	528	-	-	-	30	582
HCM Lane V/C Ratio	0.2	-	-	-	3.681	0.834
HCM Control Delay (s)	13.5	-	-	-	\$ 1478.1	34.8
HCM Lane LOS	B	-	-	-	F	D
HCM 95th %tile Q(veh)	0.7	-	-	-	13.2	8.7
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Background AM (2026)

10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	485	177	206	362	118	83	32	53	124	44	55
Future Volume (vph)	42	485	177	206	362	118	83	32	53	124	44	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		75	150		0	150		0	0		50
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	125			100			100			50		
Satd. Flow (prot)	1770	1863	1583	1770	3408	0	1703	1792	1524	1770	1708	0
Flt Permitted	0.454			0.295			0.687			0.734		
Satd. Flow (perm)	846	1863	1583	550	3408	0	1231	1792	1524	1367	1708	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			205		81				58		60	
Link Speed (mph)		35			35			35			20	
Link Distance (ft)		1984			3211			1999			620	
Travel Time (s)		38.6			62.6			38.9			21.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	46	527	192	224	521	0	90	35	58	135	108	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA		D.Pm	NA	pm+ov	D.Pm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	6		2	2			4		8	8		
Detector Phase	5	2	2	1	6		4	8	1	8	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	33.0	33.0	14.0	27.0		36.0	36.0	14.0	36.0	36.0	
Total Split (s)	14.0	35.0	35.0	30.0	51.0		20.0	20.0	30.0	20.0	20.0	
Total Split (%)	16.5%	41.2%	41.2%	35.3%	60.0%		23.5%	23.5%	35.3%	23.5%	23.5%	
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6		3.8	3.8	3.0	3.8	3.8	
All-Red Time (s)	2.9	1.6	1.6	2.9	1.6		3.4	3.4	2.9	3.4	3.4	
Lost Time Adjust (s)	-0.9	-1.2	-1.2	-0.9	-1.2		-2.2	-2.2	-0.9	-2.2	-2.2	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				Yes			
Recall Mode	None	Min	Min	None	Min		None	None	None	None	None	
Act Effct Green (s)	35.8	22.9	22.9	32.9	33.6		12.9	12.9	23.3	12.9	12.9	
Actuated g/C Ratio	0.63	0.40	0.40	0.58	0.59		0.23	0.23	0.41	0.23	0.23	
v/c Ratio	0.07	0.71	0.25	0.42	0.26		0.32	0.09	0.09	0.44	0.25	
Control Delay	5.0	22.1	3.1	7.8	8.8		26.4	22.5	3.9	28.4	13.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	5.0	22.1	3.1	7.8	8.8		26.4	22.5	3.9	28.4	13.8	
LOS	A	C	A	A	A		C	C	A	C	B	
Approach Delay		16.3			8.5			18.6			21.9	
Approach LOS		B			A			B			C	
Queue Length 50th (ft)	6	158	0	30	55		28	10	0	43	14	
Queue Length 95th (ft)	16	301	31	59	90		76	36	18	107	58	
Internal Link Dist (ft)		1904			3131			1919			540	
Turn Bay Length (ft)	100		75	150			150					
Base Capacity (vph)	698	1070	997	954	2704		353	515	1100	392	533	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.49	0.19	0.23	0.19		0.25	0.07	0.05	0.34	0.20	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 57.1

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\Revision\3-Background AM (2026).syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Background AM (2026)
10/13/2021

Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 14.2	Intersection LOS: B
Intersection Capacity Utilization 63.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: Green Oaks Pkwy. & New Hill Road



Queuing and Blocking Report

Background AM (2026)

10/13/2021

Intersection: 1: NC 55 Bypass SB & New Hill Road

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	R	R	T	T	T	T	R
Maximum Queue (ft)	314	241	528	522	457	467	217
Average Queue (ft)	175	113	164	158	340	363	113
95th Queue (ft)	275	203	385	379	499	523	193
Link Distance (ft)		1692	225	225	279	279	279
Upstream Blk Time (%)			0	0	24	30	0
Queuing Penalty (veh)			0	0	205	255	0
Storage Bay Dist (ft)	750						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: NC 55 Bypass NB & W Holly Springs Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	R	R	T	T	R
Maximum Queue (ft)	403	500	839	543	551	192
Average Queue (ft)	195	498	810	497	521	93
95th Queue (ft)	327	507	824	559	535	224
Link Distance (ft)	310		791	192	192	
Upstream Blk Time (%)	1		49	37	41	0
Queuing Penalty (veh)	3		0	723	788	0
Storage Bay Dist (ft)		400				175
Storage Blk Time (%)		46	59		41	0
Queuing Penalty (veh)		369	472		103	5

Intersection: 3: NC 55 Bypass SB & Holly Springs Road U-Turn

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	66	85	767	782
Average Queue (ft)	46	71	535	533
95th Queue (ft)	67	85	938	944
Link Distance (ft)	4	4	736	736
Upstream Blk Time (%)	36	50	13	16
Queuing Penalty (veh)	80	111	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Background AM (2026)

10/13/2021

Intersection: 4: NC 55 Bypass NB & New Hill Road U-Turn

Movement	EB	EB	NB	NB
Directions Served	L	L	T	T
Maximum Queue (ft)	65	85	786	781
Average Queue (ft)	52	74	751	749
95th Queue (ft)	58	79	772	768
Link Distance (ft)	-1	-1	728	728
Upstream Blk Time (%)			69	56
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: New Hill Road & Old Holly Springs Apex Rd.

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	309	323	363	239	272	88
Average Queue (ft)	156	103	189	107	136	29
95th Queue (ft)	265	231	303	189	228	69
Link Distance (ft)		850	1692	1692		1585
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225				300	
Storage Blk Time (%)	3	0			0	
Queuing Penalty (veh)	14	1			0	

Intersection: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	136	1178	235	509	425	1237	26	35
Average Queue (ft)	8	1145	104	262	419	776	2	9
95th Queue (ft)	72	1164	225	448	454	1295	13	31
Link Distance (ft)		1124		1094		1585	182	182
Upstream Blk Time (%)		79				0		
Queuing Penalty (veh)		0				0		
Storage Bay Dist (ft)	150		150		325			
Storage Blk Time (%)		64	23	27	42	0		
Queuing Penalty (veh)		3	104	8	49	0		

Queuing and Blocking Report

Background AM (2026)

10/13/2021

Intersection: 7: New Hill Road & Socratic Way

Movement	EB	EB	WB	WB	WB	SB	SB	B12
Directions Served	L	T	T	T	R	L	R	T
Maximum Queue (ft)	74	55	15	6	32	232	214	21
Average Queue (ft)	20	2	1	0	3	53	78	2
95th Queue (ft)	53	28	8	4	16	162	189	22
Link Distance (ft)		3115	300	300			294	4
Upstream Blk Time (%)						0	2	1
Queuing Penalty (veh)						0	11	6
Storage Bay Dist (ft)	100				100	200		
Storage Blk Time (%)	0	0				5	3	
Queuing Penalty (veh)	0	0				21	3	

Intersection: 8: Green Oaks Pkwy. & New Hill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	140	334	110	112	65	84	95	62	66	170	99
Average Queue (ft)	19	134	60	51	18	28	41	19	24	70	49
95th Queue (ft)	64	254	119	92	47	67	81	49	54	135	97
Link Distance (ft)		1938			3115	3115		1942	1942	575	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100		75	150			150				50
Storage Blk Time (%)	0	18	0	0						20	7
Queuing Penalty (veh)	0	40	1	0						20	9

Zone Summary

Zone wide Queuing Penalty: 3405

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Background PM (2026)

10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1007	0	425	0	0	0	0	0	2658	667
Future Volume (vph)	0	0	1007	0	425	0	0	0	0	0	2658	667
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			0%			0%			1%	
Storage Length (ft)	750		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Flt Permitted												
Satd. Flow (perm)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)			27									187
Link Speed (mph)		35			55			55			55	
Link Distance (ft)		1787			560			1413			473	
Travel Time (s)		34.8			6.9			17.5			5.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	1095	0	462	0	0	0	0	0	2889	725
Turn Type			Prot		NA						NA	Perm
Protected Phases			3		3						6	
Permitted Phases												6
Detector Phase			3		3						6	6
Switch Phase												
Minimum Initial (s)			7.0		7.0						14.0	14.0
Minimum Split (s)			31.0		31.0						39.0	39.0
Total Split (s)			60.0		60.0						100.0	100.0
Total Split (%)			37.5%		37.5%						62.5%	62.5%
Yellow Time (s)			3.0		3.0						5.1	5.1
All-Red Time (s)			4.0		4.0						1.8	1.8
Lost Time Adjust (s)			-2.0		-2.0						-1.9	-1.9
Total Lost Time (s)			5.0		5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode			None		None						C-Max	C-Max
Act Effct Green (s)			55.0		55.0						95.0	95.0
Actuated g/C Ratio			0.34		0.34						0.59	0.59
v/c Ratio			1.13		0.38						1.38	0.72
Control Delay			117.1		36.4						197.4	12.5
Queue Delay			0.0		0.0						0.0	0.0
Total Delay			117.1		36.4						197.4	12.5
LOS			F		D						F	B
Approach Delay		117.1			36.4						160.3	
Approach LOS		F			D						F	
Queue Length 50th (ft)			~741		155						~1817	246
Queue Length 95th (ft)			#894		m130						m926	m126
Internal Link Dist (ft)		1707			480			1333			393	
Turn Bay Length (ft)												
Base Capacity (vph)			970		1216						2091	1011
Starvation Cap Reductn			0		0						0	0
Spillback Cap Reductn			0		0						0	0
Storage Cap Reductn			0		0						0	0
Reduced v/c Ratio			1.13		0.38						1.38	0.72

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\Revision\4-Background PM (2026).syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Background PM (2026)
10/13/2021

Offset: 31 (19%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.38	
Intersection Signal Delay: 140.1	Intersection LOS: F
Intersection Capacity Utilization 117.0%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: NC 55 Bypass SB & New Hill Road



Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Background PM (2026)
10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	263	0	0	0	567	0	1998	386	0	0	0
Future Volume (vph)	0	263	0	0	0	567	0	1998	386	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			-4%			0%			0%	
Storage Length (ft)	0		0	400		0	0		175	0		0
Storage Lanes	0		0	1		2	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						55			265			
Link Speed (mph)		55			35			55			55	
Link Distance (ft)		486			877			542			909	
Travel Time (s)		6.0			17.1			6.7			11.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	0	0	0	616	0	2172	420	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		7				7		2				
Permitted Phases									2			
Detector Phase		7				7		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		14.0	14.0			
Minimum Split (s)		34.0				34.0		34.2	34.2			
Total Split (s)		35.0				35.0		45.0	45.0			
Total Split (%)		43.8%				43.8%		56.3%	56.3%			
Yellow Time (s)		3.0				3.0		5.2	5.2			
All-Red Time (s)		3.7				3.7		1.8	1.8			
Lost Time Adjust (s)		-1.7				-1.7		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		24.0				24.0		46.0	46.0			
Actuated g/C Ratio		0.30				0.30		0.58	0.58			
v/c Ratio		0.52				0.69		1.07	0.41			
Control Delay		18.6				26.2		52.3	2.8			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		18.6				26.2		52.3	2.8			
LOS		B				C		D	A			
Approach Delay		18.6			26.2			44.3				
Approach LOS		B			C			D				
Queue Length 50th (ft)		131				138		535	27			
Queue Length 95th (ft)		m85				178		m375	m9			
Internal Link Dist (ft)		406			797			462		829		
Turn Bay Length (ft)									175			
Base Capacity (vph)		694				1100		2035	1023			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.41				0.56		1.07	0.41			
Intersection Summary												
Area Type:	Other											
Cycle Length: 80												
Actuated Cycle Length: 80												

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\Revision\4-Background PM (2026).syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Background PM (2026)
10/13/2021

Offset: 74 (93%), Referenced to phase 2:NBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 39.0 Intersection LOS: D
Intersection Capacity Utilization 83.4% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: NC 55 Bypass NB & W Holly Springs Road



Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Background PM (2026)
10/13/2021

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	349	0	0	0	0	3240
Future Volume (vph)	349	0	0	0	0	3240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			3%
Storage Length (ft)	0	0		0	0	
Storage Lanes	2	0		0	0	
Taper Length (ft)	100				100	
Satd. Flow (prot)	3433	0	0	0	0	3486
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3486
Right Turn on Red	No	Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (mph)	55		55			55
Link Distance (ft)	56		443			765
Travel Time (s)	0.7		5.5			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	384	0	0	0	0	3560
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					14.0
Minimum Split (s)	15.0					22.0
Total Split (s)	30.0					130.0
Total Split (%)	18.8%					81.3%
Yellow Time (s)	3.0					4.9
All-Red Time (s)	3.9					1.0
Lost Time Adjust (s)	-1.9					-0.9
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None					C-Max
Act Effct Green (s)	22.9					127.1
Actuated g/C Ratio	0.14					0.79
v/c Ratio	0.78					1.29
Control Delay	60.9					151.7
Queue Delay	0.0					0.0
Total Delay	60.9					151.7
LOS	E					F
Approach Delay	60.9					151.7
Approach LOS	E					F
Queue Length 50th (ft)	207					~2495
Queue Length 95th (ft)	253					#2579
Internal Link Dist (ft)	1		363			685
Turn Bay Length (ft)						
Base Capacity (vph)	536					2769
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.72					1.29

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Background PM (2026)
10/13/2021

Offset: 10 (6%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.29	
Intersection Signal Delay: 142.8	Intersection LOS: F
Intersection Capacity Utilization 155.1%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: NC 55 Bypass SB & Holly Springs Road U-Turn



Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Background PM (2026)
10/13/2021

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	592	0	0	2183	0	0
Future Volume (vph)	592	0	0	2183	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			2%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	3433	0	0	3504	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	3504	0	0
Right Turn on Red	No	Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	55			55	55	
Link Distance (ft)	49			757	857	
Travel Time (s)	0.6			9.4	10.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	665	0	0	2453	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			14.0		
Minimum Split (s)	15.0			22.0		
Total Split (s)	25.0			55.0		
Total Split (%)	31.3%			68.8%		
Yellow Time (s)	3.0			5.0		
All-Red Time (s)	4.2			1.0		
Lost Time Adjust (s)	-2.2			-1.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			C-Max		
Act Effct Green (s)	19.4			50.6		
Actuated g/C Ratio	0.24			0.63		
v/c Ratio	0.80			1.11		
Control Delay	47.9			73.0		
Queue Delay	0.0			0.0		
Total Delay	47.9			73.0		
LOS	D			E		
Approach Delay	47.9			73.0		
Approach LOS	D			E		
Queue Length 50th (ft)	360			~754		
Queue Length 95th (ft)	m310			#875		
Internal Link Dist (ft)	1			677	777	
Turn Bay Length (ft)						
Base Capacity (vph)	858			2217		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.78			1.11		
Intersection Summary						
Area Type:	Other					
Cycle Length: 80						
Actuated Cycle Length: 80						

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\Revision\4-Background PM (2026).syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Background PM (2026)
10/13/2021

Offset: 53 (66%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 67.7	Intersection LOS: E
Intersection Capacity Utilization 153.4%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: NC 55 Bypass NB & New Hill Road U-Turn



Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Background PM (2026)
10/13/2021

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	235	634	610	269	224	300
Future Volume (vph)	235	634	610	269	224	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	-1%		3%	
Storage Length (ft)	225			0	300	0
Storage Lanes	1			1	1	1
Taper Length (ft)	100				125	
Satd. Flow (prot)	1770	1863	1872	1591	1743	1560
Flt Permitted	0.139				0.950	
Satd. Flow (perm)	259	1863	1872	1591	1743	1560
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				257		232
Link Speed (mph)		35	35		35	
Link Distance (ft)		936	1787		1686	
Travel Time (s)		18.2	34.8		32.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	264	712	685	302	252	337
Turn Type	D.P+P	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	6			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	14.0	23.0	23.0	23.0	23.0	14.0
Total Split (s)	25.0	105.0	80.0	25.0	25.0	25.0
Total Split (%)	19.2%	80.8%	61.5%	19.2%	19.2%	19.2%
Yellow Time (s)	5.0	3.8	3.9	3.0	3.0	5.0
All-Red Time (s)	2.0	1.9	1.3	3.4	3.4	2.0
Lost Time Adjust (s)	-2.0	-0.7	-0.2	-1.4	-1.4	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	47.6	52.7	34.3	58.5	19.0	36.7
Actuated g/C Ratio	0.58	0.64	0.42	0.71	0.23	0.45
v/c Ratio	0.67	0.59	0.87	0.25	0.63	0.41
Control Delay	23.0	10.6	35.0	1.3	39.2	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	10.6	35.0	1.3	39.2	7.6
LOS	C	B	D	A	D	A
Approach Delay		14.0	24.7		21.1	
Approach LOS		B	C		C	
Queue Length 50th (ft)	64	193	313	5	113	30
Queue Length 95th (ft)	149	269	479	26	#264	112
Internal Link Dist (ft)		856	1707		1606	
Turn Bay Length (ft)	225				300	
Base Capacity (vph)	545	1852	1681	1234	437	946
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.38	0.41	0.24	0.58	0.36

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 82

Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 19.8	Intersection LOS: B
Intersection Capacity Utilization 70.0%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 5: New Hill Road & Old Holly Springs Apex Rd.



Thales Academy Holly Springs
6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Background PM (2026)

10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	392	435	103	391	4	363	4	76	13	4	4
Future Volume (vph)	6	392	435	103	391	4	363	4	76	13	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			3%			-4%			3%	
Storage Length (ft)	150		0	150		0	325		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1761	1707	0	1743	1833	0	1805	1628	0	1743	1697	0
Flt Permitted	0.451			0.137			0.752			0.702		
Satd. Flow (perm)	836	1707	0	251	1833	0	1429	1628	0	1288	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		89			1			81			4	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1166			1135			1686			224	
Travel Time (s)		22.7			22.1			32.8			4.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	880	0	110	420	0	386	85	0	14	8	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	17.0	17.0		35.0	35.0		40.0	40.0		15.0	15.0	
Total Split (s)	60.0	60.0		60.0	60.0		40.0	40.0		40.0	40.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.8	3.8		3.7	3.7		4.1	4.1		3.7	3.7	
All-Red Time (s)	2.2	2.2		1.7	1.7		2.2	2.2		2.8	2.8	
Lost Time Adjust (s)	-1.0	-1.0		-0.4	-0.4		-1.3	-1.3		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	55.2	55.2		55.2	55.2		29.6	29.6		29.6	29.6	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.31	0.31		0.31	0.31	
v/c Ratio	0.01	0.85		0.75	0.39		0.87	0.15		0.03	0.02	
Control Delay	10.2	26.1		52.6	13.0		51.0	6.5		22.0	16.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.2	26.1		52.6	13.0		51.0	6.5		22.0	16.9	
LOS	B	C		D	B		D	A		C	B	
Approach Delay		26.0			21.2			43.0			20.1	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	2	402		49	136		217	2		6	2	
Queue Length 95th (ft)	8	#730		#165	218		#363	33		20	12	
Internal Link Dist (ft)		1086			1055			1606			144	
Turn Bay Length (ft)	150			150			325					
Base Capacity (vph)	486	1031		146	1067		529	654		477	631	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.01	0.85		0.75	0.39		0.73	0.13		0.03	0.01	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 94.8

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\Revision\4-Background PM (2026).syn
Kimley-Horn

Synchro 10 Report

Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 28.8	Intersection LOS: C
Intersection Capacity Utilization 94.9%	ICU Level of Service F
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.



Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Background PM (2026)
10/13/2021

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	819	783	105	65	140
Future Volume (vph)	25	819	783	105	65	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	100			100	200	0
Storage Lanes	1			1	1	1
Taper Length (ft)	125				100	
Satd. Flow (prot)	1805	1900	3610	1615	1805	1615
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1805	1900	3610	1615	1805	1615
Link Speed (mph)		35	35		10	
Link Distance (ft)		3211	373		386	
Travel Time (s)		62.6	7.3		26.3	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.42	0.91	0.68	0.39	0.55	0.50
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	900	1151	269	118	280
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 53.4%				ICU Level of Service A		
Analysis Period (min) 15						

Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Background PM (2026)
10/13/2021

Intersection						
Int Delay, s/veh	49.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	819	783	105	65	140
Future Vol, veh/h	25	819	783	105	65	140
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	200	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	42	91	68	39	55	50
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	60	900	1151	269	118	280
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1420	0	-	0	2171	576
Stage 1	-	-	-	-	1151	-
Stage 2	-	-	-	-	1020	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	486	-	-	-	~ 46	466
Stage 1	-	-	-	-	268	-
Stage 2	-	-	-	-	351	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	486	-	-	-	~ 40	466
Mov Cap-2 Maneuver	-	-	-	-	~ 40	-
Stage 1	-	-	-	-	235	-
Stage 2	-	-	-	-	351	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.8	0		\$ 341.5		
HCM LOS				F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	486	-	-	-	40	466
HCM Lane V/C Ratio	0.122	-	-	-	2.955	0.601
HCM Control Delay (s)	13.4	-	-	-	\$ 1094.3	23.7
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0.4	-	-	-	13.1	3.9
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Background PM (2026)
10/13/2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	286	54	81	353	37	85	102	123	62	116	111
Future Volume (vph)	83	286	54	81	353	37	85	102	123	62	116	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	100		75	150		0	150		0	0		50
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	125			100			100			50		
Satd. Flow (prot)	1736	1827	1553	1770	3490	0	1736	1827	1553	1770	1727	0
Flt Permitted	0.411			0.366			0.433			0.668		
Satd. Flow (perm)	751	1827	1553	682	3490	0	791	1827	1553	1244	1727	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			205		20				168		49	
Link Speed (mph)		35			35			35			20	
Link Distance (ft)		1984			3211			1999			620	
Travel Time (s)		38.6			62.6			38.9			21.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	392	74	111	535	0	116	140	168	85	311	0
Turn Type	D.P+P	NA	Perm	D.P+P	NA		D.Pm	NA	pm+ov	D.Pm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	6		2	2			4		8	8		
Detector Phase	5	2	2	1	6		4	8	1	8	4	
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	33.0	33.0	14.0	27.0		36.0	36.0	14.0	36.0	36.0	
Total Split (s)	14.0	35.0	35.0	30.0	51.0		20.0	20.0	30.0	20.0	20.0	
Total Split (%)	16.5%	41.2%	41.2%	35.3%	60.0%		23.5%	23.5%	35.3%	23.5%	23.5%	
Yellow Time (s)	3.0	4.6	4.6	3.0	4.6		3.8	3.8	3.0	3.8	3.8	
All-Red Time (s)	2.9	1.6	1.6	2.9	1.6		3.4	3.4	2.9	3.4	3.4	
Lost Time Adjust (s)	-0.9	-1.2	-1.2	-0.9	-1.2		-2.2	-2.2	-0.9	-2.2	-2.2	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				Yes			
Recall Mode	None	Min	Min	None	Min		None	None	None	None	None	
Act Effct Green (s)	26.2	17.1	17.1	25.1	19.8		15.1	15.1	28.2	15.1	15.1	
Actuated g/C Ratio	0.47	0.31	0.31	0.45	0.36		0.27	0.27	0.51	0.27	0.27	
v/c Ratio	0.23	0.70	0.12	0.24	0.42		0.54	0.28	0.19	0.25	0.61	
Control Delay	7.3	23.8	0.4	7.4	15.0		31.4	19.2	2.6	19.8	22.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	7.3	23.8	0.4	7.4	15.0		31.4	19.2	2.6	19.8	22.5	
LOS	A	C	A	A	B		C	B	A	B	C	
Approach Delay		17.6			13.7			16.0			21.9	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	16	111	0	16	70		31	35	0	21	71	
Queue Length 95th (ft)	26	141	0	26	83		69	69	15	48	125	
Internal Link Dist (ft)		1904			3131			1919			540	
Turn Bay Length (ft)	100		75	150			150					
Base Capacity (vph)	527	996	940	866	2923		215	498	1301	339	506	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.22	0.39	0.08	0.13	0.18		0.54	0.28	0.13	0.25	0.61	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 55.3

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Background PM (2026)
10/13/2021

Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 16.9	Intersection LOS: B
Intersection Capacity Utilization 56.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: Green Oaks Pkwy. & New Hill Road



Queuing and Blocking Report

Background PM (2026)

10/13/2021

Intersection: 1: NC 55 Bypass SB & New Hill Road

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	R	R	T	T	T	T	R
Maximum Queue (ft)	850	1679	471	453	471	484	253
Average Queue (ft)	821	1408	162	145	446	455	113
95th Queue (ft)	940	2123	320	293	474	468	205
Link Distance (ft)		1692	225	225	279	279	279
Upstream Blk Time (%)		14	0	0	39	42	0
Queuing Penalty (veh)		121	1	1	433	465	2
Storage Bay Dist (ft)	750						
Storage Blk Time (%)	64	24					
Queuing Penalty (veh)	324	122					

Intersection: 2: NC 55 Bypass NB & W Holly Springs Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	R	R	T	T	R
Maximum Queue (ft)	312	262	157	527	555	192
Average Queue (ft)	101	146	79	465	521	179
95th Queue (ft)	240	228	143	582	557	239
Link Distance (ft)	310		791	192	192	
Upstream Blk Time (%)				37	39	2
Queuing Penalty (veh)				442	467	0
Storage Bay Dist (ft)		400				175
Storage Blk Time (%)					41	2
Queuing Penalty (veh)					158	23

Intersection: 3: NC 55 Bypass SB & Holly Springs Road U-Turn

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	64	92	784	791
Average Queue (ft)	53	74	753	756
95th Queue (ft)	65	85	779	797
Link Distance (ft)	4	4	736	736
Upstream Blk Time (%)	64	76	36	44
Queuing Penalty (veh)	112	132	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Background PM (2026)

10/13/2021

Intersection: 4: NC 55 Bypass NB & New Hill Road U-Turn

Movement	EB	EB	NB	NB
Directions Served	L	L	T	T
Maximum Queue (ft)	67	91	777	779
Average Queue (ft)	52	75	666	655
95th Queue (ft)	61	83	938	956
Link Distance (ft)	-1	-1	728	728
Upstream Blk Time (%)			43	42
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: New Hill Road & Old Holly Springs Apex Rd.

Movement	EB	EB	B15	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (ft)	312	789	195	388	132	383	1201
Average Queue (ft)	177	382	43	179	41	243	506
95th Queue (ft)	373	919	212	337	97	489	1478
Link Distance (ft)		850	300	1692	1692		1585
Upstream Blk Time (%)		10	2				6
Queuing Penalty (veh)		87	13				30
Storage Bay Dist (ft)	225					300	
Storage Blk Time (%)	0	28				35	0
Queuing Penalty (veh)	2	64				104	1

Intersection: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	182	803	244	1037	312	112	40	37
Average Queue (ft)	8	380	176	527	168	30	8	6
95th Queue (ft)	72	889	308	1295	269	84	29	25
Link Distance (ft)		1124		1094		1585	182	182
Upstream Blk Time (%)		7		29				
Queuing Penalty (veh)		0		0				
Storage Bay Dist (ft)	150		150		325			
Storage Blk Time (%)		27	56	4	0			
Queuing Penalty (veh)		2	220	5	0			

Queuing and Blocking Report

Background PM (2026)

10/13/2021

Intersection: 7: New Hill Road & Socratic Way

Movement	EB	EB	WB	WB	SB	SB	B12
Directions Served	L	T	T	R	L	R	T
Maximum Queue (ft)	101	192	3	18	205	212	24
Average Queue (ft)	13	24	0	1	81	75	4
95th Queue (ft)	58	210	3	8	215	225	32
Link Distance (ft)		3115	300			294	4
Upstream Blk Time (%)					2	5	1
Queuing Penalty (veh)					0	10	2
Storage Bay Dist (ft)	100			100	200		
Storage Blk Time (%)		3			11	1	
Queuing Penalty (veh)		0			15	1	

Intersection: 8: Green Oaks Pkwy. & New Hill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	L	T	TR	L	T	R	L	TR
Maximum Queue (ft)	114	190	89	81	66	84	128	120	92	243	100
Average Queue (ft)	35	70	19	26	21	28	45	44	39	61	69
95th Queue (ft)	79	145	57	60	50	64	96	91	74	165	106
Link Distance (ft)		1938			3115	3115		1942	1942	575	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100		75	150			150				50
Storage Blk Time (%)	0	5	0				0	0		7	21
Queuing Penalty (veh)	1	8	0				1	0		17	14

Zone Summary

Zone wide Queuing Penalty: 3399

Appendix I:
Synchro & SimTraffic Output:
Build-out (2026) – Full Movement Scenario

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Build-out AM (2026) - Full Movement

02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	913	0	929	0	0	0	0	0	1901	654
Future Volume (vph)	0	0	913	0	929	0	0	0	0	0	1901	654
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			0%			0%			1%	
Storage Length (ft)	750		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Flt Permitted												
Satd. Flow (perm)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)			57									58
Link Speed (mph)		35			55			55			55	
Link Distance (ft)		1787			560			1413			473	
Travel Time (s)		34.8			6.9			17.5			5.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.89	0.93	0.91	0.93	0.93	0.93	0.93	0.93	0.93	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	1026	0	1021	0	0	0	0	0	2044	727
Turn Type			Prot		NA						NA	Perm
Protected Phases			3		3						6	
Permitted Phases												6
Detector Phase			3		3						6	6
Switch Phase												
Minimum Initial (s)			7.0		7.0						14.0	14.0
Minimum Split (s)			31.0		31.0						39.0	39.0
Total Split (s)			31.0		31.0						44.0	44.0
Total Split (%)			41.3%		41.3%						58.7%	58.7%
Yellow Time (s)			3.0		3.0						5.1	5.1
All-Red Time (s)			4.0		4.0						1.8	1.8
Lost Time Adjust (s)			-2.0		-2.0						-1.9	-1.9
Total Lost Time (s)			5.0		5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode			None		None						C-Max	C-Max
Act Effct Green (s)			26.0		26.0						39.0	39.0
Actuated g/C Ratio			0.35		0.35						0.52	0.52
v/c Ratio			1.03		0.83						1.12	0.86
Control Delay			61.0		23.2						72.5	13.2
Queue Delay			0.0		0.0						0.0	0.0
Total Delay			61.0		23.2						72.5	13.2
LOS			E		C						E	B
Approach Delay		61.0			23.2						56.9	
Approach LOS		E			C						E	
Queue Length 50th (ft)			~272		297						~857	160
Queue Length 95th (ft)			#406		m147						m#539	m107
Internal Link Dist (ft)		1707			480			1333			393	
Turn Bay Length (ft)												
Base Capacity (vph)			998		1226						1831	846
Starvation Cap Reductn			0		0						0	0
Spillback Cap Reductn			0		0						0	0
Storage Cap Reductn			0		0						0	0
Reduced v/c Ratio			1.03		0.83						1.12	0.86

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\5-Build-out AM (2026) - Full Movement.syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Build-out AM (2026) - Full Movement
02/01/2022

Offset: 64 (85%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 50.7	Intersection LOS: D
Intersection Capacity Utilization 138.8%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: NC 55 Bypass SB & New Hill Road



Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Build-out AM (2026) - Full Movement

02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	289	0	0	0	1628	0	3638	287	0	0	0
Future Volume (vph)	0	289	0	0	0	1628	0	3638	287	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			-4%			0%			0%	
Storage Length (ft)	0		0	400		0	0		175	0		0
Storage Lanes	0		0	1		2	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						29			70			
Link Speed (mph)		55			35			55			55	
Link Distance (ft)		486			877			542			909	
Travel Time (s)		6.0			17.1			6.7			11.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93	0.88	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	311	0	0	0	1770	0	3912	326	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		7				7		2				
Permitted Phases									2			
Detector Phase		7				7		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		14.0	14.0			
Minimum Split (s)		34.0				34.0		34.2	34.2			
Total Split (s)		60.0				60.0		90.0	90.0			
Total Split (%)		40.0%				40.0%		60.0%	60.0%			
Yellow Time (s)		3.0				3.0		5.2	5.2			
All-Red Time (s)		3.7				3.7		1.8	1.8			
Lost Time Adjust (s)		-1.7				-1.7		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		55.0				55.0		85.0	85.0			
Actuated g/C Ratio		0.37				0.37		0.57	0.57			
v/c Ratio		0.46				1.67		1.95	0.35			
Control Delay		28.4				336.6		450.1	11.0			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		28.4				336.6		450.1	11.0			
LOS		C				F		F	B			
Approach Delay		28.4			336.6			416.3				
Approach LOS		C			F			F				
Queue Length 50th (ft)		173				~1428		~2903	92			
Queue Length 95th (ft)		m155				#1578		m#1499	m35			
Internal Link Dist (ft)		406			797			462			829	
Turn Bay Length (ft)									175			
Base Capacity (vph)		679				1060		2005	927			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.46				1.67		1.95	0.35			

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\5-Build-out AM (2026) - Full Movement.syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Build-out AM (2026) - Full Movement
02/01/2022

Offset: 38 (25%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.95	
Intersection Signal Delay: 374.9	Intersection LOS: F
Intersection Capacity Utilization 165.8%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: NC 55 Bypass NB & W Holly Springs Road



Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Build-out AM (2026) - Full Movement

02/01/2022

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	483	0	0	0	0	2361
Future Volume (vph)	483	0	0	0	0	2361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			3%
Storage Length (ft)	0	0		0	0	
Storage Lanes	2	0		0	0	
Taper Length (ft)	100				100	
Satd. Flow (prot)	3433	0	0	0	0	3486
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3486
Right Turn on Red	No	Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (mph)	55		55			55
Link Distance (ft)	56		443			765
Travel Time (s)	0.7		5.5			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	549	0	0	0	0	2595
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					14.0
Minimum Split (s)	15.0					22.0
Total Split (s)	20.0					55.0
Total Split (%)	26.7%					73.3%
Yellow Time (s)	3.0					4.9
All-Red Time (s)	3.9					1.0
Lost Time Adjust (s)	-1.9					-0.9
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None					C-Max
Act Effct Green (s)	14.8					50.2
Actuated g/C Ratio	0.20					0.67
v/c Ratio	0.81					1.11
Control Delay	43.0					73.2
Queue Delay	0.0					0.0
Total Delay	43.0					73.2
LOS	D					E
Approach Delay	43.0					73.2
Approach LOS	D					E
Queue Length 50th (ft)	262					~744
Queue Length 95th (ft)	m127					#881
Internal Link Dist (ft)	1		363			685
Turn Bay Length (ft)						
Base Capacity (vph)	686					2333
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.80					1.11

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\5-Build-out AM (2026) - Full Movement.syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Build-out AM (2026) - Full Movement
02/01/2022

Offset: 50 (67%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 67.9	Intersection LOS: E
Intersection Capacity Utilization 205.0%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: NC 55 Bypass SB & Holly Springs Road U-Turn



Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Build-out AM (2026) - Full Movement
02/01/2022

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	505	0	0	4153	0	0
Future Volume (vph)	505	0	0	4153	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			2%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	3433	0	0	3504	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	3504	0	0
Right Turn on Red	No	Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	55			55	55	
Link Distance (ft)	49			757	857	
Travel Time (s)	0.6			9.4	10.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	561	0	0	4418	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			14.0		
Minimum Split (s)	15.0			22.0		
Total Split (s)	30.0			120.0		
Total Split (%)	20.0%			80.0%		
Yellow Time (s)	3.0			5.0		
All-Red Time (s)	4.2			1.0		
Lost Time Adjust (s)	-2.2			-1.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			C-Max		
Act Effct Green (s)	25.0			115.0		
Actuated g/C Ratio	0.17			0.77		
v/c Ratio	0.98			1.64		
Control Delay	50.8			312.6		
Queue Delay	0.0			0.0		
Total Delay	50.8			312.6		
LOS	D			F		
Approach Delay	50.8			312.6		
Approach LOS	D			F		
Queue Length 50th (ft)	261			~3282		
Queue Length 95th (ft)	m245			#3326		
Internal Link Dist (ft)	1			677	777	
Turn Bay Length (ft)						
Base Capacity (vph)	572			2686		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.98			1.64		

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Build-out AM (2026) - Full Movement
02/01/2022

Offset: 10 (7%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.64	
Intersection Signal Delay: 283.1	Intersection LOS: F
Intersection Capacity Utilization 181.6%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: NC 55 Bypass NB & New Hill Road U-Turn



Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Build-out AM (2026) - Full Movement
02/01/2022

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	409	537	732	652	407	179
Future Volume (vph)	409	537	732	652	407	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	-1%		3%	
Storage Length (ft)	225			0	300	0
Storage Lanes	1			1	1	1
Taper Length (ft)	100				125	
Satd. Flow (prot)	1770	1863	1872	1591	1743	1560
Flt Permitted	0.070				0.950	
Satd. Flow (perm)	130	1863	1872	1591	1743	1560
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				103		72
Link Speed (mph)		35	35		35	
Link Distance (ft)		936	1787		1689	
Travel Time (s)		18.2	34.8		32.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.84	0.85	0.90	0.90	0.86
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	465	639	861	724	452	208
Turn Type	D.P+P	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	6			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	14.0	23.0	23.0	23.0	23.0	14.0
Total Split (s)	35.0	95.0	60.0	35.0	35.0	35.0
Total Split (%)	26.9%	73.1%	46.2%	26.9%	26.9%	26.9%
Yellow Time (s)	5.0	3.8	3.9	3.0	3.0	5.0
All-Red Time (s)	2.0	1.9	1.3	3.4	3.4	2.0
Lost Time Adjust (s)	-2.0	-0.7	-0.2	-1.4	-1.4	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	85.0	90.0	55.0	90.0	30.0	64.4
Actuated g/C Ratio	0.65	0.69	0.42	0.69	0.23	0.50
v/c Ratio	1.00	0.50	1.09	0.64	1.12	0.26
Control Delay	83.0	11.0	94.5	12.3	128.6	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	11.0	94.5	12.3	128.6	13.0
LOS	F	B	F	B	F	B
Approach Delay		41.3	56.9		92.2	
Approach LOS		D	E		F	
Queue Length 50th (ft)	~347	230	~814	261	~439	62
Queue Length 95th (ft)	#553	278	#966	381	#649	105
Internal Link Dist (ft)		856	1707		1609	
Turn Bay Length (ft)	225				300	
Base Capacity (vph)	463	1289	792	1133	402	809
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.50	1.09	0.64	1.12	0.26

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Build-out AM (2026) - Full Movement
02/01/2022

Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 58.7	Intersection LOS: E
Intersection Capacity Utilization 96.2%	ICU Level of Service F
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 5: New Hill Road & Old Holly Springs Apex Rd.



Thales Academy Holly Springs
6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Build-out AM (2026) - Full Movement

02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	621	499	42	240	214	1042	13	115	5	13	4
Future Volume (vph)	4	621	499	42	240	214	1042	13	115	5	13	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			3%			-4%			3%	
Storage Length (ft)	150		0	150		0	325		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1761	1729	0	1743	1705	0	1805	1642	0	1743	1774	0
Flt Permitted	0.242			0.068			0.746			0.656		
Satd. Flow (perm)	449	1729	0	125	1705	0	1417	1642	0	1204	1774	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			35			113			4	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1166			1135			1686			224	
Travel Time (s)		22.7			22.1			32.8			4.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.91	0.79	0.92	0.92	0.92	0.92	0.88	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1223	0	53	494	0	1133	145	0	5	18	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	17.0	17.0		35.0	35.0		40.0	40.0		15.0	15.0	
Total Split (s)	64.0	64.0		64.0	64.0		86.0	86.0		86.0	86.0	
Total Split (%)	42.7%	42.7%		42.7%	42.7%		57.3%	57.3%		57.3%	57.3%	
Yellow Time (s)	3.8	3.8		3.7	3.7		4.1	4.1		3.7	3.7	
All-Red Time (s)	2.2	2.2		1.7	1.7		2.2	2.2		2.8	2.8	
Lost Time Adjust (s)	-1.0	-1.0		-0.4	-0.4		-1.3	-1.3		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	59.0	59.0		59.0	59.0		81.0	81.0		81.0	81.0	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.54	0.54		0.54	0.54	
v/c Ratio	0.02	1.75		1.08	0.71		1.48	0.15		0.01	0.02	
Control Delay	28.5	372.1		198.0	42.4		252.4	5.1		16.0	13.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.5	372.1		198.0	42.4		252.4	5.1		16.0	13.6	
LOS	C	F		F	D		F	A		B	B	
Approach Delay		371.0			57.5			224.3			14.1	
Approach LOS		F			E			F			B	
Queue Length 50th (ft)	2	~1766		~58	379		~1522	14		2	6	
Queue Length 95th (ft)	11	#2037		#129	521		#1788	49		9	19	
Internal Link Dist (ft)		1086			1055			1606			144	
Turn Bay Length (ft)	150			150			325					
Base Capacity (vph)	176	699		49	691		765	938		650	959	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	1.75		1.08	0.71		1.48	0.15		0.01	0.02	

Intersection Summary

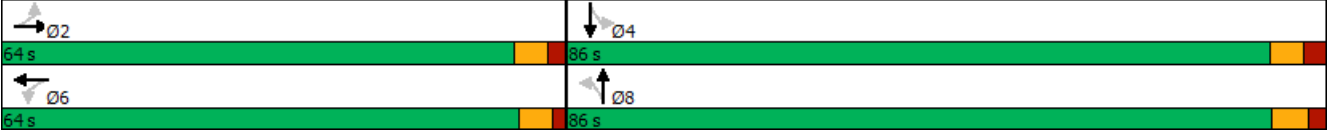
Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.75	
Intersection Signal Delay: 251.6	Intersection LOS: F
Intersection Capacity Utilization 135.9%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.



Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Build-out AM (2026) - Full Movement
02/01/2022

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	75	882	529	334	53	354
Future Volume (vph)	75	882	529	334	53	354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	100			100	200	0
Storage Lanes	1			1	1	1
Taper Length (ft)	125				100	
Satd. Flow (prot)	1805	1863	3539	1615	1805	1615
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1805	1863	3539	1615	1805	1615
Link Speed (mph)		35	35		10	
Link Distance (ft)		3210	372		397	
Travel Time (s)		62.5	7.2		27.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.52	0.61	0.62	0.49	0.48	0.49
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	1446	853	682	110	722
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 56.4%				ICU Level of Service B		
Analysis Period (min) 15						

Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Build-out AM (2026) - Full Movement
02/01/2022

Intersection						
Int Delay, s/veh	108.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	75	882	529	334	53	354
Future Vol, veh/h	75	882	529	334	53	354
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	200	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	52	61	62	49	48	49
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	144	1446	853	682	110	722
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1535	0	-	0	2587	427
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	1734	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	439	-	-	-	~ 25	~ 582
Stage 1	-	-	-	-	383	-
Stage 2	-	-	-	-	158	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	439	-	-	-	~ 17	~ 582
Mov Cap-2 Maneuver	-	-	-	-	~ 17	-
Stage 1	-	-	-	-	257	-
Stage 2	-	-	-	-	158	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.6	0		\$ 513.1		
HCM LOS	F					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	439	-	-	-	17	582
HCM Lane V/C Ratio	0.329	-	-	-	6.495	1.241
HCM Control Delay (s)	17.2	-	-	-	\$ 2918.6	145.5
HCM Lane LOS	C	-	-	-	F	F
HCM 95th %tile Q(veh)	1.4	-	-	-	14.5	27.4
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Build-out AM (2026) - Full Movement

02/01/2022

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (vph)	42	491	177	103	206	368	130	83	32	53	137	44	55
Future Volume (vph)	42	491	177	103	206	368	130	83	32	53	137	44	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%				-1%			0%			0%	
Storage Length (ft)	100		75		150		0	150		0	0		50
Storage Lanes	1		1		1		0	1		1	1		1
Taper Length (ft)	125				100			100			50		
Satd. Flow (prot)	1761	1853	1575	0	1778	3415	0	1703	1792	1524	1770	1708	0
Flt Permitted	0.431				0.225			0.687			0.734		
Satd. Flow (perm)	799	1853	1575	0	421	3415	0	1231	1792	1524	1367	1708	0
Right Turn on Red			Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			205			96				58		60	
Link Speed (mph)		45				45			35			20	
Link Distance (ft)		1984				3210			1999			620	
Travel Time (s)		30.1				48.6			38.9			21.1	
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.92	0.91	0.92	0.50	0.92	0.91	0.88	0.92	0.92	0.92	0.88	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%				0%			0%			0%	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	46	540	192	0	430	552	0	90	35	58	156	108	0
Turn Type	D.P+P	NA	Perm	D.P+P	D.P+P	NA		D.Pm	NA	pm+ov	D.Pm	NA	
Protected Phases	5	2		1!	1	6			8	1!		4	
Permitted Phases	6		2	2	2			4		8	8		
Detector Phase	5	2	2	1	1	6		4	8	1	8	4	
Switch Phase													
Minimum Initial (s)	7.0	12.0	12.0	7.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	33.0	33.0	14.0	14.0	27.0		36.0	36.0	14.0	36.0	36.0	
Total Split (s)	14.0	35.0	35.0	30.0	30.0	51.0		20.0	20.0	30.0	20.0	20.0	
Total Split (%)	16.5%	41.2%	41.2%	35.3%	35.3%	60.0%		23.5%	23.5%	35.3%	23.5%	23.5%	
Yellow Time (s)	3.0	4.6	4.6	3.0	3.0	4.6		3.8	3.8	3.0	3.8	3.8	
All-Red Time (s)	2.9	1.6	1.6	2.9	2.9	1.6		3.4	3.4	2.9	3.4	3.4	
Lost Time Adjust (s)	-0.9	-1.2	-1.2		-0.9	-1.2		-2.2	-2.2	-0.9	-2.2	-2.2	
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				Yes			
Recall Mode	None	Min	Min	None	None	Min		None	None	None	None	None	
Act Effct Green (s)	45.6	25.6	25.6		43.0	41.4		13.4	13.4	36.0	13.4	13.4	
Actuated g/C Ratio	0.63	0.36	0.36		0.60	0.58		0.19	0.19	0.50	0.19	0.19	
v/c Ratio	0.07	0.82	0.28		0.74	0.28		0.39	0.11	0.07	0.61	0.30	
Control Delay	4.4	34.3	3.8		19.5	7.7		35.0	28.9	3.2	42.0	17.8	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	4.4	34.3	3.8		19.5	7.7		35.0	28.9	3.2	42.0	17.8	
LOS	A	C	A		B	A		D	C	A	D	B	
Approach Delay		25.0				12.8			23.8			32.1	
Approach LOS		C				B			C			C	
Queue Length 50th (ft)	6	224	0		97	61		38	14	0	69	19	
Queue Length 95th (ft)	15	#431	37		198	90		89	41	17	#151	66	
Internal Link Dist (ft)		1904				3130			1919			540	
Turn Bay Length (ft)	100		75		150			150					
Base Capacity (vph)	637	803	799		764	2311		266	388	966	296	417	
Starvation Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.67	0.24		0.56	0.24		0.34	0.09	0.06	0.53	0.26	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 72

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\5-Build-out AM (2026) - Full Movement.syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Build-out AM (2026) - Full Movement
02/01/2022

Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 20.3	Intersection LOS: C
Intersection Capacity Utilization 73.1%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
! Phase conflict between lane groups.	

Splits and Phases: 8: Green Oaks Pkwy. & New Hill Road



Queuing and Blocking Report

Build-out AM (2026) - Full Movement

01/31/2022

Intersection: 1: NC 55 Bypass SB & New Hill Road

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	R	R	T	T	T	T	R
Maximum Queue (ft)	406	324	529	520	470	483	220
Average Queue (ft)	209	135	152	149	395	419	116
95th Queue (ft)	332	245	357	358	516	530	187
Link Distance (ft)		1692	225	225	279	279	279
Upstream Blk Time (%)			0	0	36	44	0
Queuing Penalty (veh)			0	0	310	377	0
Storage Bay Dist (ft)	750						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: NC 55 Bypass NB & W Holly Springs Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	R	R	T	T	R
Maximum Queue (ft)	384	500	840	548	544	192
Average Queue (ft)	198	498	811	496	521	90
95th Queue (ft)	331	509	828	557	533	220
Link Distance (ft)	310		791	192	192	
Upstream Blk Time (%)	1		48	36	40	0
Queuing Penalty (veh)	3		0	722	787	0
Storage Bay Dist (ft)		400				175
Storage Blk Time (%)		48	59		40	0
Queuing Penalty (veh)		394	482		115	6

Intersection: 3: NC 55 Bypass SB & Holly Springs Road U-Turn

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	66	93	780	787
Average Queue (ft)	48	71	658	661
95th Queue (ft)	68	89	953	953
Link Distance (ft)	4	4	736	736
Upstream Blk Time (%)	37	50	18	26
Queuing Penalty (veh)	91	122	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Build-out AM (2026) - Full Movement

01/31/2022

Intersection: 4: NC 55 Bypass NB & New Hill Road U-Turn

Movement	EB	EB	NB	NB
Directions Served	L	L	T	T
Maximum Queue (ft)	68	92	781	779
Average Queue (ft)	52	74	750	748
95th Queue (ft)	60	83	768	765
Link Distance (ft)	-1	-1	728	728
Upstream Blk Time (%)			67	54
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: New Hill Road & Old Holly Springs Apex Rd.

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	303	290	376	222	280	103
Average Queue (ft)	170	119	221	100	138	34
95th Queue (ft)	277	233	338	177	232	82
Link Distance (ft)		846	1692	1692		1584
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225				300	
Storage Blk Time (%)	4	0			0	
Queuing Penalty (veh)	23	1			0	

Intersection: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	44	1175	250	985	425	1294	27	39
Average Queue (ft)	4	1144	193	590	418	846	2	8
95th Queue (ft)	39	1161	314	1225	462	1422	15	31
Link Distance (ft)		1124		1088		1581	182	182
Upstream Blk Time (%)		79		25		0		
Queuing Penalty (veh)		0		0		0		
Storage Bay Dist (ft)	150		150		325			
Storage Blk Time (%)		64	70	29	44			
Queuing Penalty (veh)		3	318	12	56			

Queuing and Blocking Report

Build-out AM (2026) - Full Movement

01/31/2022

Intersection: 7: New Hill Road & Socratic Way

Movement	EB	EB	WB	WB	WB	SB	SB	B12
Directions Served	L	T	T	T	R	L	R	T
Maximum Queue (ft)	85	20	12	9	56	187	162	7
Average Queue (ft)	28	1	0	0	5	57	85	1
95th Queue (ft)	68	26	6	4	30	146	149	12
Link Distance (ft)		3114	304	304			305	11
Upstream Blk Time (%)							1	0
Queuing Penalty (veh)							3	0
Storage Bay Dist (ft)	100				100	200		
Storage Blk Time (%)	0				0	2	0	
Queuing Penalty (veh)	4				0	11	0	

Intersection: 8: Green Oaks Pkwy. & New Hill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	UL	T	TR	L	T	R	L	TR
Maximum Queue (ft)	142	512	110	171	59	78	128	60	70	197	100
Average Queue (ft)	27	193	68	83	13	26	48	20	24	81	57
95th Queue (ft)	100	426	132	141	38	62	98	49	56	153	102
Link Distance (ft)		1938			3114	3114		1942	1942	575	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100		75	150			150				50
Storage Blk Time (%)	0	28	0	1			0			28	10
Queuing Penalty (veh)	0	62	2	2			0			28	14

Zone Summary

Zone wide Queuing Penalty: 3950

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Build-out PM (2026) - Full Movement

02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1067	0	449	0	0	0	0	0	2658	699
Future Volume (vph)	0	0	1067	0	449	0	0	0	0	0	2658	699
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			0%			0%			1%	
Storage Length (ft)	750		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Flt Permitted												
Satd. Flow (perm)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)			27									162
Link Speed (mph)		35			55			55			55	
Link Distance (ft)		1787			560			1413			473	
Travel Time (s)		34.8			6.9			17.5			5.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.90	0.92	0.90	0.92	0.92	0.92	0.92	0.92	0.92	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	1186	0	499	0	0	0	0	0	2889	777
Turn Type			Prot		NA						NA	Perm
Protected Phases			3		3						6	
Permitted Phases												6
Detector Phase			3		3						6	6
Switch Phase												
Minimum Initial (s)			7.0		7.0						14.0	14.0
Minimum Split (s)			31.0		31.0						39.0	39.0
Total Split (s)			60.0		60.0						100.0	100.0
Total Split (%)			37.5%		37.5%						62.5%	62.5%
Yellow Time (s)			3.0		3.0						5.1	5.1
All-Red Time (s)			4.0		4.0						1.8	1.8
Lost Time Adjust (s)			-2.0		-2.0						-1.9	-1.9
Total Lost Time (s)			5.0		5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode			None		None						C-Max	C-Max
Act Effct Green (s)			55.0		55.0						95.0	95.0
Actuated g/C Ratio			0.34		0.34						0.59	0.59
v/c Ratio			1.22		0.41						1.38	0.78
Control Delay			152.6		36.5						198.5	15.7
Queue Delay			0.0		0.0						0.0	0.0
Total Delay			152.6		36.5						198.5	15.7
LOS			F		D						F	B
Approach Delay		152.6			36.5						159.7	
Approach LOS		F			D						F	
Queue Length 50th (ft)			~855		187						~2109	174
Queue Length 95th (ft)			#1009		m166						m#1448	m131
Internal Link Dist (ft)		1707			480			1333			393	
Turn Bay Length (ft)												
Base Capacity (vph)			970		1216						2091	1000
Starvation Cap Reductn			0		0						0	0
Spillback Cap Reductn			0		0						0	0
Storage Cap Reductn			0		0						0	0
Reduced v/c Ratio			1.22		0.41						1.38	0.78

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\6-Build-out PM (2026) - Full Movement.syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Build-out PM (2026) - Full Movement
02/01/2022

Offset: 31 (19%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.38	
Intersection Signal Delay: 146.6	Intersection LOS: F
Intersection Capacity Utilization 119.1%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: NC 55 Bypass SB & New Hill Road



Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Build-out PM (2026) - Full Movement

02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	263	0	0	0	591	0	2007	411	0	0	0
Future Volume (vph)	0	263	0	0	0	591	0	2007	411	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			-4%			0%			0%	
Storage Length (ft)	0		0	400		0	0		175	0		0
Storage Lanes	0		0	1		2	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						55			290			
Link Speed (mph)		55			35			55			55	
Link Distance (ft)		486			877			542			909	
Travel Time (s)		6.0			17.1			6.7			11.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.90	0.92	0.92	0.89	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	0	0	0	657	0	2182	462	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		7				7		2				
Permitted Phases									2			
Detector Phase		7				7		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		14.0	14.0			
Minimum Split (s)		34.0				34.0		34.2	34.2			
Total Split (s)		35.0				35.0		45.0	45.0			
Total Split (%)		43.8%				43.8%		56.3%	56.3%			
Yellow Time (s)		3.0				3.0		5.2	5.2			
All-Red Time (s)		3.7				3.7		1.8	1.8			
Lost Time Adjust (s)		-1.7				-1.7		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		24.8				24.8		45.2	45.2			
Actuated g/C Ratio		0.31				0.31		0.56	0.56			
v/c Ratio		0.50				0.71		1.09	0.45			
Control Delay		17.8				26.5		61.8	2.9			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		17.8				26.5		61.8	2.9			
LOS		B				C		E	A			
Approach Delay		17.8			26.5			51.5				
Approach LOS		B			C			D				
Queue Length 50th (ft)		152				147		~997	39			
Queue Length 95th (ft)		m101				193		m#903	m21			
Internal Link Dist (ft)		406			797			462		829		
Turn Bay Length (ft)									175			
Base Capacity (vph)		694				1100		1997	1019			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.41				0.60		1.09	0.45			
Intersection Summary												
Area Type:	Other											
Cycle Length: 80												
Actuated Cycle Length: 80												

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\6-Build-out PM (2026) - Full Movement.syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Build-out PM (2026) - Full Movement
02/01/2022

Offset: 74 (93%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 44.2	Intersection LOS: D
Intersection Capacity Utilization 84.5%	ICU Level of Service E
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: NC 55 Bypass NB & W Holly Springs Road



Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Build-out PM (2026) - Full Movement
02/01/2022

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	373	0	0	0	0	3248
Future Volume (vph)	373	0	0	0	0	3248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			3%
Storage Length (ft)	0	0		0	0	
Storage Lanes	2	0		0	0	
Taper Length (ft)	100				100	
Satd. Flow (prot)	3433	0	0	0	0	3486
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3486
Right Turn on Red	No	Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (mph)	55		55			55
Link Distance (ft)	56		443			765
Travel Time (s)	0.7		5.5			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	424	0	0	0	0	3569
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					14.0
Minimum Split (s)	15.0					22.0
Total Split (s)	30.0					130.0
Total Split (%)	18.8%					81.3%
Yellow Time (s)	3.0					4.9
All-Red Time (s)	3.9					1.0
Lost Time Adjust (s)	-1.9					-0.9
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None					C-Max
Act Effct Green (s)	23.8					126.2
Actuated g/C Ratio	0.15					0.79
v/c Ratio	0.83					1.30
Control Delay	63.2					157.6
Queue Delay	0.0					0.0
Total Delay	63.2					157.6
LOS	E					F
Approach Delay	63.2					157.6
Approach LOS	E					F
Queue Length 50th (ft)	229					~2517
Queue Length 95th (ft)	271					#2590
Internal Link Dist (ft)	1		363			685
Turn Bay Length (ft)						
Base Capacity (vph)	536					2749
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.79					1.30

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Build-out PM (2026) - Full Movement
02/01/2022

Offset: 10 (6%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.30	
Intersection Signal Delay: 147.6	Intersection LOS: F
Intersection Capacity Utilization 155.6%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 3: NC 55 Bypass SB & Holly Springs Road U-Turn



Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Build-out PM (2026) - Full Movement
02/01/2022

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	626	0	0	2207	0	0
Future Volume (vph)	626	0	0	2207	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			2%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	3433	0	0	3504	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	3504	0	0
Right Turn on Red	No	Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	55			55	55	
Link Distance (ft)	49			757	857	
Travel Time (s)	0.6			9.4	10.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	720	0	0	2480	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			14.0		
Minimum Split (s)	15.0			22.0		
Total Split (s)	25.0			55.0		
Total Split (%)	31.3%			68.8%		
Yellow Time (s)	3.0			5.0		
All-Red Time (s)	4.2			1.0		
Lost Time Adjust (s)	-2.2			-1.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			C-Max		
Act Effct Green (s)	19.7			50.3		
Actuated g/C Ratio	0.25			0.63		
v/c Ratio	0.85			1.13		
Control Delay	51.9			81.0		
Queue Delay	0.0			0.0		
Total Delay	51.9			81.0		
LOS	D			F		
Approach Delay	51.9			81.0		
Approach LOS	D			F		
Queue Length 50th (ft)	393			~770		
Queue Length 95th (ft)	m314			#890		
Internal Link Dist (ft)	1			677	777	
Turn Bay Length (ft)						
Base Capacity (vph)	858			2204		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.84			1.13		

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Build-out PM (2026) - Full Movement
02/01/2022

Offset: 53 (66%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 74.4	Intersection LOS: E
Intersection Capacity Utilization 155.8%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: NC 55 Bypass NB & New Hill Road U-Turn



Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Build-out PM (2026) - Full Movement

02/01/2022

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	248	694	666	269	224	311
Future Volume (vph)	248	694	666	269	224	311
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	-1%		3%	
Storage Length (ft)	225			0	300	0
Storage Lanes	1			1	1	1
Taper Length (ft)	100				125	
Satd. Flow (prot)	1770	1863	1872	1591	1743	1560
Flt Permitted	0.106				0.950	
Satd. Flow (perm)	197	1863	1872	1591	1743	1560
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				196		188
Link Speed (mph)		35	35		35	
Link Distance (ft)		936	1787		1689	
Travel Time (s)		18.2	34.8		32.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.86	0.86	0.89	0.89	0.88
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	285	807	774	302	252	353
Turn Type	D.P+P	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	6			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	14.0	23.0	23.0	23.0	23.0	14.0
Total Split (s)	25.0	105.0	80.0	25.0	25.0	25.0
Total Split (%)	19.2%	80.8%	61.5%	19.2%	19.2%	19.2%
Yellow Time (s)	5.0	3.8	3.9	3.0	3.0	5.0
All-Red Time (s)	2.0	1.9	1.3	3.4	3.4	2.0
Lost Time Adjust (s)	-2.0	-0.7	-0.2	-1.4	-1.4	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	56.7	61.9	42.3	67.0	19.5	38.5
Actuated g/C Ratio	0.62	0.67	0.46	0.73	0.21	0.42
v/c Ratio	0.77	0.64	0.90	0.25	0.68	0.46
Control Delay	36.1	10.8	36.8	1.9	47.6	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	10.8	36.8	1.9	47.6	12.6
LOS	D	B	D	A	D	B
Approach Delay		17.4	27.0		27.2	
Approach LOS		B	C		C	
Queue Length 50th (ft)	98	238	387	14	127	57
Queue Length 95th (ft)	204	299	565	41	#337	177
Internal Link Dist (ft)		856	1707		1609	
Turn Bay Length (ft)	225				300	
Base Capacity (vph)	487	1793	1550	1233	395	858
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.45	0.50	0.24	0.64	0.41

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 91.8

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\6-Build-out PM (2026) - Full Movement.syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Build-out PM (2026) - Full Movement
02/01/2022

Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 23.3	Intersection LOS: C
Intersection Capacity Utilization 73.7%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 5: New Hill Road & Old Holly Springs Apex Rd.



Thales Academy Holly Springs
6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Build-out PM (2026) - Full Movement

02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	392	439	110	391	4	367	4	85	13	4	4
Future Volume (vph)	6	392	439	110	391	4	367	4	85	13	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			3%			-4%			3%	
Storage Length (ft)	150		0	150		0	325		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1761	1707	0	1743	1833	0	1805	1626	0	1743	1697	0
Flt Permitted	0.450			0.133			0.752			0.692		
Satd. Flow (perm)	834	1707	0	244	1833	0	1429	1626	0	1270	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90			1			96			4	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1166			1135			1686			224	
Travel Time (s)		22.7			22.1			32.8			4.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.91	0.94	0.94	0.94	0.94	0.89	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	884	0	121	420	0	390	100	0	14	8	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	17.0	17.0		35.0	35.0		40.0	40.0		15.0	15.0	
Total Split (s)	60.0	60.0		60.0	60.0		40.0	40.0		40.0	40.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.8	3.8		3.7	3.7		4.1	4.1		3.7	3.7	
All-Red Time (s)	2.2	2.2		1.7	1.7		2.2	2.2		2.8	2.8	
Lost Time Adjust (s)	-1.0	-1.0		-0.4	-0.4		-1.3	-1.3		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	55.2	55.2		55.2	55.2		29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.31	0.31		0.31	0.31	
v/c Ratio	0.01	0.86		0.86	0.39		0.87	0.17		0.04	0.01	
Control Delay	10.3	26.6		69.9	13.1		51.4	6.0		21.9	16.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.3	26.6		69.9	13.1		51.4	6.0		21.9	16.9	
LOS	B	C		E	B		D	A		C	B	
Approach Delay		26.5			25.8			42.2			20.1	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	2	411		61	138		220	2		6	2	
Queue Length 95th (ft)	8	#734		#187	218		#369	36		20	12	
Internal Link Dist (ft)		1086			1055			1606			144	
Turn Bay Length (ft)	150			150			325					
Base Capacity (vph)	484	1029		141	1064		528	661		469	629	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.01	0.86		0.86	0.39		0.74	0.15		0.03	0.01	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 95

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\6-Build-out PM (2026) - Full Movement.syn
Kimley-Horn

Synchro 10 Report

Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 30.2	Intersection LOS: C
Intersection Capacity Utilization 95.3%	ICU Level of Service F
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.



Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Build-out PM (2026) - Full Movement
02/01/2022

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	37	892	783	172	65	225
Future Volume (vph)	37	892	783	172	65	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	100			100	200	0
Storage Lanes	1			1	1	1
Taper Length (ft)	125				100	
Satd. Flow (prot)	1805	1863	3539	1615	1805	1615
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1805	1863	3539	1615	1805	1615
Link Speed (mph)		35	35		10	
Link Distance (ft)		3210	372		397	
Travel Time (s)		62.5	7.2		27.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.45	0.88	0.68	0.43	0.55	0.50
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	1014	1151	400	118	450
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 57.2%				ICU Level of Service B		
Analysis Period (min) 15						

Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Build-out PM (2026) - Full Movement
02/01/2022

Intersection						
Int Delay, s/veh	70.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	892	783	172	65	225
Future Vol, veh/h	37	892	783	172	65	225
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	200	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	45	88	68	43	55	50
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	82	1014	1151	400	118	450
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1551	0	-	0	2329	576
Stage 1	-	-	-	-	1151	-
Stage 2	-	-	-	-	1178	-
Critical Hdwy	4.1	-	-	-	6.6	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	433	-	-	-	~ 36	466
Stage 1	-	-	-	-	268	-
Stage 2	-	-	-	-	295	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	433	-	-	-	~ 29	466
Mov Cap-2 Maneuver	-	-	-	-	~ 29	-
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	295	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.1	0		\$ 395.9		
HCM LOS	F					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	433	-	-	-	29	466
HCM Lane V/C Ratio	0.19	-	-	-	4.075	0.966
HCM Control Delay (s)	15.3	-	-	-	\$ 1661.6	63.5
HCM Lane LOS	C	-	-	-	F	F
HCM 95th %tile Q(veh)	0.7	-	-	-	14.3	12
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Build-out PM (2026) - Full Movement

02/01/2022

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (vph)	83	290	54	73	81	357	45	85	102	123	70	116	111
Future Volume (vph)	83	290	54	73	81	357	45	85	102	123	70	116	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%				-1%			0%			0%	
Storage Length (ft)	100		75		150		0	150		0	0		50
Storage Lanes	1		1		1		0	1		1	1		1
Taper Length (ft)	125				100			100			50		
Satd. Flow (prot)	1761	1853	1575	0	1778	3493	0	1703	1792	1524	1770	1727	0
Flt Permitted	0.404				0.357			0.409			0.668		
Satd. Flow (perm)	749	1853	1575	0	668	3493	0	733	1792	1524	1244	1727	0
Right Turn on Red			Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			205			26				168		49	
Link Speed (mph)		45				45			35			20	
Link Distance (ft)		1984				3210			1999			620	
Travel Time (s)		30.1				48.6			38.9			21.1	
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.73	0.73	0.73	0.50	0.73	0.73	0.69	0.73	0.73	0.73	0.70	0.73	0.73
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%				0%			0%			0%	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	114	397	74	0	257	554	0	116	140	168	100	311	0
Turn Type	D.P+P	NA	Perm	D.P+P	D.P+P	NA		D.Pm	NA	pm+ov	D.Pm	NA	
Protected Phases	5	2		1!	1	6			8	1!		4	
Permitted Phases	6		2	2	2			4		8	8		
Detector Phase	5	2	2	1	1	6		4	8	1	8	4	
Switch Phase													
Minimum Initial (s)	7.0	12.0	12.0	7.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	33.0	33.0	14.0	14.0	27.0		36.0	36.0	14.0	36.0	36.0	
Total Split (s)	14.0	35.0	35.0	30.0	30.0	51.0		20.0	20.0	30.0	20.0	20.0	
Total Split (%)	16.5%	41.2%	41.2%	35.3%	35.3%	60.0%		23.5%	23.5%	35.3%	23.5%	23.5%	
Yellow Time (s)	3.0	4.6	4.6	3.0	3.0	4.6		3.8	3.8	3.0	3.8	3.8	
All-Red Time (s)	2.9	1.6	1.6	2.9	2.9	1.6		3.4	3.4	2.9	3.4	3.4	
Lost Time Adjust (s)	-0.9	-1.2	-1.2		-0.9	-1.2		-2.2	-2.2	-0.9	-2.2	-2.2	
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				Yes			
Recall Mode	None	Min	Min	None	None	Min		None	None	None	None	None	
Act Effct Green (s)	29.4	18.4	18.4		28.2	23.1		15.2	15.2	30.0	15.2	15.2	
Actuated g/C Ratio	0.50	0.31	0.31		0.48	0.39		0.26	0.26	0.51	0.26	0.26	
v/c Ratio	0.22	0.68	0.12		0.51	0.40		0.61	0.30	0.19	0.31	0.64	
Control Delay	6.7	24.0	0.4		10.1	13.7		40.0	21.9	2.6	23.3	26.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	6.7	24.0	0.4		10.1	13.7		40.0	21.9	2.6	23.3	26.0	
LOS	A	C	A		B	B		D	C	A	C	C	
Approach Delay		17.7				12.6			19.2			25.3	
Approach LOS		B				B			B			C	
Queue Length 50th (ft)	16	118	0		40	72		35	39	0	28	79	
Queue Length 95th (ft)	26	155	0		53	83		#90	78	15	59	140	
Internal Link Dist (ft)		1904				3130			1919			540	
Turn Bay Length (ft)	100		75		150			150					
Base Capacity (vph)	542	960	915		858	2781		189	464	1222	322	483	
Starvation Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.21	0.41	0.08		0.30	0.20		0.61	0.30	0.14	0.31	0.64	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 58.6

\\kimley-horn.com\SE_DUR\RAL_TPTO_Traffic\011822014 Thales Holly Springs\T4 - Analysis\Synchro\6-Build-out PM (2026) - Full Movement.syn
Kimley-Horn

Synchro 10 Report

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Build-out PM (2026) - Full Movement
02/01/2022

Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 59.2%	ICU Level of Service B
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
! Phase conflict between lane groups.	

Splits and Phases: 8: Green Oaks Pkwy. & New Hill Road



Queuing and Blocking Report

Build-out PM (2026) - Full Movement

01/31/2022

Intersection: 1: NC 55 Bypass SB & New Hill Road

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	R	R	T	T	T	T	R
Maximum Queue (ft)	850	1709	525	441	472	482	257
Average Queue (ft)	831	1508	170	157	446	455	119
95th Queue (ft)	927	2083	334	313	475	468	209
Link Distance (ft)		1692	225	225	279	279	279
Upstream Blk Time (%)		18	1	1	38	41	0
Queuing Penalty (veh)		163	2	1	433	460	3
Storage Bay Dist (ft)	750						
Storage Blk Time (%)	70	29					
Queuing Penalty (veh)	377	152					

Intersection: 2: NC 55 Bypass NB & W Holly Springs Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	R	R	T	T	R
Maximum Queue (ft)	294	287	186	526	554	192
Average Queue (ft)	99	152	83	455	520	179
95th Queue (ft)	228	243	150	574	556	239
Link Distance (ft)	310		791	192	192	
Upstream Blk Time (%)				37	38	2
Queuing Penalty (veh)				449	472	0
Storage Bay Dist (ft)		400				175
Storage Blk Time (%)					40	2
Queuing Penalty (veh)					166	23

Intersection: 3: NC 55 Bypass SB & Holly Springs Road U-Turn

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	60	86	788	788
Average Queue (ft)	53	74	752	755
95th Queue (ft)	66	83	789	789
Link Distance (ft)	4	4	736	736
Upstream Blk Time (%)	66	75	31	41
Queuing Penalty (veh)	125	141	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Build-out PM (2026) - Full Movement

01/31/2022

Intersection: 4: NC 55 Bypass NB & New Hill Road U-Turn

Movement	EB	EB	NB	NB
Directions Served	L	L	T	T
Maximum Queue (ft)	67	93	777	779
Average Queue (ft)	52	75	673	662
95th Queue (ft)	59	84	921	935
Link Distance (ft)	-1	-1	728	728
Upstream Blk Time (%)			43	40
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: New Hill Road & Old Holly Springs Apex Rd.

Movement	EB	EB	B15	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (ft)	325	946	368	402	148	425	1344
Average Queue (ft)	217	569	119	182	36	269	548
95th Queue (ft)	413	1176	365	338	94	514	1529
Link Distance (ft)		846	304	1692	1692		1584
Upstream Blk Time (%)		26	6				7
Queuing Penalty (veh)		240	55				38
Storage Bay Dist (ft)	225					300	
Storage Blk Time (%)	1	42				43	0
Queuing Penalty (veh)	4	102				130	1

Intersection: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	139	836	242	953	301	85	38	33
Average Queue (ft)	8	387	186	529	166	31	8	6
95th Queue (ft)	68	921	313	1278	260	65	29	25
Link Distance (ft)		1124		1088		1581	182	182
Upstream Blk Time (%)		8		27				
Queuing Penalty (veh)		0		0				
Storage Bay Dist (ft)	150		150		325			
Storage Blk Time (%)		27	62	4	0			
Queuing Penalty (veh)		2	245	5	0			

Queuing and Blocking Report

Build-out PM (2026) - Full Movement

01/31/2022

Intersection: 7: New Hill Road & Socratic Way

Movement	EB	EB	WB	WB	WB	SB	SB	B12
Directions Served	L	T	T	T	R	L	R	T
Maximum Queue (ft)	174	811	3	11	28	256	284	44
Average Queue (ft)	33	165	0	0	2	129	134	13
95th Queue (ft)	128	693	3	7	12	298	347	57
Link Distance (ft)		3114	304	304			305	11
Upstream Blk Time (%)						10	17	3
Queuing Penalty (veh)						0	35	6
Storage Bay Dist (ft)	100				100	200		
Storage Blk Time (%)		15				27	2	
Queuing Penalty (veh)		3				44	1	

Intersection: 8: Green Oaks Pkwy. & New Hill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	UL	T	TR	L	T	R	L	TR
Maximum Queue (ft)	102	202	109	122	73	80	114	139	117	292	100
Average Queue (ft)	31	76	23	43	18	24	44	47	43	83	71
95th Queue (ft)	69	147	72	92	50	59	91	98	85	212	112
Link Distance (ft)		1938			3114	3114		1942	1942	575	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100		75	150			150				50
Storage Blk Time (%)	0	9	0	0			0	0		12	25
Queuing Penalty (veh)	0	13	0	0			1	0		31	20

Zone Summary

Zone wide Queuing Penalty: 3942

Appendix J:
Synchro & SimTraffic Output:
Build-out (2026) – Right-out Only Scenario

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Build-out AM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	913	0	929	0	0	0	0	0	1901	654
Future Volume (vph)	0	0	913	0	929	0	0	0	0	0	1901	654
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			0%			0%			1%	
Storage Length (ft)	750		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Flt Permitted												
Satd. Flow (perm)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)			57									58
Link Speed (mph)		35			55			55			55	
Link Distance (ft)		1787			560			1413			473	
Travel Time (s)		34.8			6.9			17.5			5.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.89	0.93	0.91	0.93	0.93	0.93	0.93	0.93	0.93	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	1026	0	1021	0	0	0	0	0	2044	727
Turn Type			Prot		NA						NA	Perm
Protected Phases			3		3						6	
Permitted Phases												6
Detector Phase			3		3						6	6
Switch Phase												
Minimum Initial (s)			7.0		7.0						14.0	14.0
Minimum Split (s)			31.0		31.0						39.0	39.0
Total Split (s)			31.0		31.0						44.0	44.0
Total Split (%)			41.3%		41.3%						58.7%	58.7%
Yellow Time (s)			3.0		3.0						5.1	5.1
All-Red Time (s)			4.0		4.0						1.8	1.8
Lost Time Adjust (s)			-2.0		-2.0						-1.9	-1.9
Total Lost Time (s)			5.0		5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode			None		None						C-Max	C-Max
Act Effct Green (s)			26.0		26.0						39.0	39.0
Actuated g/C Ratio			0.35		0.35						0.52	0.52
v/c Ratio			1.03		0.83						1.12	0.86
Control Delay			61.0		23.2						72.6	13.2
Queue Delay			0.0		0.0						0.0	0.0
Total Delay			61.0		23.2						72.6	13.2
LOS			E		C						E	B
Approach Delay		61.0			23.2						57.0	
Approach LOS		E			C						E	
Queue Length 50th (ft)			~272		297						~861	161
Queue Length 95th (ft)			#406		m147						m#545	m107
Internal Link Dist (ft)		1707			480			1333			393	
Turn Bay Length (ft)												
Base Capacity (vph)			998		1226						1831	846
Starvation Cap Reductn			0		0						0	0
Spillback Cap Reductn			0		0						0	0
Storage Cap Reductn			0		0						0	0
Reduced v/c Ratio			1.03		0.83						1.12	0.86
Intersection Summary												
Area Type:	Other											
Cycle Length: 75												
Actuated Cycle Length: 75												

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Build-out AM (2026) - Right-out Only
02/01/2022

Offset: 64 (85%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 50.7	Intersection LOS: D
Intersection Capacity Utilization 138.8%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: NC 55 Bypass SB & New Hill Road



Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Build-out AM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	289	0	0	0	1628	0	3638	287	0	0	0
Future Volume (vph)	0	289	0	0	0	1628	0	3638	287	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			-4%			0%			0%	
Storage Length (ft)	0		0	400		0	0		175	0		0
Storage Lanes	0		0	1		2	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						29			70			
Link Speed (mph)		55			35			55			55	
Link Distance (ft)		486			877			542			909	
Travel Time (s)		6.0			17.1			6.7			11.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.92	0.93	0.93	0.88	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	311	0	0	0	1770	0	3912	326	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		7				7		2				
Permitted Phases									2			
Detector Phase		7				7		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		14.0	14.0			
Minimum Split (s)		34.0				34.0		34.2	34.2			
Total Split (s)		60.0				60.0		90.0	90.0			
Total Split (%)		40.0%				40.0%		60.0%	60.0%			
Yellow Time (s)		3.0				3.0		5.2	5.2			
All-Red Time (s)		3.7				3.7		1.8	1.8			
Lost Time Adjust (s)		-1.7				-1.7		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		55.0				55.0		85.0	85.0			
Actuated g/C Ratio		0.37				0.37		0.57	0.57			
v/c Ratio		0.46				1.67		1.95	0.35			
Control Delay		28.4				336.6		450.1	11.0			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		28.4				336.6		450.1	11.0			
LOS		C				F		F	B			
Approach Delay		28.4			336.6			416.3				
Approach LOS		C			F			F				
Queue Length 50th (ft)		174				~1428		~2903	92			
Queue Length 95th (ft)		m156				#1578		m#1501	m34			
Internal Link Dist (ft)		406			797			462			829	
Turn Bay Length (ft)									175			
Base Capacity (vph)		679				1060		2005	927			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.46				1.67		1.95	0.35			

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Build-out AM (2026) - Right-out Only
02/01/2022

Offset: 38 (25%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.95	
Intersection Signal Delay: 374.9	Intersection LOS: F
Intersection Capacity Utilization 165.8%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: NC 55 Bypass NB & W Holly Springs Road



Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Build-out AM (2026) - Right-out Only
02/01/2022

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	483	0	0	0	0	2361
Future Volume (vph)	483	0	0	0	0	2361
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			3%
Storage Length (ft)	0	0		0	0	
Storage Lanes	2	0		0	0	
Taper Length (ft)	100				100	
Satd. Flow (prot)	3433	0	0	0	0	3486
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3486
Right Turn on Red	No	Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (mph)	55		55			55
Link Distance (ft)	56		443			765
Travel Time (s)	0.7		5.5			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	549	0	0	0	0	2595
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					14.0
Minimum Split (s)	15.0					22.0
Total Split (s)	20.0					55.0
Total Split (%)	26.7%					73.3%
Yellow Time (s)	3.0					4.9
All-Red Time (s)	3.9					1.0
Lost Time Adjust (s)	-1.9					-0.9
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None					C-Max
Act Effct Green (s)	14.8					50.2
Actuated g/C Ratio	0.20					0.67
v/c Ratio	0.81					1.11
Control Delay	43.0					73.2
Queue Delay	0.0					0.0
Total Delay	43.0					73.2
LOS	D					E
Approach Delay	43.0					73.2
Approach LOS	D					E
Queue Length 50th (ft)	262					~744
Queue Length 95th (ft)	m127					#881
Internal Link Dist (ft)	1		363			685
Turn Bay Length (ft)						
Base Capacity (vph)	686					2333
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.80					1.11

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Build-out AM (2026) - Right-out Only
02/01/2022

Offset: 50 (67%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.11	
Intersection Signal Delay: 67.9	Intersection LOS: E
Intersection Capacity Utilization 205.0%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: NC 55 Bypass SB & Holly Springs Road U-Turn



Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Build-out AM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	505	0	0	4153	0	0
Future Volume (vph)	505	0	0	4153	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			2%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	3433	0	0	3504	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	3504	0	0
Right Turn on Red	No	Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	55			55	55	
Link Distance (ft)	49			757	857	
Travel Time (s)	0.6			9.4	10.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	561	0	0	4418	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			14.0		
Minimum Split (s)	15.0			22.0		
Total Split (s)	30.0			120.0		
Total Split (%)	20.0%			80.0%		
Yellow Time (s)	3.0			5.0		
All-Red Time (s)	4.2			1.0		
Lost Time Adjust (s)	-2.2			-1.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			C-Max		
Act Effct Green (s)	25.0			115.0		
Actuated g/C Ratio	0.17			0.77		
v/c Ratio	0.98			1.64		
Control Delay	50.8			312.6		
Queue Delay	0.0			0.0		
Total Delay	50.8			312.6		
LOS	D			F		
Approach Delay	50.8			312.6		
Approach LOS	D			F		
Queue Length 50th (ft)	261			~3282		
Queue Length 95th (ft)	m245			#3326		
Internal Link Dist (ft)	1			677	777	
Turn Bay Length (ft)						
Base Capacity (vph)	572			2686		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.98			1.64		

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Build-out AM (2026) - Right-out Only
02/01/2022

Offset: 10 (7%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.64	
Intersection Signal Delay: 283.1	Intersection LOS: F
Intersection Capacity Utilization 181.6%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: NC 55 Bypass NB & New Hill Road U-Turn



Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Build-out AM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	409	537	732	652	407	179
Future Volume (vph)	409	537	732	652	407	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	-1%		3%	
Storage Length (ft)	225			0	300	0
Storage Lanes	1			1	1	1
Taper Length (ft)	100				125	
Satd. Flow (prot)	1770	1863	1872	1591	1743	1560
Flt Permitted	0.070				0.950	
Satd. Flow (perm)	130	1863	1872	1591	1743	1560
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				103		72
Link Speed (mph)		35	35		35	
Link Distance (ft)		936	1787		1689	
Travel Time (s)		18.2	34.8		32.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.84	0.85	0.90	0.90	0.86
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	465	639	861	724	452	208
Turn Type	D.P+P	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	6			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	14.0	23.0	23.0	23.0	23.0	14.0
Total Split (s)	35.0	95.0	60.0	35.0	35.0	35.0
Total Split (%)	26.9%	73.1%	46.2%	26.9%	26.9%	26.9%
Yellow Time (s)	5.0	3.8	3.9	3.0	3.0	5.0
All-Red Time (s)	2.0	1.9	1.3	3.4	3.4	2.0
Lost Time Adjust (s)	-2.0	-0.7	-0.2	-1.4	-1.4	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	85.0	90.0	55.0	90.0	30.0	64.4
Actuated g/C Ratio	0.65	0.69	0.42	0.69	0.23	0.50
v/c Ratio	1.00	0.50	1.09	0.64	1.12	0.26
Control Delay	83.0	11.0	94.5	12.3	128.6	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	11.0	94.5	12.3	128.6	13.0
LOS	F	B	F	B	F	B
Approach Delay		41.3	56.9		92.2	
Approach LOS		D	E		F	
Queue Length 50th (ft)	~347	230	~814	261	~439	62
Queue Length 95th (ft)	#553	278	#966	381	#649	105
Internal Link Dist (ft)		856	1707		1609	
Turn Bay Length (ft)	225				300	
Base Capacity (vph)	463	1289	792	1133	402	809
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.50	1.09	0.64	1.12	0.26

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Build-out AM (2026) - Right-out Only
02/01/2022

Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 58.7	Intersection LOS: E
Intersection Capacity Utilization 96.2%	ICU Level of Service F
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 5: New Hill Road & Old Holly Springs Apex Rd.



Thales Academy Holly Springs

Build-out AM (2026) - Right-out Only

6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	621	499	42	240	214	1042	13	115	5	13	4
Future Volume (vph)	4	621	499	42	240	214	1042	13	115	5	13	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			3%			-4%			3%	
Storage Length (ft)	150		0	150		0	325		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1761	1729	0	1743	1705	0	1805	1642	0	1743	1774	0
Flt Permitted	0.242			0.068			0.746			0.656		
Satd. Flow (perm)	449	1729	0	125	1705	0	1417	1642	0	1204	1774	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			35			113			4	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1166			1135			1686			224	
Travel Time (s)		22.7			22.1			32.8			4.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.91	0.79	0.92	0.92	0.92	0.92	0.88	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	1223	0	53	494	0	1133	145	0	5	18	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	17.0	17.0		35.0	35.0		40.0	40.0		15.0	15.0	
Total Split (s)	64.0	64.0		64.0	64.0		86.0	86.0		86.0	86.0	
Total Split (%)	42.7%	42.7%		42.7%	42.7%		57.3%	57.3%		57.3%	57.3%	
Yellow Time (s)	3.8	3.8		3.7	3.7		4.1	4.1		3.7	3.7	
All-Red Time (s)	2.2	2.2		1.7	1.7		2.2	2.2		2.8	2.8	
Lost Time Adjust (s)	-1.0	-1.0		-0.4	-0.4		-1.3	-1.3		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	59.0	59.0		59.0	59.0		81.0	81.0		81.0	81.0	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.54	0.54		0.54	0.54	
v/c Ratio	0.02	1.75		1.08	0.71		1.48	0.15		0.01	0.02	
Control Delay	28.5	372.1		198.0	42.4		252.4	5.1		16.0	13.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.5	372.1		198.0	42.4		252.4	5.1		16.0	13.6	
LOS	C	F		F	D		F	A		B	B	
Approach Delay		371.0			57.5			224.3			14.1	
Approach LOS		F			E			F			B	
Queue Length 50th (ft)	2	~1766		~58	379		~1522	14		2	6	
Queue Length 95th (ft)	11	#2037		#129	521		#1788	49		9	19	
Internal Link Dist (ft)		1086			1055			1606			144	
Turn Bay Length (ft)	150			150			325					
Base Capacity (vph)	176	699		49	691		765	938		650	959	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	1.75		1.08	0.71		1.48	0.15		0.01	0.02	

Intersection Summary

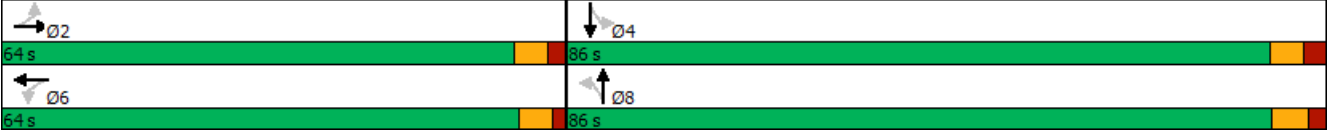
Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.75	
Intersection Signal Delay: 251.6	Intersection LOS: F
Intersection Capacity Utilization 135.9%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.



Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Build-out AM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	75	935	529	334	0	407
Future Volume (vph)	75	935	529	334	0	407
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	100			100	0	0
Storage Lanes	1			1	0	1
Taper Length (ft)	125				100	
Satd. Flow (prot)	1805	1863	3539	1615	0	1644
Flt Permitted	0.950					
Satd. Flow (perm)	1805	1863	3539	1615	0	1644
Link Speed (mph)		35	35		10	
Link Distance (ft)		3210	372		397	
Travel Time (s)		62.5	7.2		27.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.52	0.60	0.62	0.49	0.50	0.49
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	1558	853	682	0	831
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 52.5%				ICU Level of Service A		
Analysis Period (min) 15						

Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Build-out AM (2026) - Right-out Only
02/01/2022

Intersection						
Int Delay, s/veh	46					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	75	935	529	334	0	407
Future Vol, veh/h	75	935	529	334	0	407
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	52	60	62	49	50	49
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	144	1558	853	682	0	831
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1535	0	-	0	-	427
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	439	-	-	-	0	~ 582
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	439	-	-	-	-	~ 582
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.5	0		222.2		
HCM LOS	F					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	439	-	-	-	582	
HCM Lane V/C Ratio	0.329	-	-	-	1.427	
HCM Control Delay (s)	17.2	-	-	-	222.2	
HCM Lane LOS	C	-	-	-	F	
HCM 95th %tile Q(veh)	1.4	-	-	-	39.1	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Build-out AM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (vph)	42	491	177	156	206	368	130	83	32	53	137	44	55
Future Volume (vph)	42	491	177	156	206	368	130	83	32	53	137	44	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%				-1%			0%			0%	
Storage Length (ft)	100		75		150		0	150		0	0		50
Storage Lanes	1		1		1		0	1		1	1		1
Taper Length (ft)	125				100			100			50		
Satd. Flow (prot)	1761	1853	1575	0	1778	3415	0	1703	1792	1524	1770	1708	0
Flt Permitted	0.432				0.198			0.687			0.734		
Satd. Flow (perm)	801	1853	1575	0	371	3415	0	1231	1792	1524	1367	1708	0
Right Turn on Red			Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			205			96				58		60	
Link Speed (mph)		45				45			35			20	
Link Distance (ft)		1984				3210			1999			620	
Travel Time (s)		30.1				48.6			38.9			21.1	
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.92	0.91	0.92	0.49	0.92	0.91	0.88	0.92	0.92	0.92	0.88	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%				0%			0%			0%	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	46	540	192	0	542	552	0	90	35	58	156	108	0
Turn Type	D.P+P	NA	Perm	D.P+P	D.P+P	NA		D.Pm	NA	pm+ov	D.Pm	NA	
Protected Phases	5	2		1!	1	6			8	1!		4	
Permitted Phases	6		2	2	2			4		8	8		
Detector Phase	5	2	2	1	1	6		4	8	1	8	4	
Switch Phase													
Minimum Initial (s)	7.0	12.0	12.0	7.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	33.0	33.0	14.0	14.0	27.0		36.0	36.0	14.0	36.0	36.0	
Total Split (s)	14.0	35.0	35.0	30.0	30.0	51.0		20.0	20.0	30.0	20.0	20.0	
Total Split (%)	16.5%	41.2%	41.2%	35.3%	35.3%	60.0%		23.5%	23.5%	35.3%	23.5%	23.5%	
Yellow Time (s)	3.0	4.6	4.6	3.0	3.0	4.6		3.8	3.8	3.0	3.8	3.8	
All-Red Time (s)	2.9	1.6	1.6	2.9	2.9	1.6		3.4	3.4	2.9	3.4	3.4	
Lost Time Adjust (s)	-0.9	-1.2	-1.2		-0.9	-1.2		-2.2	-2.2	-0.9	-2.2	-2.2	
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				Yes			
Recall Mode	None	Min	Min	None	None	Min		None	None	None	None	None	
Act Effct Green (s)	50.7	26.4	26.4		48.3	46.4		13.4	13.4	40.5	13.4	13.4	
Actuated g/C Ratio	0.66	0.34	0.34		0.63	0.60		0.17	0.17	0.53	0.17	0.17	
v/c Ratio	0.07	0.85	0.29		0.86	0.26		0.42	0.11	0.07	0.66	0.31	
Control Delay	4.2	39.1	3.9		30.9	7.3		37.7	30.3	3.2	46.5	18.7	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	4.2	39.1	3.9		30.9	7.3		37.7	30.3	3.2	46.5	18.7	
LOS	A	D	A		C	A		D	C	A	D	B	
Approach Delay		28.3				19.0			25.3			35.1	
Approach LOS		C				B			C			D	
Queue Length 50th (ft)	6	259	0		182	61		43	16	0	78	22	
Queue Length 95th (ft)	15	#431	37		#358	90		89	41	17	#151	66	
Internal Link Dist (ft)		1904				3130			1919			540	
Turn Bay Length (ft)	100		75		150			150					
Base Capacity (vph)	648	740	752		710	2204		246	357	898	273	388	
Starvation Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.73	0.26		0.76	0.25		0.37	0.10	0.06	0.57	0.28	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 77.1

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Build-out AM (2026) - Right-out Only
02/01/2022

Natural Cycle: 95	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 24.4	Intersection LOS: C
Intersection Capacity Utilization 76.0%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
! Phase conflict between lane groups.	

Splits and Phases: 8: Green Oaks Pkwy. & New Hill Road



Queuing and Blocking Report

Build-out AM (2026) - Right-out Only

01/31/2022

Intersection: 1: NC 55 Bypass SB & New Hill Road

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	R	R	T	T	T	T	R
Maximum Queue (ft)	352	291	492	472	471	477	216
Average Queue (ft)	209	133	143	150	375	397	119
95th Queue (ft)	335	239	323	364	522	536	188
Link Distance (ft)		1692	225	225	279	279	279
Upstream Blk Time (%)			0	0	32	39	0
Queuing Penalty (veh)			0	0	272	336	0
Storage Bay Dist (ft)	750						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: NC 55 Bypass NB & W Holly Springs Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	R	R	T	T	R
Maximum Queue (ft)	426	500	837	542	547	192
Average Queue (ft)	199	498	810	494	521	81
95th Queue (ft)	341	509	824	559	535	207
Link Distance (ft)	310		791	192	192	
Upstream Blk Time (%)	1		49	36	40	0
Queuing Penalty (veh)	3		0	720	798	0
Storage Bay Dist (ft)		400				175
Storage Blk Time (%)		49	59		41	0
Queuing Penalty (veh)		395	480		117	6

Intersection: 3: NC 55 Bypass SB & Holly Springs Road U-Turn

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	72	91	773	784
Average Queue (ft)	48	71	621	622
95th Queue (ft)	71	86	966	974
Link Distance (ft)	4	4	736	736
Upstream Blk Time (%)	37	50	16	23
Queuing Penalty (veh)	91	121	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Build-out AM (2026) - Right-out Only

01/31/2022

Intersection: 4: NC 55 Bypass NB & New Hill Road U-Turn

Movement	EB	EB	NB	NB
Directions Served	L	L	T	T
Maximum Queue (ft)	58	90	781	781
Average Queue (ft)	52	74	751	748
95th Queue (ft)	57	82	771	766
Link Distance (ft)	-1	-1	728	728
Upstream Blk Time (%)			67	54
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: New Hill Road & Old Holly Springs Apex Rd.

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	307	324	366	214	277	116
Average Queue (ft)	170	122	217	106	138	35
95th Queue (ft)	279	249	327	188	234	90
Link Distance (ft)		846	1692	1692		1584
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	225				300	
Storage Blk Time (%)	4	1			0	0
Queuing Penalty (veh)	21	3			0	0

Intersection: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	154	1174	250	1034	425	1323	24	39
Average Queue (ft)	7	1144	208	693	417	810	2	9
95th Queue (ft)	70	1161	303	1344	460	1445	15	31
Link Distance (ft)		1124		1088		1581	182	182
Upstream Blk Time (%)		79		41		0		
Queuing Penalty (veh)		0		0		1		
Storage Bay Dist (ft)	150		150		325			
Storage Blk Time (%)		64	80	26	42	0		
Queuing Penalty (veh)		3	364	11	54	0		

Queuing and Blocking Report

Build-out AM (2026) - Right-out Only

01/31/2022

Intersection: 7: New Hill Road & Socratic Way

Movement	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	R	R
Maximum Queue (ft)	80	64	3	11	51	148
Average Queue (ft)	24	3	0	0	6	88
95th Queue (ft)	62	33	3	7	28	134
Link Distance (ft)		3120	310	310		306
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	100				100	
Storage Blk Time (%)	0	0			0	
Queuing Penalty (veh)	1	0			0	

Intersection: 8: Green Oaks Pkwy. & New Hill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	UL	T	TR	L	T	R	L	TR
Maximum Queue (ft)	189	463	110	189	81	76	113	71	71	261	100
Average Queue (ft)	28	195	70	94	17	26	46	20	22	100	62
95th Queue (ft)	108	377	135	159	55	63	92	52	53	201	111
Link Distance (ft)		1938			3120	3120		1942	1942	575	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100		75	150			150				50
Storage Blk Time (%)	0	32	0	1			0			37	12
Queuing Penalty (veh)	0	70	2	3			0			37	16

Zone Summary

Zone wide Queuing Penalty: 3927

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Build-out PM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	1067	0	449	0	0	0	0	0	2658	699
Future Volume (vph)	0	0	1067	0	449	0	0	0	0	0	2658	699
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			0%			0%			1%	
Storage Length (ft)	750		0	0		0	0		0	0		0
Storage Lanes	1		1	0		0	0		0	0		1
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Flt Permitted												
Satd. Flow (perm)	0	0	2773	0	3539	0	0	0	0	0	3522	1575
Right Turn on Red			Yes	Yes		Yes			Yes			Yes
Satd. Flow (RTOR)			27									162
Link Speed (mph)		35			55			55			55	
Link Distance (ft)		1787			560			1413			473	
Travel Time (s)		34.8			6.9			17.5			5.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.90	0.92	0.90	0.92	0.92	0.92	0.92	0.92	0.92	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	1186	0	499	0	0	0	0	0	2889	777
Turn Type			Prot		NA						NA	Perm
Protected Phases			3		3						6	
Permitted Phases												6
Detector Phase			3		3						6	6
Switch Phase												
Minimum Initial (s)			7.0		7.0						14.0	14.0
Minimum Split (s)			31.0		31.0						39.0	39.0
Total Split (s)			60.0		60.0						100.0	100.0
Total Split (%)			37.5%		37.5%						62.5%	62.5%
Yellow Time (s)			3.0		3.0						5.1	5.1
All-Red Time (s)			4.0		4.0						1.8	1.8
Lost Time Adjust (s)			-2.0		-2.0						-1.9	-1.9
Total Lost Time (s)			5.0		5.0						5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode			None		None						C-Max	C-Max
Act Effct Green (s)			55.0		55.0						95.0	95.0
Actuated g/C Ratio			0.34		0.34						0.59	0.59
v/c Ratio			1.22		0.41						1.38	0.78
Control Delay			152.6		36.5						198.5	15.7
Queue Delay			0.0		0.0						0.0	0.0
Total Delay			152.6		36.5						198.5	15.7
LOS			F		D						F	B
Approach Delay		152.6			36.5						159.7	
Approach LOS		F			D						F	
Queue Length 50th (ft)			~855		187						~2109	174
Queue Length 95th (ft)			#1009		m166						m#1448	m131
Internal Link Dist (ft)		1707			480			1333			393	
Turn Bay Length (ft)												
Base Capacity (vph)			970		1216						2091	1000
Starvation Cap Reductn			0		0						0	0
Spillback Cap Reductn			0		0						0	0
Storage Cap Reductn			0		0						0	0
Reduced v/c Ratio			1.22		0.41						1.38	0.78

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Thales Academy Holly Springs
1: NC 55 Bypass SB & New Hill Road

Build-out PM (2026) - Right-out Only
02/01/2022

Offset: 31 (19%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.38	
Intersection Signal Delay: 146.6	Intersection LOS: F
Intersection Capacity Utilization 119.1%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 1: NC 55 Bypass SB & New Hill Road



Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Build-out PM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	263	0	0	0	591	0	2007	411	0	0	0
Future Volume (vph)	0	263	0	0	0	591	0	2007	411	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			-4%			0%			0%	
Storage Length (ft)	0		0	400		0	0		175	0		0
Storage Lanes	0		0	1		2	0		1	0		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	1853	0	0	0	2842	0	3539	1583	0	0	0
Right Turn on Red	Yes		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						55			290			
Link Speed (mph)		55			35			55			55	
Link Distance (ft)		486			877			542			909	
Travel Time (s)		6.0			17.1			6.7			11.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.90	0.92	0.92	0.89	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	286	0	0	0	657	0	2182	462	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		7				7		2				
Permitted Phases									2			
Detector Phase		7				7		2	2			
Switch Phase												
Minimum Initial (s)		7.0				7.0		14.0	14.0			
Minimum Split (s)		34.0				34.0		34.2	34.2			
Total Split (s)		35.0				35.0		45.0	45.0			
Total Split (%)		43.8%				43.8%		56.3%	56.3%			
Yellow Time (s)		3.0				3.0		5.2	5.2			
All-Red Time (s)		3.7				3.7		1.8	1.8			
Lost Time Adjust (s)		-1.7				-1.7		-2.0	-2.0			
Total Lost Time (s)		5.0				5.0		5.0	5.0			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		None				None		C-Max	C-Max			
Act Effct Green (s)		24.8				24.8		45.2	45.2			
Actuated g/C Ratio		0.31				0.31		0.56	0.56			
v/c Ratio		0.50				0.71		1.09	0.45			
Control Delay		17.8				26.5		61.8	2.9			
Queue Delay		0.0				0.0		0.0	0.0			
Total Delay		17.8				26.5		61.8	2.9			
LOS		B				C		E	A			
Approach Delay		17.8			26.5			51.5				
Approach LOS		B			C			D				
Queue Length 50th (ft)		152				147		~997	39			
Queue Length 95th (ft)		m101				193		m#903	m21			
Internal Link Dist (ft)		406			797			462		829		
Turn Bay Length (ft)									175			
Base Capacity (vph)		694				1100		1997	1019			
Starvation Cap Reductn		0				0		0	0			
Spillback Cap Reductn		0				0		0	0			
Storage Cap Reductn		0				0		0	0			
Reduced v/c Ratio		0.41				0.60		1.09	0.45			
Intersection Summary												
Area Type:	Other											
Cycle Length: 80												
Actuated Cycle Length: 80												

Thales Academy Holly Springs
2: NC 55 Bypass NB & W Holly Springs Road

Build-out PM (2026) - Right-out Only
02/01/2022

Offset: 74 (93%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 44.2	Intersection LOS: D
Intersection Capacity Utilization 84.5%	ICU Level of Service E
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: NC 55 Bypass NB & W Holly Springs Road



Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Build-out PM (2026) - Right-out Only
02/01/2022

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	373	0	0	0	0	3248
Future Volume (vph)	373	0	0	0	0	3248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			3%
Storage Length (ft)	0	0		0	0	
Storage Lanes	2	0		0	0	
Taper Length (ft)	100				100	
Satd. Flow (prot)	3433	0	0	0	0	3486
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3486
Right Turn on Red	No	Yes		Yes		
Satd. Flow (RTOR)						
Link Speed (mph)	55		55			55
Link Distance (ft)	56		443			765
Travel Time (s)	0.7		5.5			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	424	0	0	0	0	3569
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					14.0
Minimum Split (s)	15.0					22.0
Total Split (s)	30.0					130.0
Total Split (%)	18.8%					81.3%
Yellow Time (s)	3.0					4.9
All-Red Time (s)	3.9					1.0
Lost Time Adjust (s)	-1.9					-0.9
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None					C-Max
Act Effct Green (s)	23.8					126.2
Actuated g/C Ratio	0.15					0.79
v/c Ratio	0.83					1.30
Control Delay	63.2					157.6
Queue Delay	0.0					0.0
Total Delay	63.2					157.6
LOS	E					F
Approach Delay	63.2					157.6
Approach LOS	E					F
Queue Length 50th (ft)	229					~2517
Queue Length 95th (ft)	271					#2590
Internal Link Dist (ft)	1		363			685
Turn Bay Length (ft)						
Base Capacity (vph)	536					2749
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.79					1.30

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Thales Academy Holly Springs
3: NC 55 Bypass SB & Holly Springs Road U-Turn

Build-out PM (2026) - Right-out Only
02/01/2022

Offset: 10 (6%), Referenced to phase 6:SBT, Start of Green	
Natural Cycle: 150	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.30	
Intersection Signal Delay: 147.6	Intersection LOS: F
Intersection Capacity Utilization 155.6%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: NC 55 Bypass SB & Holly Springs Road U-Turn



Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Build-out PM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	626	0	0	2207	0	0
Future Volume (vph)	626	0	0	2207	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			2%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	100		100			
Satd. Flow (prot)	3433	0	0	3504	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	3504	0	0
Right Turn on Red	No	Yes				Yes
Satd. Flow (RTOR)						
Link Speed (mph)	55			55	55	
Link Distance (ft)	49			757	857	
Travel Time (s)	0.6			9.4	10.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	720	0	0	2480	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			14.0		
Minimum Split (s)	15.0			22.0		
Total Split (s)	25.0			55.0		
Total Split (%)	31.3%			68.8%		
Yellow Time (s)	3.0			5.0		
All-Red Time (s)	4.2			1.0		
Lost Time Adjust (s)	-2.2			-1.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			C-Max		
Act Effct Green (s)	19.7			50.3		
Actuated g/C Ratio	0.25			0.63		
v/c Ratio	0.85			1.13		
Control Delay	51.9			81.0		
Queue Delay	0.0			0.0		
Total Delay	51.9			81.0		
LOS	D			F		
Approach Delay	51.9			81.0		
Approach LOS	D			F		
Queue Length 50th (ft)	393			~770		
Queue Length 95th (ft)	m314			#890		
Internal Link Dist (ft)	1			677	777	
Turn Bay Length (ft)						
Base Capacity (vph)	858			2204		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.84			1.13		
Intersection Summary						
Area Type:	Other					
Cycle Length: 80						
Actuated Cycle Length: 80						

Thales Academy Holly Springs
4: NC 55 Bypass NB & New Hill Road U-Turn

Build-out PM (2026) - Right-out Only
02/01/2022

Offset: 53 (66%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 74.4	Intersection LOS: E
Intersection Capacity Utilization 155.8%	ICU Level of Service H
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 4: NC 55 Bypass NB & New Hill Road U-Turn



Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Build-out PM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	248	694	666	269	224	311
Future Volume (vph)	248	694	666	269	224	311
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	-1%		3%	
Storage Length (ft)	225			0	300	0
Storage Lanes	1			1	1	1
Taper Length (ft)	100				125	
Satd. Flow (prot)	1770	1863	1872	1591	1743	1560
Flt Permitted	0.106				0.950	
Satd. Flow (perm)	197	1863	1872	1591	1743	1560
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				196		188
Link Speed (mph)		35	35		35	
Link Distance (ft)		936	1787		1689	
Travel Time (s)		18.2	34.8		32.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.87	0.86	0.86	0.89	0.89	0.88
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	285	807	774	302	252	353
Turn Type	D.P+P	NA	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	6	4	4	5
Permitted Phases	6			6		4
Detector Phase	5	2	6	4	4	5
Switch Phase						
Minimum Initial (s)	7.0	10.0	10.0	7.0	7.0	7.0
Minimum Split (s)	14.0	23.0	23.0	23.0	23.0	14.0
Total Split (s)	25.0	105.0	80.0	25.0	25.0	25.0
Total Split (%)	19.2%	80.8%	61.5%	19.2%	19.2%	19.2%
Yellow Time (s)	5.0	3.8	3.9	3.0	3.0	5.0
All-Red Time (s)	2.0	1.9	1.3	3.4	3.4	2.0
Lost Time Adjust (s)	-2.0	-0.7	-0.2	-1.4	-1.4	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.6
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Recall Mode	None	Min	Min	None	None	None
Act Effct Green (s)	56.7	61.9	42.3	67.0	19.5	38.5
Actuated g/C Ratio	0.62	0.67	0.46	0.73	0.21	0.42
v/c Ratio	0.77	0.64	0.90	0.25	0.68	0.46
Control Delay	36.1	10.8	36.8	1.9	47.6	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	10.8	36.8	1.9	47.6	12.6
LOS	D	B	D	A	D	B
Approach Delay		17.4	27.0		27.2	
Approach LOS		B	C		C	
Queue Length 50th (ft)	98	238	387	14	127	57
Queue Length 95th (ft)	204	299	565	41	#337	177
Internal Link Dist (ft)		856	1707		1609	
Turn Bay Length (ft)	225				300	
Base Capacity (vph)	487	1793	1550	1233	395	858
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.45	0.50	0.24	0.64	0.41

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 91.8

Thales Academy Holly Springs
5: New Hill Road & Old Holly Springs Apex Rd.

Build-out PM (2026) - Right-out Only
02/01/2022

Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 23.3	Intersection LOS: C
Intersection Capacity Utilization 73.7%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 5: New Hill Road & Old Holly Springs Apex Rd.



Thales Academy Holly Springs

Build-out PM (2026) - Right-out Only

6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

02/01/2022

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	392	439	110	391	4	367	4	85	13	4	4
Future Volume (vph)	6	392	439	110	391	4	367	4	85	13	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%			3%			-4%			3%	
Storage Length (ft)	150		0	150		0	325		0	0		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Satd. Flow (prot)	1761	1707	0	1743	1833	0	1805	1626	0	1743	1697	0
Flt Permitted	0.450			0.133			0.752			0.692		
Satd. Flow (perm)	834	1707	0	244	1833	0	1429	1626	0	1270	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		90			1			96			4	
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		1166			1135			1686			224	
Travel Time (s)		22.7			22.1			32.8			4.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.91	0.94	0.94	0.94	0.94	0.89	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	884	0	121	420	0	390	100	0	14	8	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	17.0	17.0		35.0	35.0		40.0	40.0		15.0	15.0	
Total Split (s)	60.0	60.0		60.0	60.0		40.0	40.0		40.0	40.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.8	3.8		3.7	3.7		4.1	4.1		3.7	3.7	
All-Red Time (s)	2.2	2.2		1.7	1.7		2.2	2.2		2.8	2.8	
Lost Time Adjust (s)	-1.0	-1.0		-0.4	-0.4		-1.3	-1.3		-1.5	-1.5	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	55.2	55.2		55.2	55.2		29.8	29.8		29.8	29.8	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.31	0.31		0.31	0.31	
v/c Ratio	0.01	0.86		0.86	0.39		0.87	0.17		0.04	0.01	
Control Delay	10.3	26.6		69.9	13.1		51.4	6.0		21.9	16.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.3	26.6		69.9	13.1		51.4	6.0		21.9	16.9	
LOS	B	C		E	B		D	A		C	B	
Approach Delay		26.5			25.8			42.2			20.1	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	2	411		61	138		220	2		6	2	
Queue Length 95th (ft)	8	#734		#187	218		#369	36		20	12	
Internal Link Dist (ft)		1086			1055			1606			144	
Turn Bay Length (ft)	150			150			325					
Base Capacity (vph)	484	1029		141	1064		528	661		469	629	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.01	0.86		0.86	0.39		0.74	0.15		0.03	0.01	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 95

Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 30.2	Intersection LOS: C
Intersection Capacity Utilization 95.3%	ICU Level of Service F
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.



Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Build-out PM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	37	957	783	172	0	290
Future Volume (vph)	37	957	783	172	0	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	100			100	200	0
Storage Lanes	1			1	0	1
Taper Length (ft)	125				100	
Satd. Flow (prot)	1805	1863	3539	1615	0	1644
Flt Permitted	0.950					
Satd. Flow (perm)	1805	1863	3539	1615	0	1644
Link Speed (mph)		35	35		10	
Link Distance (ft)		3210	372		397	
Travel Time (s)		62.5	7.2		27.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.45	0.85	0.68	0.43	0.55	0.51
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	1126	1151	400	0	569
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 53.7%				ICU Level of Service A		
Analysis Period (min) 15						

Thales Academy Holly Springs
7: New Hill Road & Socratic Way

Build-out PM (2026) - Right-out Only
02/01/2022

Intersection						
Int Delay, s/veh	25					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	957	783	172	0	290
Future Vol, veh/h	37	957	783	172	0	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	45	85	68	43	55	51
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	82	1126	1151	400	0	569
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1551	0	-	0	-	576
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	433	-	-	-	0	~ 466
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	433	-	-	-	-	~ 466
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	1	0		144.1		
HCM LOS				F		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	433	-	-	-	466	
HCM Lane V/C Ratio	0.19	-	-	-	1.22	
HCM Control Delay (s)	15.3	-	-	-	144.1	
HCM Lane LOS	C	-	-	-	F	
HCM 95th %tile Q(veh)	0.7	-	-	-	22.4	
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Build-out PM (2026) - Right-out Only
02/01/2022

Lane Group	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Volume (vph)	83	290	54	138	81	357	45	85	102	123	70	116	111
Future Volume (vph)	83	290	54	138	81	357	45	85	102	123	70	116	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		1%				-1%			0%			0%	
Storage Length (ft)	100		75		150		0	150		0	0		50
Storage Lanes	1		1		1		0	1		1	1		1
Taper Length (ft)	125				100			100			50		
Satd. Flow (prot)	1761	1853	1575	0	1778	3493	0	1703	1792	1524	1770	1727	0
Flt Permitted	0.409				0.344			0.384			0.668		
Satd. Flow (perm)	758	1853	1575	0	644	3493	0	688	1792	1524	1244	1727	0
Right Turn on Red			Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			205			26				168		49	
Link Speed (mph)		45				45			35			20	
Link Distance (ft)		1984				3210			1999			620	
Travel Time (s)		30.1				48.6			38.9			21.1	
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.73	0.73	0.73	0.52	0.73	0.73	0.69	0.73	0.73	0.73	0.70	0.73	0.73
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	6%	6%	6%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)													
Mid-Block Traffic (%)		0%				0%			0%			0%	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	114	397	74	0	376	554	0	116	140	168	100	311	0
Turn Type	D.P+P	NA	Perm	D.P+P	D.P+P	NA		D.Pm	NA	pm+ov	D.Pm	NA	
Protected Phases	5	2		1!	1	6			8	1!		4	
Permitted Phases	6		2	2	2			4		8	8		
Detector Phase	5	2	2	1	1	6		4	8	1	8	4	
Switch Phase													
Minimum Initial (s)	7.0	12.0	12.0	7.0	7.0	12.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	14.0	33.0	33.0	14.0	14.0	27.0		36.0	36.0	14.0	36.0	36.0	
Total Split (s)	14.0	35.0	35.0	30.0	30.0	51.0		20.0	20.0	30.0	20.0	20.0	
Total Split (%)	16.5%	41.2%	41.2%	35.3%	35.3%	60.0%		23.5%	23.5%	35.3%	23.5%	23.5%	
Yellow Time (s)	3.0	4.6	4.6	3.0	3.0	4.6		3.8	3.8	3.0	3.8	3.8	
All-Red Time (s)	2.9	1.6	1.6	2.9	2.9	1.6		3.4	3.4	2.9	3.4	3.4	
Lost Time Adjust (s)	-0.9	-1.2	-1.2		-0.9	-1.2		-2.2	-2.2	-0.9	-2.2	-2.2	
Total Lost Time (s)	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes				Yes			
Recall Mode	None	Min	Min	None	None	Min		None	None	None	None	None	
Act Effct Green (s)	32.6	19.0	19.0		31.4	26.3		15.3	15.3	32.7	15.3	15.3	
Actuated g/C Ratio	0.53	0.31	0.31		0.51	0.42		0.25	0.25	0.53	0.25	0.25	
v/c Ratio	0.22	0.70	0.12		0.68	0.37		0.69	0.32	0.19	0.33	0.67	
Control Delay	6.3	26.2	0.4		13.7	12.8		49.5	24.4	2.5	26.0	29.2	
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	6.3	26.2	0.4		13.7	12.8		49.5	24.4	2.5	26.0	29.2	
LOS	A	C	A		B	B		D	C	A	C	C	
Approach Delay		19.1				13.2			22.6			28.4	
Approach LOS		B				B			C			C	
Queue Length 50th (ft)	16	127	0		63	72		39	42	0	30	86	
Queue Length 95th (ft)	25	174	0		76	81		#106	86	15	65	155	
Internal Link Dist (ft)		1904				3130			1919			540	
Turn Bay Length (ft)	100		75		150			150					
Base Capacity (vph)	556	913	880		845	2647		169	441	1171	306	462	
Starvation Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.21	0.43	0.08		0.44	0.21		0.69	0.32	0.14	0.33	0.67	

Intersection Summary

Area Type: Other

Cycle Length: 85

Actuated Cycle Length: 61.9

Thales Academy Holly Springs
8: Green Oaks Pkwy. & New Hill Road

Build-out PM (2026) - Right-out Only
02/01/2022

Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 62.8%	ICU Level of Service B
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	
! Phase conflict between lane groups.	

Splits and Phases: 8: Green Oaks Pkwy. & New Hill Road



Queuing and Blocking Report

Build-out PM (2026) - Right-out Only

01/31/2022

Intersection: 1: NC 55 Bypass SB & New Hill Road

Movement	EB	EB	WB	WB	SB	SB	SB
Directions Served	R	R	T	T	T	T	R
Maximum Queue (ft)	850	1707	406	403	475	477	232
Average Queue (ft)	835	1495	162	152	446	454	121
95th Queue (ft)	921	2065	290	297	479	465	216
Link Distance (ft)		1692	225	225	279	279	279
Upstream Blk Time (%)		15	1	1	39	41	0
Queuing Penalty (veh)		138	3	2	435	464	2
Storage Bay Dist (ft)	750						
Storage Blk Time (%)	71	29					
Queuing Penalty (veh)	381	157					

Intersection: 2: NC 55 Bypass NB & W Holly Springs Road

Movement	EB	WB	WB	NB	NB	NB
Directions Served	T	R	R	T	T	R
Maximum Queue (ft)	404	309	211	534	554	192
Average Queue (ft)	113	162	83	450	523	180
95th Queue (ft)	282	266	159	572	549	238
Link Distance (ft)	310		791	192	192	
Upstream Blk Time (%)				36	39	2
Queuing Penalty (veh)				438	478	0
Storage Bay Dist (ft)		400				175
Storage Blk Time (%)		0			41	2
Queuing Penalty (veh)		0			167	21

Intersection: 3: NC 55 Bypass SB & Holly Springs Road U-Turn

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	62	88	790	787
Average Queue (ft)	54	74	754	756
95th Queue (ft)	65	84	795	774
Link Distance (ft)	4	4	736	736
Upstream Blk Time (%)	68	76	31	42
Queuing Penalty (veh)	127	143	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Build-out PM (2026) - Right-out Only

01/31/2022

Intersection: 4: NC 55 Bypass NB & New Hill Road U-Turn

Movement	EB	EB	NB	NB
Directions Served	L	L	T	T
Maximum Queue (ft)	63	92	774	777
Average Queue (ft)	52	75	691	683
95th Queue (ft)	58	84	921	939
Link Distance (ft)	-1	-1	728	728
Upstream Blk Time (%)			45	42
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: New Hill Road & Old Holly Springs Apex Rd.

Movement	EB	EB	B15	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (ft)	325	895	273	405	117	413	1335
Average Queue (ft)	199	473	86	188	40	255	519
95th Queue (ft)	395	1064	314	348	94	506	1470
Link Distance (ft)		846	310	1692	1692		1584
Upstream Blk Time (%)		19	4				4
Queuing Penalty (veh)		170	37				21
Storage Bay Dist (ft)	225					300	
Storage Blk Time (%)	0	34				39	1
Queuing Penalty (veh)	1	83				117	3

Intersection: 6: Old Holly Springs Apex Rd. & Bennett Knoll Pkwy. & Woodlark Ln.

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	119	741	249	916	291	102	38	29
Average Queue (ft)	7	319	195	537	171	32	8	5
95th Queue (ft)	62	694	315	1249	265	73	29	21
Link Distance (ft)		1124		1088		1581	182	182
Upstream Blk Time (%)		1		25				
Queuing Penalty (veh)		0		0				
Storage Bay Dist (ft)	150		150		325			
Storage Blk Time (%)		23	68	4	0			
Queuing Penalty (veh)		1	268	5	0			

Queuing and Blocking Report

Build-out PM (2026) - Right-out Only

01/31/2022

Intersection: 7: New Hill Road & Socratic Way

Movement	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	R	R
Maximum Queue (ft)	145	651	6	4	35	220
Average Queue (ft)	31	191	0	0	2	92
95th Queue (ft)	122	889	4	4	15	166
Link Distance (ft)		3120	310	310		306
Upstream Blk Time (%)						0
Queuing Penalty (veh)						0
Storage Bay Dist (ft)	100				100	
Storage Blk Time (%)	0	12				
Queuing Penalty (veh)	1	3				

Intersection: 8: Green Oaks Pkwy. & New Hill Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	R	UL	T	TR	L	T	R	L	TR
Maximum Queue (ft)	124	249	103	178	104	72	137	137	98	325	100
Average Queue (ft)	33	84	23	56	18	24	53	48	40	93	74
95th Queue (ft)	89	188	70	120	62	56	110	103	74	241	113
Link Distance (ft)		1938			3120	3120		1942	1942	575	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100		75	150			150				50
Storage Blk Time (%)	0	11	0	1			1	0		13	31
Queuing Penalty (veh)	0	17	0	2			1	0		34	24

Zone Summary

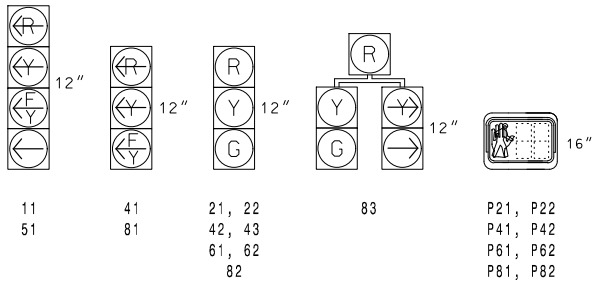
Zone wide Queuing Penalty: 3746

Appendix K:

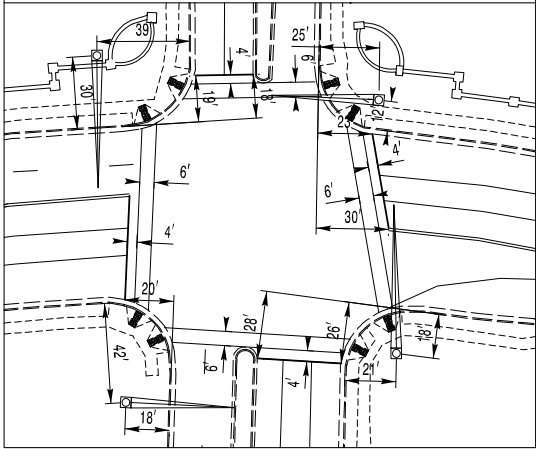
Signal Plans and Timing Data

SIGNAL FACE I.D.

All Heads L.E.D.



CROSSWALK, STOPLINE, AND METAL POLE LOCATION DIAGRAM



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART											
INDUCTIVE LOOPS				DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP
1A	6X40	0	2-4-2	X	1	Y	Y	-	-	15*	- X
1B	6X40	0	2-4-2	X	1	Y	Y	-	-	15	- X
2A	6X6	300	6	X	2	Y	Y	-	-	-	- X
4A	6X40	0	2-4-2	X	4	Y	Y	-	-	-	- X
4B	6X40	0	2-4-2	X	4	Y	Y	-	-	10	- X
5A	6X40	0	2-4-2	X	5	Y	Y	-	-	15*	- X
6A	6X6	300	6	X	6	Y	Y	-	-	-	- X
6B	6X6	300	6	X	6	Y	Y	-	-	-	- X
8A	6X40	0	2-4-2	X	8	Y	Y	-	-	-	- X
8B	6X40	0	2-4-2	X	8	Y	Y	-	-	-	- X

* Reduce Delay to 3 seconds during Alternate Phasing
Disable Phase call for loop during Alternate Phasing.

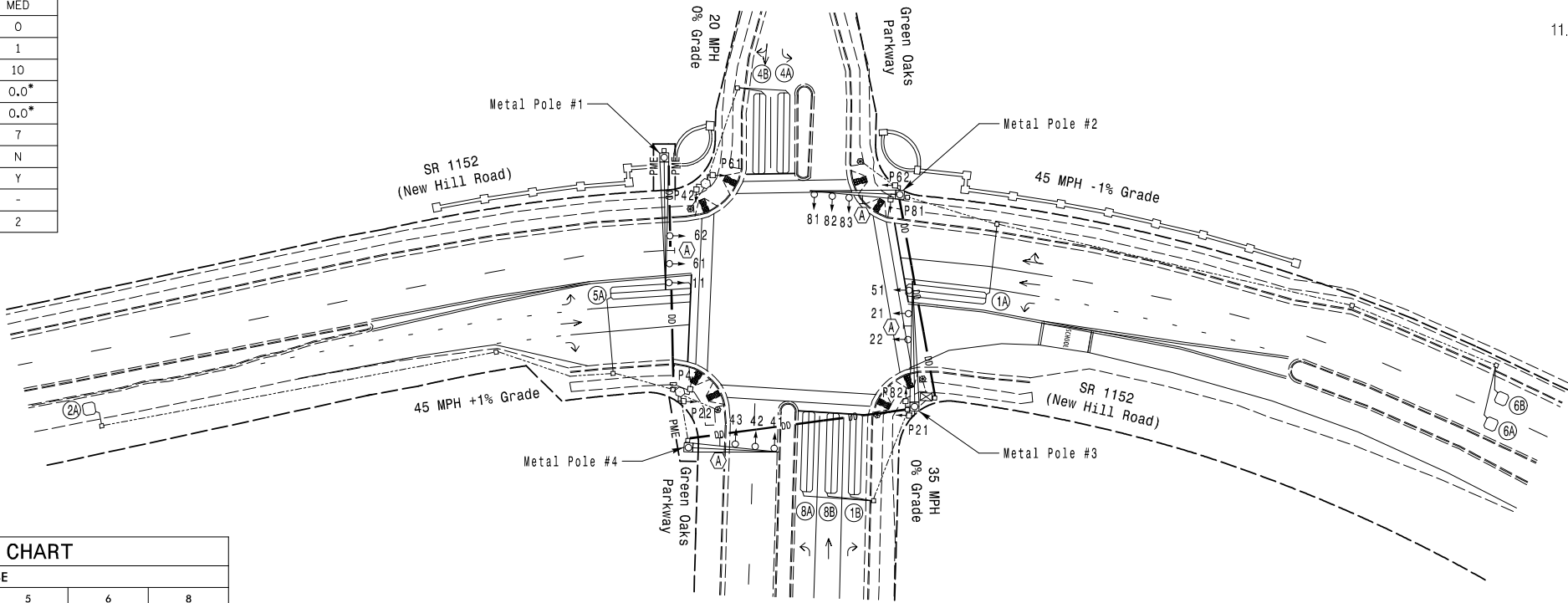
5 Phase Fully Actuated w/ Emergency Vehicle Preemption (Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2018, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pavement markings are existing, unless otherwise noted.
- Pedestrian pedestals are conceptual and shown for reference only. See Roadway Standard Drawing 1705.04 for pushbuttons locations details.
- The Division (Town) Traffic Engineer will determine the hours of use for each phasing plan.
- Install GPS emergency preemption system per manufacturers instructions to achieve preemption needed, as shown in phasing diagram.

OASIS 2070 EV PREEMPT			
FUNCTION	PRE 3	PRE 4	PRE 5
Interval 1 - Dwell Green	255	255	255
Interval 1 - Dwell Yellow	0.0*	0.0*	0.0*
Interval 1 - Dwell Red	0.0*	0.0*	0.0*
Interval 5 - Exit Green	1	1	1
Interval 5 - Yellow	0.0	0.0	0.0
Interval 5 - Red	0.0	0.0	0.0
Exit Phase(s)	2+6	4+8	2+6
Priority	MED	MED	MED
Delay Time	0	0	0
Min Green Before Pre	1	1	1
Ped Clear Before Pre	10	10	10
Yellow Clear Before Pre	0.0*	0.0*	0.0*
Red Clear Before Pre	0.0*	0.0*	0.0*
Dwell Min Time	7	10	7
Enable Backup Protection	N	N	N
Ped Clear Through Yellow	Y	Y	Y
Omit Overlaps	-	-	-
Preempt Extend**	2	2	2

* Time defaults to time used for phase during normal operation
** Program Timing on Optical Detection Unit



LEGEND

PROPOSED	EXISTING

OASIS 2070 TIMING CHART						
FEATURE	PHASE					
	1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	20	90	30	20	90	30
Yellow Clearance	3.0	4.6	3.8	3.0	4.6	3.8
Red Clearance	2.9	1.6	3.4	2.9	1.6	3.4
Walk 1 *	-	7	7	-	7	7
Don't Walk 1	-	18	20	-	12	20
Seconds Per Actuation *	-	2.5	-	-	1.5	-
Max Variable Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	45	-	-	45	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
Dual Entry	-	-	ON	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

NC Dept of Transportation
Division of Highways
Final Drawing Date: 3/3/2020
ITS & Signals Unit

New Installation - Sheet 1 of 2

Prepared For:

Signal Design Section

PLANS PREPARED IN THE OFFICE OF:
KimleyHorn
NC License #F-0102
421 Fayetteville Street, Suite 600
Raleigh, NC 27601
(919) 671-2000

SR 1152 (New Hill Road)
at
Green Oaks Parkway

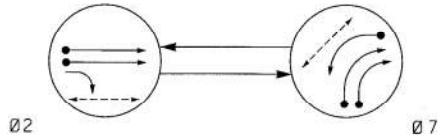
Division 5 Wake County Holly Springs
PLAN DATE: October 2019 REVIEWED BY: SL Phillips
PREPARED BY: CR Wong REVIEWED BY:
REVISIONS
INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

Stacie L. Phillips
2/13/2020
DATE

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

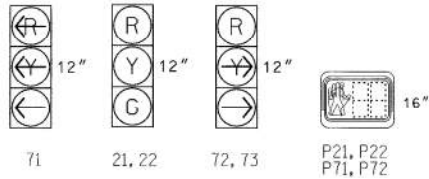
TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø 2	Ø 7	FLUSH
21, 22	G	R	Y
71	←	→	←
72, 73	R	←	→
P21, P22	W	DW	DRK
P71, P72	DW	W	DRK

W - Walk
DW - Don't Walk
DRK - Dark

SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS				DETECTOR PROGRAMMING						
LOOP	SIZE (FT)	TURNS	DISTANCE FROM STOPBAR (FT)	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S32	6X6	6	400	Y	2	Y	Y	-	-	-
2B/S33	6X6	6	400	Y	2	Y	Y	-	-	-
7A	6X40	2-4-2	0	Y	7	Y	Y	-	-	-
7B	6X40	2-4-2	16	Y	7	Y	Y	-	-	-
7C	6X40	2-4-2	16	Y	7	Y	Y	-	-	-
*7D	6X6	Diagonal	0	Y	7	Y	Y	-	-	-
*7E	6X6	Diagonal	0	Y	7	Y	Y	-	-	-
S34	6X6	3	130	Y	-	-	-	-	-	-

*Set sensitivity to appropriate level to detect a bicycle.

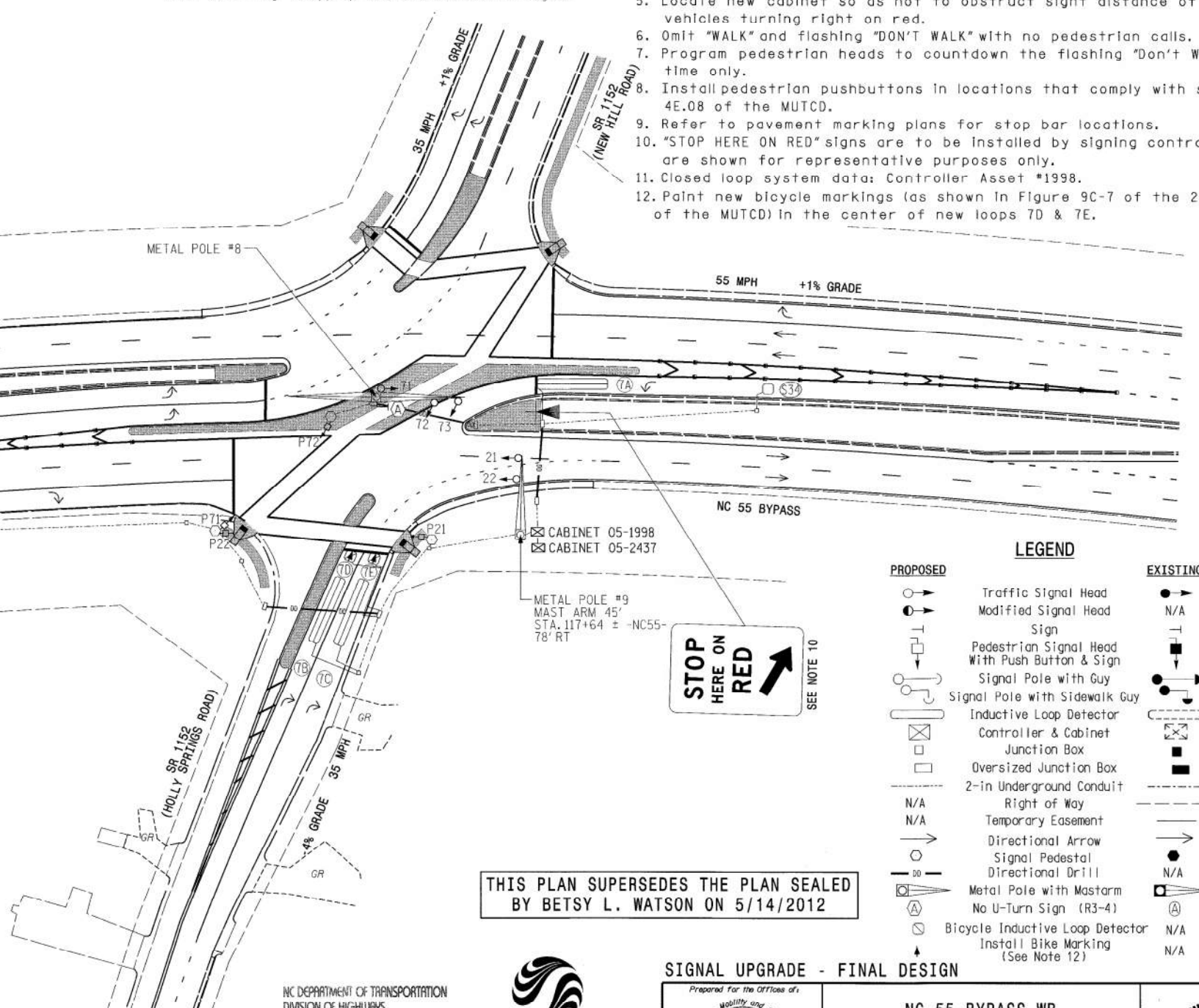
2 PHASE FULLY ACTUATED (NC 55 BYP (HOLLY SPRINGS) CLS) NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012, "Standard Specifications for Road and Structures" dated January 2012, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <http://www.ncdot.org/doh/preconstruct/traffic/itss>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Maximum times shown in the timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Install pedestrian pushbuttons in locations that comply with section 4E.08 of the MUTCD.
- Refer to pavement marking plans for stop bar locations.
- "STOP HERE ON RED" signs are to be installed by signing contractor and are shown for representative purposes only.
- Closed loop system data: Controller Asset #1998.
- Paint new bicycle markings (as shown in Figure 9C-7 of the 2009 edition of the MUTCD) in the center of new loops 7D & 7E.

OASIS 2070L TIMING CHART

FEATURE	PHASE	
	2	7
Min Green 1 *	14	7
Extension 1 *	6.0	2.0
Max Green 1 *	90	30
Yellow Clearance	5.2	3.0
Red Clearance	1.8	4.0
Walk 1 *	7	7
Don't Walk 1	20	20
Seconds Per Actuation *	1.5	-
Max Variable Initial *	46	-
Time Before Reduction *	15	-
Time To Reduction *	50	-
Minimum Gap	3.0	-
Recall Mode	MIN RECALL	-
Vehicle Call Memory	YELLOW	-
Dual Entry	-	-
Simultaneous Gap	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phase 2 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



LEGEND

PROPOSED	EXISTING
Traffic Signal Head	N/A
Modified Signal Head	N/A
Sign	N/A
Pedestrian Signal Head With Push Button & Sign	N/A
Signal Pole with Guy	N/A
Signal Pole with Sidewalk Guy	N/A
Inductive Loop Detector	N/A
Controller & Cabinet	N/A
Junction Box	N/A
Oversized Junction Box	N/A
2-in Underground Conduit	N/A
Right of Way	N/A
Temporary Easement	N/A
Directional Arrow	N/A
Signal Pedestal	N/A
Directional Drill	N/A
Metal Pole with Mastarm	N/A
No U-Turn Sign (R3-4)	N/A
Bicycle Inductive Loop Detector	N/A
Install Bike Marking (See Note 12)	N/A

THIS PLAN SUPERSEDES THE PLAN SEALED BY BETSY L. WATSON ON 5/14/2012

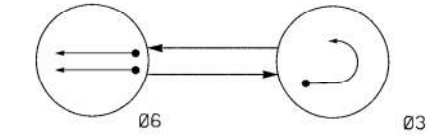
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
FINAL DRAWING Date: 8/17/12
R. Hargis
Traffic Engineering Branch

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

SIGNAL UPGRADE - FINAL DESIGN

Prepared for the Office of: Transportation Mobility and Safety Signal Design Section		NC 55 BYPASS WB AT SR 1152 (HOLLY SPRINGS ROAD)		SEAL NORTH CAROLINA PROFESSIONAL SEAL 029449 ENGINEER BETSY L. WATSON
Division 5 Wake County Holly Springs		Division 5 Wake County Holly Springs		
PLAN DATE: August 2011	REVIEWED BY: L Mahany	PREPARED BY: K Wieskamp	REVIEWED BY: B Watson	
REVISIONS		INIT.	DATE	
1			8/8/12	
SIGNATURE		DATE		
SIG. INVENTORY NO.		05-1998		

PHASING DIAGRAM

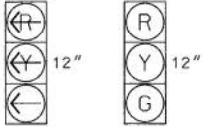


PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

All Heads L.E.D.



31 61, 62

SIGNAL FACE	PHASE		
	06	03	FLASH
31	←R	←R	
61, 62	G	R Y	

2070L LOOP & DETECTOR INSTALLATION

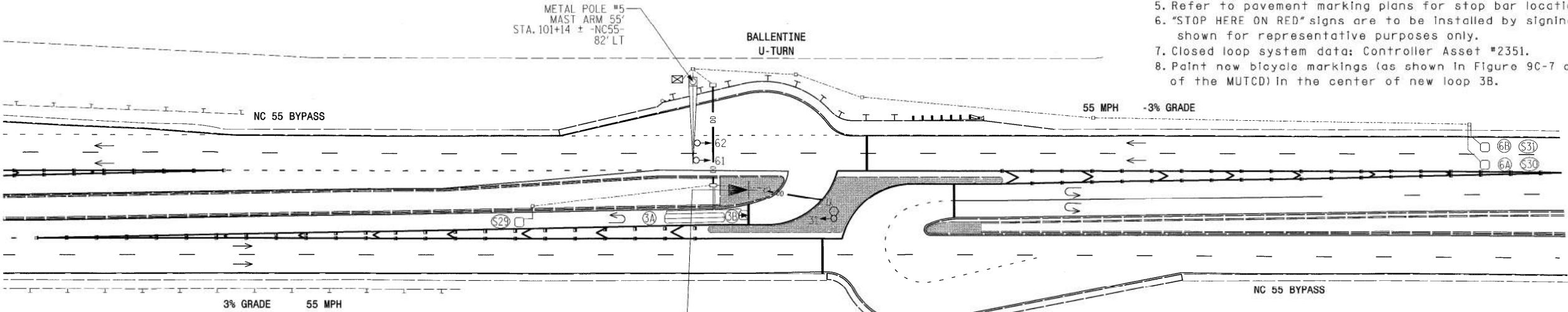
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	TURNS	DISTANCE FROM STOPBAR (FT)	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
3A	6X40	2-4-2	16	Y	3	Y	Y	-	-	-	-	Y
*3B	6X6	2-4-2 Diagonal	0	Y	3	Y	Y	-	-	-	-	Y
6A/S30	6X6	6	420	Y	6	Y	Y	-	-	-	Y	Y
6B/S31	6X6	6	420	Y	6	Y	Y	-	-	-	Y	Y
S29	6X6	3	150	Y	-	-	-	-	-	-	Y	Y

*Set sensitivity to appropriate level to detect a bicycle.

2 PHASE FULLY ACTUATED (NC 55 BYP(HOLLY SPRINGS) CLS)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012. "Standard Specifications for Road and Structures" dated January 2012, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <http://www.ncdot.org/doh/preconstruct/traffic/ltss>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Maximum times shown in the timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Set all detector units to presence mode.
- Refer to pavement marking plans for stop bar locations.
- "STOP HERE ON RED" signs are to be installed by signing contractor and are shown for representative purposes only.
- Closed loop system data: Controller Asset #2351.
- Paint new bicycle markings (as shown in Figure 9C-7 of the 2009 edition of the MUTCD) in the center of new loop 3B.



OASIS 2070L TIMING CHART

FEATURE	PHASE	
	3	6
Min Green 1 *	7	14
Extension 1 *	2.0	6.0
Max Green 1 *	30	90
Yellow Clearance	3.0	5.5
Red Clearance	3.3	1.0
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	-	1.5
Max Variable Initial *	-	46
Time Before Reduction *	-	15
Time To Reduction *	-	50
Minimum Gap	-	3.0
Recall Mode	-	MIN RECALL
Vehicle Call Memory	-	YELLOW
Dual Entry	-	-
Simultaneous Gap	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phase 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

PROPOSED	EXISTING
Traffic Signal Head	N/A
Modified Signal Head	N/A
Sign	N/A
Pedestrian Signal Head With Push Button & Sign	N/A
Signal Pole with Guy	N/A
Signal Pole with Sidewalk Guy	N/A
Inductive Loop Detector	N/A
Controller & Cabinet	N/A
Junction Box	N/A
Oversized Junction Box	N/A
2-in Underground Conduit	N/A
N/A	N/A
Right of Way	N/A
Temporary Easement	N/A
Directional Arrow	N/A
Signal Pedestal	N/A
Directional Drill	N/A
Metal Pole with Mastarm	N/A
Guardrail	N/A
Bicycle Inductive Loop Detector	N/A
Install Bike Marking (See Note 8)	N/A

THIS PLAN SUPERSEDES THE PLAN SEALED BY BETSY L. WATSON ON 5/14/2012

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
FINAL DRAWING Date: 8/17/12
Traffic Engineering Branch

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

NEW INSTALLATION

Prepared for the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

0 40
1" = 40'

NC 55 BYPASS EB AT BALLENTE STREET U-TURN (NORTH)

Division 5 Wake County Holly Springs

PLAN DATE: August 2011 REVIEWED BY: L Mahany

PREPARED BY: K Wieskamp REVIEWED BY: B Watson

REVISIONS

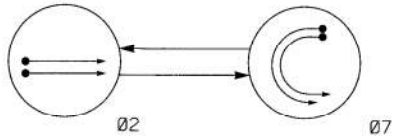
INIT. DATE

Signature: Betsy L. Watson 8/18/12

Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029449 BETSY L. WATSON

SIG. INVENTORY NO. 05-2351

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

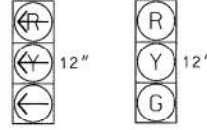
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø 2	Ø 7	Ø 7
21, 22	G	R	Y
71, 72	R	G	Y

SIGNAL FACE I.D.

All Heads L.E.D.



71, 72

21, 22

2070L LOOP & DETECTOR INSTALLATION

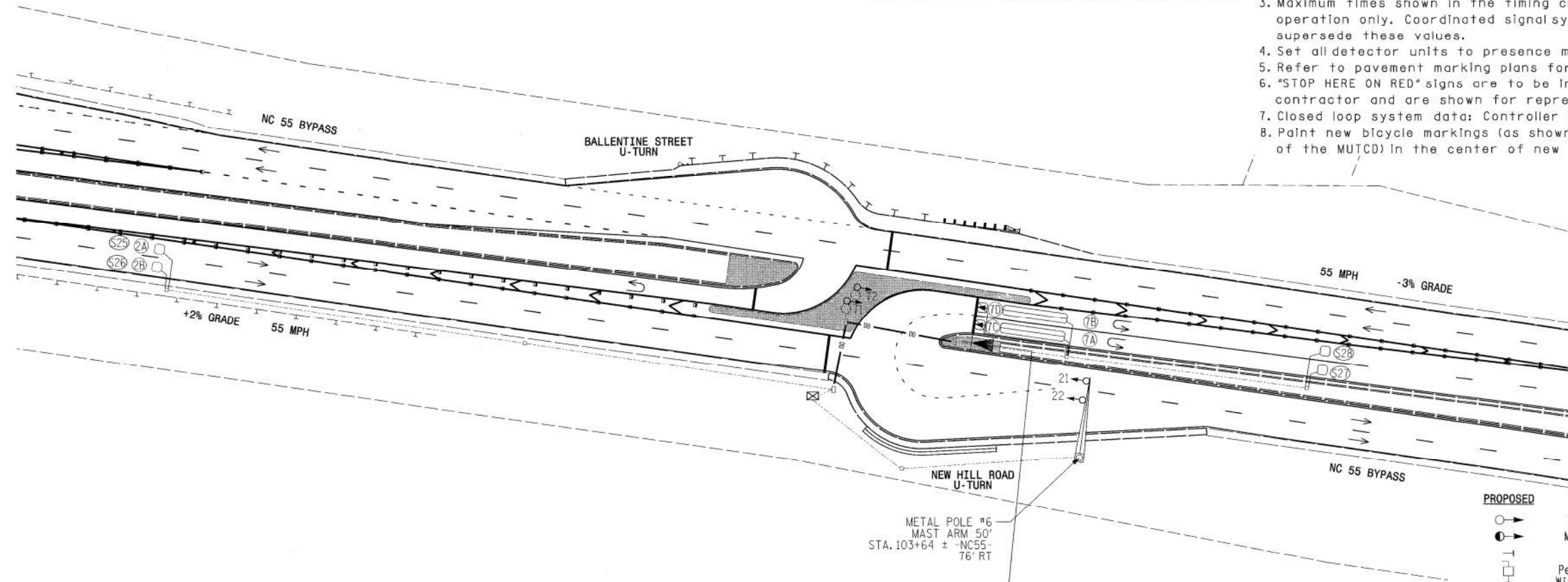
INDUCTIVE LOOPS				DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	TURNS	DISTANCE FROM STOPBAR (FT)	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP
2A/S25	6X6	6	420	Y	2	Y	Y	-	-	-	Y
2B/S26	6X6	6	420	Y	2	Y	Y	-	-	-	Y
7A	6X40	2-4-2	16	Y	7	Y	Y	-	-	-	Y
7B	6X40	2-4-2	16	Y	7	Y	Y	-	-	-	Y
*7C	6X6	2-4-2 Diagonal	0	Y	7	Y	Y	-	-	-	Y
*7D	6X6	2-4-2 Diagonal	0	Y	7	Y	Y	-	-	-	Y
S27	6X6	3	215	Y	-	-	-	-	-	-	Y
S28	6X6	3	215	Y	-	-	-	-	-	-	Y

*Set sensitivity to appropriate level to detect a bicycle.

2 PHASE
FULLY ACTUATED
(NC 55 BYP (HOLLY SPRINGS) CLS)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012, "Standard Specifications for Road and Structures" dated January 2012, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <http://www.ncdot.org/doh/preconstruct/traffic/itss>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Maximum times shown in the timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Set all detector units to presence mode.
- Refer to pavement marking plans for stop bar locations.
- "STOP HERE ON RED" signs are to be installed by signing contractor and are shown for representative purposes only.
- Closed loop system data: Controller Asset #2436.
- Paint new bicycle markings (as shown in Figure 9C-7 of the 2009 edition of the MUTCD) in the center of new loops 7C & 7D.



METAL POLE #6
MAST ARM 50'
STA. 103+64 ± - NC55-
76' RT



SEE NOTE 6

THIS PLAN SUPERSEDES THE PLAN SEALED
BY BETSY L. WATSON ON 5/14/2012

OASIS 2070L TIMING CHART

FEATURE	PHASE	
	2	7
Min Green 1 *	14	7
Extension 1 *	6.0	2.0
Max Green 1 *	90	30
Yellow Clearance	5.0	3.0
Red Clearance	1.0	4.2
Walk 1 *	-	-
Don't Walk 1	-	-
Seconds Per Actuation *	1.5	-
Max Variable Initial *	46	-
Time Before Reduction *	15	-
Time To Reduction *	50	-
Minimum Gap	3.0	-
Recall Mode	MIN RECALL	-
Vehicle Call Memory	YELLOW	-
Dual Entry	-	-
Simultaneous Gap	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phase 2 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

PROPOSED	EXISTING
Traffic Signal Head	N/A
Modified Signal Head	N/A
Sign	N/A
Pedestrian Signal Head With Push Button & Sign	N/A
Signal Pole with Guy	N/A
Signal Pole with Sidewalk Guy	N/A
Inductive Loop Detector	N/A
Controller & Cabinet	N/A
Junction Box	N/A
Oversized Junction Box	N/A
2-In Underground Conduit	N/A
Right of Way	N/A
Temporary Easement	N/A
Directional Arrow	N/A
Signal Pedestal	N/A
Directional Drill	N/A
Metal Pole with Mastarm	N/A
Guardrail	N/A
Bicycle Inductive Loop Detector	N/A
Install Bike Marking (See Note 8)	N/A

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
FINAL DRAWING Date: 8/17/12
Traffic Engineering Branch



Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

NEW INSTALLATION



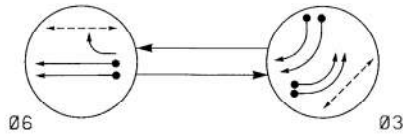
750 N. Greenfield Pkwy, Garner, NC 27529
SCALE 0 40
1" = 40'

NC 55 BYPASS WB AT SR 1152 (NEW HILL ROAD) SOUTH U-TURN		
Division 5	Wake County	Holly Springs
PLAN DATE: August 2011	REVIEWED BY: L. Mahany	
PREPARED BY: K. Wieskamp	REVIEWED BY: B. Watson	
REVISIONS	INIT.	DATE



Signature: Betsy L. Watson
Date: 8/15/12
S16. INVENTORY NO. 05-2436

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

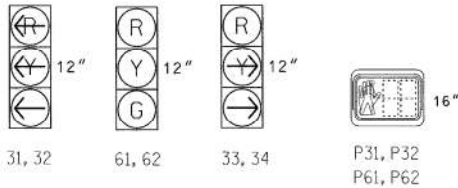
- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT
- ←---→ UNSIGNALIZED MOVEMENT
- ←- - - -> PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE		
	Ø 6	Ø 3	FLIGHT
31, 32	←	←	←
33, 34	←	←	←
61, 62	←	←	←
P31, P32	←	←	←
P61, P62	←	←	←

W - Walk
DW - Don't Walk
DRK - Dark

SIGNAL FACE I.D.

All Heads L.E.D.



2070L LOOP & DETECTOR INSTALLATION											
INDUCTIVE LOOPS						DETECTOR PROGRAMMING					
LOOP	SIZE (FT)	URNS	DISTANCE FROM STOPBAR (FT)	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP NEW CARD
3A	6X40	2-4-2	0	Y	3	Y	Y	-	-	-	Y
3B	6X40	2-4-2	0	Y	3	Y	Y	-	-	-	Y
3C	6X40	2-4-2	16	Y	3	Y	Y	-	-	15	Y
3D	6X40	2-4-2	16	Y	3	Y	Y	-	-	15	Y
*3E	6X6	2-4-2 Diagonal	0	Y	3	Y	Y	-	-	15	Y
*3F	6X6	2-4-2 Diagonal	0	Y	3	Y	Y	-	-	15	Y
6A/S37	6X6	6	385	Y	6	Y	Y	-	-	-	Y
6B/S38	6X6	6	385	Y	6	Y	Y	-	-	-	Y
S35	6X6	3	175	Y	-	-	-	-	-	-	Y
S36	6X6	3	175	Y	-	-	-	-	-	-	Y

*Set sensitivity to appropriate level to detect a bicycle.

2 PHASE
FULLY ACTUATED
(NC 55 BYP(HOLLY SPRINGS) CLS)

PROJECT REFERENCE NO.	SHEET NO.
36249.3096	SIG. 20

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012. "Standard Specifications for Road and Structures" dated January 2012, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website:
<http://www.ncdot.org/doh/preconstruct/traffic/itss>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Maximum times shown in the timing chart are for free-run operation only. Coordinated signalsystem timing values shall supersede these values.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Install pedestrian pushbuttons in locations that comply with section 4E.08 of the MUTCD.
- Refer to pavement marking plans for stop bar locations.
- "STOP HERE ON RED" signs are to be installed by signing contractor and are shown for representative purposes only.
- Closed loop system data: Controller Asset #2437.
- Paint new bicycle markings (as shown in Figure 9C-7 of the 2009 edition of the MUTCD) in the center of new loops 3E and 3F.

OASIS 2070L TIMING CHART

FEATURE	PHASE	
	3	6
Min Green 1 *	7	14
Extension 1 *	2.0	6.0
Max Green 1 *	30	90
Yellow Clearance	3.0	5.1
Red Clearance	4.0	1.8
Walk 1 *	7	7
Don't Walk 1	17	25
Seconds Per Actuation *	-	1.5
Max Variable Initial *	-	46
Time Before Reduction *	-	15
Time To Reduction *	-	50
Minimum Gap	-	3.0
Recall Mode	-	MIN RECALL
Vehicle Call Memory	-	YELLOW
Dual Entry	-	-
Simultaneous Gap	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phase 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

SEE NOTE 10
STOP
HERE ON
RED

METAL POLE #7
MAST ARM 45'
STA. 116+47 ± -NC55-
75' LT

CABINET 05-1998
CABINET 05-2437
METAL POLE #8
STA. 116+82 ± -NC55-
1' RT
METAL POLE #9
MAST ARM 45'
STA. 117+64 ± -NC55-
78' RT

PROPOSED	LEGEND	EXISTING
○	Traffic Signal Head	N/A
●	Modified Signal Head	N/A
⊥	Sign	N/A
⊥	Pedestrian Signal Head With Push Button & Sign	N/A
⊥	Signal Pole with Guy	N/A
⊥	Signal Pole with Sidewalk Guy	N/A
⊥	Inductive Loop Detector	N/A
⊥	Controller & Cabinet	N/A
⊥	Junction Box	N/A
⊥	Oversized Junction Box	N/A
⊥	2-in Underground Conduit	N/A
N/A	Right of Way	N/A
N/A	Temporary Easement	N/A
→	Directional Arrow	N/A
○	Signal Pedestal	N/A
—	Directional Drill	N/A
⊥	Metal Pole with Mastarm	N/A
⊥	No U-Turn Sign (R3-4)	N/A
⊥	Bicycle Inductive Loop Detector	N/A
⊥	Install Bike Marking (See Note 12)	N/A

THIS PLAN SUPERSEDES THE PLAN SEALED
BY BETSY L. WATSON ON 5/14/2012

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
FINAL DRAWING Date: 8/17/12
Traffic Engineering Branch

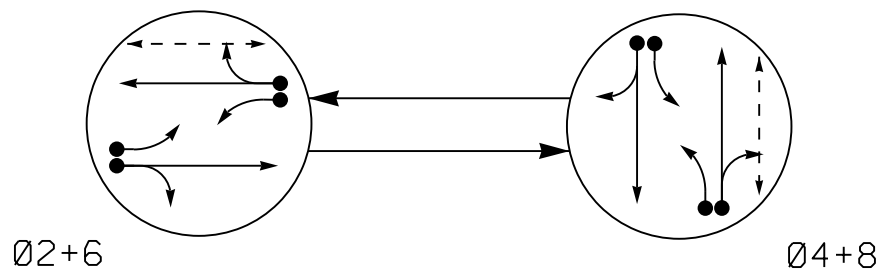
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

NEW INSTALLATION

Prepared for the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529		NC 55 BYPASS EB AT SR 1152 (NEW HILL ROAD)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER 029449 BETSY L. WATSON	
Division 5		Wake County		Holly Springs	
PLAN DATE: August 2011		REVIEWED BY: L. Mahany		DATE: 8/15/12	
PREPARED BY: K. Wieskamp		REVIEWED BY: B. Watson		DATE: 8/15/12	
REVISIONS		INIT.		DATE	
0		40		1" = 40'	
SCALE		SIG. INVENTORY NO.		05-2437	

PROJECT REFERENCE NO.	SHEET NO.
36249.4163	Sig. 1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

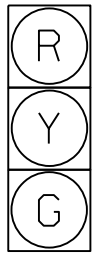
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

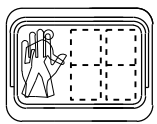
SIGNAL FACE	PHASE		
	Ø 2 + 6	Ø 4 + 8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R
P61, P62	W	DW	DRK
P81, P82	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
41, 42
61, 62
81, 82



P61, P62
P81, P82

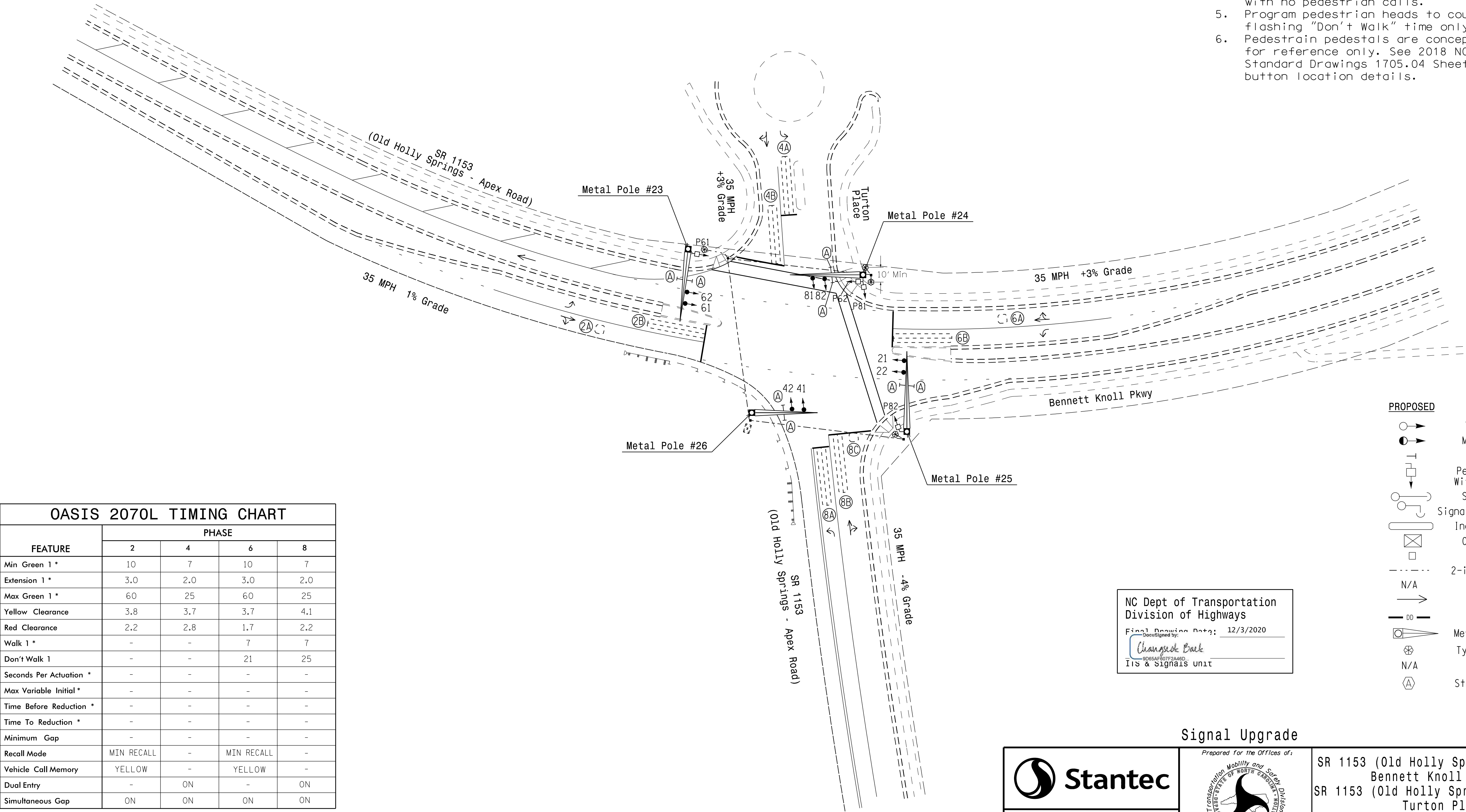
2070L LOOP & DETECTOR INSTALLATION

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	TURNS	DISTANCE FROM STOPBAR (FT)	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	EXIST	70	-	2	Y	Y	-	-	-	-	-
2B	6X40	2-4-2	0	-	2	Y	Y	-	-	-	-	-
4A	6X40	2-4-2	0	-	4	Y	Y	-	-	3	-	-
4B	6X40	2-4-2	0	-	4	Y	Y	-	-	10	-	-
6A	6X6	EXIST	70	-	6	Y	Y	-	-	-	-	-
6B	6X40	2-4-2	0	-	6	Y	Y	-	-	-	-	-
8A	6X40	2-4-2	0	-	8	Y	Y	-	-	3	-	-
8B	6X40	2-4-2	0	-	8	Y	Y	-	-	10	-	-
8C	6X6	EXIST	0	-	8	Y	Y	-	-	15	-	-

2 Phase
Fully Actuated
(Isolated)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018, "Standard Specifications for Roads and Structures" dated January 2018, and all applicable sections of the latest version of the generic Project Special Provisions. The PSP can be accessed at the following website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pedestrian pedestals are conceptual and shown for reference only. See 2018 NCDOT Roadway Standard Drawings 1705.04 Sheets 1-3 for push button location details.



OASIS 2070L TIMING CHART				
FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	10	7	10	7
Extension 1 *	3.0	2.0	3.0	2.0
Max Green 1 *	60	25	60	25
Yellow Clearance	3.8	3.7	3.7	4.1
Red Clearance	2.2	2.8	1.7	2.2
Walk 1 *	-	-	7	7
Don't Walk 1	-	-	21	25
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduction *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

- | PROPOSED | EXISTING |
|--|-------------------------|
| Traffic Signal Head | Modified Signal Head |
| Pedestrian Signal Head With Push Button & Sign | Signal Pole with Guy |
| Signal Pole with Sidewalk Guy | Inductive Loop Detector |
| Controller & Cabinet | Junction Box |
| 2-in Underground Conduit | Right of Way |
| Directional Arrow | Directional Drill |
| Metal Pole with Mastarm | Type I Pushbutton Post |
| Guardrail | Street Name Sign (D3-1) |

NC Dept of Transportation
Division of Highways
Final Drawing Date: 12/3/2020
Designed by: Changsook Baik
Checked by: Dennis Waller
ITS & Signals Unit

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Stantec Consulting Services Inc.
801 Jones Franklin Road-Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

Prepared for the Offices of:
Transportation Mobility and Safety
Division of Highways
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

0 SCALE 40
1" = 40'

SR 1153 (Old Holly Springs-Apex Rd)/
Bennett Knoll Pkwy at
SR 1153 (Old Holly Springs-Apex Rd)/
Turton Place
Division 5 Wake County Holly Springs
PLAN DATE: November 2020 REVIEWED BY: R.Muncey, PE
PREPARED BY: D.Waller, PE REVIEWED BY: D.Harris

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
042678
Dennis Waller
12/1/2020
SIGNATURE DATE
SIG. INVENTORY NO. 05-2445

Intersection: NC 55 Bypass @ HSR North U-Turn
 Signal Inventory #: 05-2438

Collected by: TF
 Date: 7/27/21

AM Peak Hour

Coordinated: (Y) N
 Plan #: 4-1
 Duration: 6-9:30
 Cycle Length: 75
 Offset: 50
 Phase Seq. Page: 1
 Laging Phases: -
 Timing Page: 1

Event 1

Phase	1	2	3	4	5	6	7	8
Splits/Max			27			48		
Min. Green			7			14		
Yellow			3.0			4.9		
Red			3.9			1.0		
Veh. Ext.			2			6		
Walk								
Ped. Clear								
Time B4 Reduce						15		
Time 2 Reduce						50		
Min. Gap						3.0		
Seconds/Actuation						1.5		

PM Peak Hour

Coordinated: (Y) N
 Plan #: 5-1
 Duration: 3-6:30pm
 Cycle Length: 160
 Offset: 10
 Phase Seq. Page: 1
 Laging Phases: -
 Timing Page: 1

Event 4

Phase	1	2	3	4	5	6	7	8
Splits/Max			36			124		
Min. Green								
Yellow								
Red								
Veh. Ext.								
Walk								
Ped. Clear								
Time B4 Reduce								
Time 2 Reduce								
Min. Gap								
Seconds/Actuation								

Notes:

Intersection: New Hill Rd @ OHSA Rd
 Signal Inventory #: 05-2446

Collected by: TF
 Date: 7/27/21

AM Peak Hour

Coordinated: Y / (N)
 Plan #: _____
 Duration: _____
 Cycle Length: _____
 Offset: _____
 Phase Seq. Page: _____
 Laging Phases: _____
 Timing Page: _____

Phase	1	2	3	4	5	6	7	8
Splits/Max		60		25		60		
Min. Green		10		7		10		
Yellow		3.8		3.0		3.9		
Red		1.9		3.4		1.3		
Veh. Ext.		3		2		3		
Walk								
Ped. Clear								
Time B4 Reduce								
Time 2 Reduce								
Min. Gap								
Seconds/Actuation								

PM Peak Hour

Coordinated: Y / N
 Plan #: _____
 Duration: _____
 Cycle Length: _____
 Offset: _____
 Phase Seq. Page: _____
 Laging Phases: _____
 Timing Page: _____

Phase	1	2	3	4	5	6	7	8
Splits/Max								
Min. Green								
Yellow								
Red								
Veh. Ext.								
Walk								
Ped. Clear								
Time B4 Reduce								
Time 2 Reduce								
Min. Gap								
Seconds/Actuation								

Notes:

Intersection: NC 55 Byp. @ New Hill South U-Turn
 Signal Inventory #: 05-2436

Collected by: TF
 Date: 7/27/21

AM Peak Hour

Coordinated: (Y) N Event 1
 Plan #: 4-1
 Duration: 6-9:30 AM
 Cycle Length: 150
 Offset: 10
 Phase Seq. Page: 1
 Laging Phases: -
 Timing Page: 1

Phase	1	2	3	4	5	6	7	8
Splits/Max		116					34	
Min. Green		14					7	
Yellow		5.0					3.0	
Red		1.0					4.2	
Veh. Ext.		6					2	
Walk								
Ped. Clear								
Time B4 Reduce		15						
Time 2 Reduce		50						
Min. Gap		3.0						
Seconds/Actuation		1.5						

PM Peak Hour

Coordinated: (Y) N Event 4
 Plan #: 5-1
 Duration: 3-6:30 PM
 Cycle Length: 80
 Offset: 53
 Phase Seq. Page: 1
 Laging Phases: -
 Timing Page: 1

Phase	1	2	3	4	5	6	7	8
Splits/Max		51					29	
Min. Green								
Yellow								
Red								
Veh. Ext.								
Walk								
Ped. Clear								
Time B4 Reduce								
Time 2 Reduce								
Min. Gap								
Seconds/Actuation								

Notes:

Intersection: NC 55 Byp. @ ~~SR 16~~ NH Rd
 Signal Inventory #: 05-2437

Collected by: TF
 Date: 7/27/21

AM Peak Hour

Coordinated: (Y) N
 Plan #: 4-1
 Duration: 6-9:30 AM
 Cycle Length: 75
 Offset: 64
 Phase Seq. Page: 1
 Laging Phases: -
 Timing Page: 2

Phase	1	2	3	4	5	6	7	8
Splits/Max			29			46		
Min. Green			7			14		
Yellow			3.0			5.1		
Red			4.0			1.8		
Veh. Ext.			2			6		
Walk			7			5		
Ped. Clear			17			25		
Time B4 Reduce								
Time 2 Reduce								
Min. Gap								
Seconds/Actuation								

PM Peak Hour

Coordinated: (Y) N
 Plan #: 5-1
 Duration: 3-6:30 PM
 Cycle Length: 160
 Offset: 31
 Phase Seq. Page: 1
 Laging Phases: -
 Timing Page: 1

Phase	1	2	3	4	5	6	7	8
Splits/Max			56			104		
Min. Green			7			14		
Yellow			3.0			5.1		
Red			4.0			1.8		
Veh. Ext.			2			6		
Walk			7			5		
Ped. Clear			17			25		
Time B4 Reduce						15		
Time 2 Reduce						50		
Min. Gap						3.0		
Seconds/Actuation						1.5		

Notes:

Intersection: NC 55 Byp @ HS Rd
 Signal Inventory #: 05-1998

Collected by: TF
 Date: 7/27/21

AM Peak Hour

Coordinated: (Y) N
 Plan #: 4-1
 Duration: 6-9:30 AM
 Cycle Length: 150
 Offset: 38
 Phase Seq. Page: 1
 Laging Phases:
 Timing Page: 1

Phase	1	2	3	4	5	6	7	8
Splits/Max		105					45	
Min. Green		14					7	
Yellow		5.2					3.0	
Red		1.8					3.7	
Veh. Ext.		6					3	
Walk		7					7	
Ped. Clear		20					20	
Time B4 Reduce		3.0						
Time 2 Reduce		15						
Min. Gap		50						
Seconds/Actuation		1.5						

PM Peak Hour

Coordinated: (Y) N
 Plan #: 5-1
 Duration: 3-6:30 PM
 Cycle Length: 80
 Offset: 74
 Phase Seq. Page: 1
 Laging Phases:
 Timing Page: 1

Phase	1	2	3	4	5	6	7	8
Splits/Max		45					35	
Min. Green								
Yellow								
Red								
Veh. Ext.								
Walk								
Ped. Clear								
Time B4 Reduce								
Time 2 Reduce								
Min. Gap								
Seconds/Actuation								

Notes:

Appendix L:

MSTA Queue Calculators & Upper School Trip Generation

MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates
(These numbers do not reflect peak hour traffic volumes)

Queue Calculator for Upper School

School Name: 600 K-12 Students				Version: 04012021						
Type: Urban Charter										
MSTA School Queue Input				Calculations						
Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length
K - 10	450	6	28		177	87	1931	531	382	30%
11th	75	2	6	38	21	10	222	83	86	289
12th	75	1	6	39	21	12	274	80	87	357
Sum >>	600		40	77	219	109	2426	694	555	3155
729										

Grade K-10									
AM Trips Generated					PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN	252		28	280	177			177	
OUT	252			252	177		28	205	
AM K-10 Trips				531	PM K-10 Trips				382

Grade 11											
AM Trips Generated					PM Trips Generated						
Direction	Parents	Buses	Staff	Student Dvr	Trips	Parents	Buses	Staff	Student Dvr	Trips	
IN	23		6	31	60	21				21	
OUT	23				23	21		6	38	65	
AM 11th Trips					83	PM 11th Trips					86

Grade 12											
AM Trips Generated					PM Trips Generated						
Direction	Parents	Buses	Staff	Student Dvr	Trips	Parents	Buses	Staff	Student Dvr	Trips	
IN	21		6	32	59	21				21	
OUT	21				21	21		6	39	66	
AM 12th Trips					80	PM 12th Trips					87

All AM TRIPS			All PM TRIPS		
In	399		In	219	
Out	296		Out	336	
Total	694		Total	555	

ADT	
913	
169	
167	
1249	

NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

MSTA School Traffic Calculations

AM and PM Peak Traffic Estimates
(These numbers do not reflect peak hour traffic volumes)

Queue Calculator for Lower School

AM Cars / Student				PM Cars / Student				Avg. Car Length				PM At one Time			
55.94%				39.15%				22.19				48.67%			
52.91%				47.50%				22.19				46.12%			
50.08%				47.58%				22.83				55.71%			

NOTES

- Average Queue Length does not include an alternative traffic pattern required for high traffic demand days which is usually 30% additional length.
- Average Queue Length does not include the Student Loading Zone.
- Peak traffic volumes at schools normally occur within a 30-minute time period. (justifying a PHF of 0.5)

School Name: Thales Holly Springs (K-5 600 students)
 Type: **Urban Charter**
 Version: 04012021

MSTA School Queue Input					Calculations							
Grade Level	Student Population	Number of Buses	Staff Members	Student Drivers	PM Total Vehicles	PM Peak Vehicles	Average Queue Length	Total AM Trips	Total PM Trips	High Demand Length		
K - 10	600	8	40		235	115	2552	711	510	30%		
11th												
12th												
Sum >>					600	40	235	115	2552	711	510	3318
											766	

Grade K-10									
AM Trips Generated					PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN	336		40	376	235			235	
OUT	336			336	235		40	275	
AM K-10 Trips				711	PM K-10 Trips				510

Grade 11-12									
AM Trips Generated					PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN									
OUT									
AM 11th Trips					PM 11th Trips				

Grade 11-12									
AM Trips Generated					PM Trips Generated				
Direction	Parents	Buses	Staff	Trips	Parents	Buses	Staff	Trips	
IN									
OUT									
AM 12th Trips					PM 12th Trips				

All AM TRIPS				All PM TRIPS			
		In	376			In	235
		Out	336			Out	275
		Total	711			Total	510

ADT
1221
1221

Calculated 9/9/2021 By: _____

Page 518 of 609

Certificate Of Completion

Envelope Id: A4E755B792634B31AC4CEFAADA86FFF7

Status: Completed

Subject: Please DocuSign: Thales Holly Springs Expansion - TIA Report and Appendix 2-2-22.pdf

Source Envelope:

Document Pages: 275

Signatures: 2

Envelope Originator:

Certificate Pages: 2

Initials: 0

Nathan Butler

AutoNav: Enabled

401 Fayetteville St.

Enveloped Stamping: Enabled

Suite 600

Time Zone: (UTC-05:00) Eastern Time (US & Canada)

Raleigh, NC 27601

Nathan.Butler@kimley-horn.com

IP Address: 208.127.224.42

Record Tracking

Status: Original

Holder: Nathan Butler

Location: DocuSign

2/2/2022 2:54:59 PM

Nathan.Butler@kimley-horn.com

Signer Events

Melissa Helbert-Pogoloff

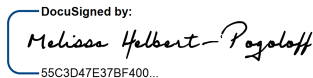
Melissa.Helbert@kimley-horn.com

Project Manager

Kimley-Horn

Security Level: Email, Account Authentication
(None)**Signature**

DocuSigned by:



55C3D47E37BF400...

Signature Adoption: Pre-selected Style
Using IP Address: 34.99.124.178**Timestamp**

Sent: 2/2/2022 3:11:27 PM

Viewed: 2/2/2022 3:12:03 PM

Signed: 2/2/2022 3:12:12 PM

Electronic Record and Signature Disclosure:

Not Offered via DocuSign

Travis Fluit

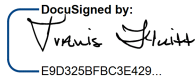
travis.fluit@kimley-horn.com

Project Manager

Kimley-Horn and Associates, Inc.

Security Level: Email, Account Authentication
(None)

DocuSigned by:



E9D325BFB3E429...

Signature Adoption: Pre-selected Style
Using IP Address: 134.238.172.6

Sent: 2/2/2022 3:11:27 PM

Viewed: 2/2/2022 3:27:39 PM

Signed: 2/2/2022 3:27:46 PM

Electronic Record and Signature Disclosure:

Not Offered via DocuSign

In Person Signer Events**Signature****Timestamp****Editor Delivery Events****Status****Timestamp****Agent Delivery Events****Status****Timestamp****Intermediary Delivery Events****Status****Timestamp****Certified Delivery Events****Status****Timestamp****Carbon Copy Events****Status****Timestamp****Witness Events****Signature****Timestamp****Notary Events****Signature****Timestamp****Envelope Summary Events****Status****Timestamps**

Envelope Sent

Hashed/Encrypted

2/2/2022 3:11:27 PM

Certified Delivered

Security Checked

2/2/2022 3:27:39 PM

Envelope Summary Events	Status	Timestamps
Signing Complete	Security Checked	2/2/2022 3:27:46 PM
Completed	Security Checked	2/2/2022 3:27:46 PM
Payment Events	Status	Timestamps

NORTH CAROLINA
WAKE COUNTY

TOWN OF HOLLY SPRINGS
(17-DP-04-A02 & 21-SEU-02)

IN RE THALES ACADEMY MAJOR)
AMENDMENT TO DEVELOPMENT)
PLAN AND SPECIAL EXCEPTION)
USE)
_____)

AFFIDAVIT OF
TONY JOHNSON

I, TONY JOHNSON, being duly sworn, hereby depose and say:

1. I am over the age of eighteen years old, am under no disability, and have personal knowledge of all matters stated in this Affidavit.

2. I am a registered architect and the principal architect for Tony Johnson Architecture. I was retained by Thales Academy for the proposed expansion of an existing private school. The existing school currently contains one school building for grades kindergarten through eighth grade, and the proposed expansion would add a new upper school building to accommodate grades six through twelfth grade and a gymnasium, for a maximum of 1200 students, on an approximately 9.74 acre site located at 11244 Holly Springs New Hill Road, Holly Springs, North Carolina, PIN0649265028 (the "Site"). On behalf of the Thales Academy, I prepared the architectural plans for the proposed upper school building and gymnasium (the "Architectural Plans") submitted as part of the application for a major amendment to an existing development plan and special exception use (the "Application"), which must meet the criteria in Holly Springs' Unified Development Ordinance (UDO) Section 9.10.A.2.

3. I received my degree in Architecture from the North Carolina State University, and am a registered architect in the State of North Carolina. I have over 37 years of experience in architecture, and have worked in architecture in North Carolina for 40 years.

4. I oversaw the design of the buildings in the Architectural Plans, and interacted with City staff regarding UDO requirements, including requirements for building design and

architectural requirements. As part of the Application, Thales Academy submitted the following three requests for waivers and alternative compliance from the architectural standards for the proposed buildings in UDO Section 3.08:

- a. Waiver and alternative compliance from UDO Section 3.08.A.1.c.2.b.i, requiring building walls consist of a building bay or structural building system that is a maximum of 30 feet in width. Thales Academy requests a waiver to allow a single 39 feet 4 inch building bay on the left side (west) elevation of the proposed upper school building (the “First Waiver Request”); and
- b. Waiver and alternative compliance from UDO Section 3.08.A.1.c.2.c.iii.3, requiring windows and glass doors be provided on a minimum of two building facades based on highest levels of pedestrian traffic and vehicular visibility; on lower levels of all uses, a minimum 20% surface area. Thales Academy requests a waiver to allow a reduction to 11.9% surface area window coverage of the lower level of the east elevation of the proposed gymnasium (the “Second Waiver Request”).
- c. Waiver and alternative compliance from UDO Section 3.08.A.1.c.2.g, requiring that all sides of visible parapet walls shall be finished to match the primary façade and shall extend an appropriate depth that is proportionate with the building size. Thales Academy requests a waiver to allow the small portion of visible parapet wall to be covered with tan TPO roofing rather than brick to match the primary façade (the “Third Waiver Request.”).

The waiver and alternative compliance requests must meet the findings of fact for alternative compliance under UDO Section 3.08.

5. The First Waiver Request, to allow a single 39 feet 4 inch building bay, will allow the proposed new upper school building to accommodate the internal facilities design, including the siting of classrooms, restrooms, stairs and sprinkler risers, without artificially bumping out the wall on this façade to meet the maximum wall length. Architectural Plans, Sheet A-02. Compliance with the UDO requirement would result in a less aesthetically pleasing building design without any functional benefit. This proposed alternative compliance will, thus, result in a development pattern superior to that achievable under the required architectural standard.

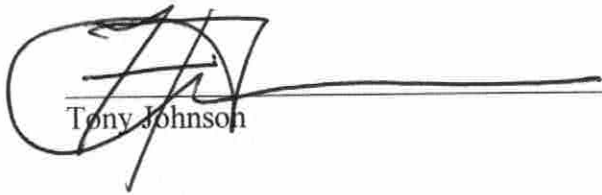
6. The Second Waiver Request, to allow an 11.9% minimum window surface area coverage for a lower building level, is necessary because the functional requirements of the gymnasium building will preclude the windows at the court level. In addition, the location of the site utilities require the sprinkler riser, water supply and other utility connections to be located on the east side of the building, preventing compliance with the UDO standard. To ensure the introduction of natural lighting, there will be 11.9% minimum window surface area coverage. To achieve cohesive aesthetics for the exterior, a precast portico and false brick windows will be provided. Architectural Plans, Sheet A-03. This proposed alternative compliance will, thus, result in a development pattern that is the functional equivalent to that achievable under the required architectural standard.

7. The Third Waiver Request, to allow the small portion of visible TPO wall on the rear of the parapet, is necessary to avoid the creation of a difficult construction detail which would make the roof less water tight, and would provide little aesthetic benefit. Architectural Plans, Sheet A-05. This proposed alternative compliance will, thus, result in a development pattern that is superior to that achievable under the required architectural standard.

8. The proposed school expansion meets all other applicable architectural and building standards. Additionally, the proposed buildings are designed with adequate facilities and safety equipment for students and faculty, complying with all state regulations for school facilities.

FURTHER, AFFIANT SAYETH NOT.

This the 4th day of March, 2022.


Tony Johnson

Signed and sworn to before me this day by Tony Johnson.

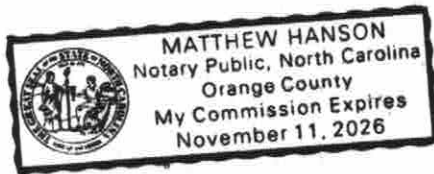
Date: 3/4/2022


Official Signature of Notary Public

MATTHEW HANSON Notary Public

(Official Seal)

My commission expires: Nov. 11, 2026





Resolution No. 22-11

Date Adopted: March 15, 2022

Effective Date: March 15, 2022

**RESOLUTION OF THE TOWN OF HOLLY SPRINGS TOWN COUNCIL
MAKING FINDINGS OF FACT FOR SPECIAL EXCEPTION USE (21-SEU-
02) & WAIVER FOR ARCHITECTURAL DESIGN REQUIREMENTS; IN
ASSOCIATION WITH DEVELOPMENT PETITION 17-DP-04-A02 FOR
THALES ACADEMY EXPANSION**

WHEREAS, the Town of Holly Springs Town Council adopted *Town of Holly Springs Unified Development Ordinance* ("UDO") in November 2002; and

WHEREAS, pursuant to NCGS §§160A-361 & 388 and the UDO, the town council of Holly Springs ("Town Council") has the authority to grant special exception uses, variances, and waivers if competent and substantial evidence is presented by the Petitioner which allows the Town Council to find as a fact that conditions either currently exist or may exist after implementation of conditions by the Town Council. Such findings are each of the following:

Special Exception Use Findings of Fact:

A special exception use may only be granted upon the presentation of sufficient evidence to enable a written determination that:

- a. The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare;
- b. The proposed use will not injure or adversely affect the adjacent area;
- c. The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan;
- d. The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved as set forth above, in which case the proposed use shall conform to the terms and conditions of such waiver).
- e. Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 – Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency;
- f. Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood;
- g. The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of

those persons whom may work at, visit or own property nearby to the proposed use;

- h. Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the needs of the proposed use;
- i. The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts; and,
- j. The type, size, and intensity of the proposed use (including but not limited to such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use) will not have significant adverse impacts on adjoining properties or the neighborhood.

Waiver for Alternate Compliance with Architectural Design Requirements Findings of Fact:

A petition for a waiver of regulations of UDO Section 3.08, A., waiver for Alternate Compliance with Architectural Design Requirements may only be granted upon the presentation of sufficient evidence to enable a written determination that:

- 1. The proposed development represents the use of building materials, building massing and façade treatment, building orientation, signs, landscaping, lighting or open space which will result in a development pattern which is equivalent to or superior to that achievable under the applicable regulations;
- 2. The proposed development will be compatible with and will enhance the use or value of area properties;
- 3. The proposed development is consistent with the intent of the Comprehensive Plan; and,
- 4. The proposed development is consistent with the intent and purpose of this UDO.

WHEREAS, the Town Council has heard sworn testimony in the form of affidavits submitted by the applicant from the following persons: Brandon Hafner; Brendie Vega; Daniel Whatley; David McClure; Melissa Helbert-Pogoloff , and held a public hearing on March 15, 2021 at which time additional evidence [was /was not] presented and such evidence is summarized in the minutes. In addition to the evidence presented, the Town has accepted and entered the Petitioner's written findings of fact into the minutes (Exhibit A) and have received site plans and elevations depicting the requested WAIVERS (Exhibit B) for the following requested Special Exception Use & Waivers:

Part 1: Special Exception Use (21-SEU-02)

Development of a private school within the R-10 Residential District

Part 2: Waiver: Alternate Compliance with Architectural Design Requirements

3.08, A 1. c. Primary Façade Building Materials, and Building Massing and Façade Treatment, Primary Building Material

Variation in Massing:

Exceed the 30 feet maximum bay width on west façade of the school building for a bay that is 39 feet, 4 inches

Animating Features:

Reduce 20% glazing on the east façade of the gymnasium building lower level to 11.9%

Roof Treatment:

Allow tan color TPO roofing membrane to be used on the back side of a parapet wall that is visible

WHEREAS, the Town Council has received competent and substantial evidence and has therefore found the Petitioner's written findings of fact. The Town Council finds that the Petitioner's findings of fact to be consistent with the public testimony received on the requested Special Exception Uses and Waivers, and therefore the Town Council is able to reach conclusions independently (Exhibit C) or be reasonably able to meet the conclusions on the Findings of Fact upon implementation of conditions listed on Exhibit D to this Resolution.

WHEREAS, by the Town Council to make and accept the Findings of Fact for Special Exception Use (21-SEU-02) & Waiver For Architectural And Design; as submitted by Withers Ravenel.

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

1. Based on the evidence presented to the Town, the Town Council hereby makes and accepts the Findings of Facts for the Special Exception Use as submitted by the Applicant.
2. Based on the evidence presented to the Town, the Town Council hereby makes and accepts the Findings of Facts for the Waiver of Architectural Compliance.
3. The Special Exception use and Wavier of Architectural Compliance as described in the Application and in the Applicant's witness' affidavits is hereby ALLOWED, subject to the conditions listed in the document entitled "**Thales Academy Expansion Development Plan, Special Exception Use, and Waiver 17-DP-04-A02 / 21-SEU-02 Conditions of Approval**" attached hereto and incorporated by reference, along with the following Conditions added by the Town Council as a result of the evidence presented at the hearing:

[List additional conditions, if any, as necessary and as supported by the evidence]

4. This resolution shall take effect immediately, unless an appeal is NCGS 160D-406(k).

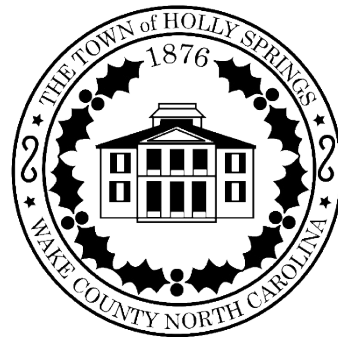
Adopted by the Holly Springs Town Council on this, the 15th day of March, 2022.

Town of Holly Springs by

Sean Mayefskie, Mayor

ATTEST:

Linda McKinney, Town Clerk



RESOLUTION EXHIBIT A

Part 1: Special Exception Use (21-SEU-02) Findings of Fact Submitted By Petitioner

Proposed School Expansion

Statement of Justification

- (1) The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience, or general welfare.

The school will not injure the public health, safety, comfort, community moral standards, convenience, or general welfare. Thales Academy will provide an additional, convenient education choice to area residents thereby reducing the burden on the public school system in this rapidly growing area.

- (2) The proposed use will not injure or adversely affect the adjacent area or property values therein.

The Thales Academy site was carefully designed to comport with the surrounding community. Sidewalks and street connections are being provided to promote walkability and improve interconnection with the surrounding area. Sidewalk connections to public streets are also provided via Socratic Way. Driveways were designed to provide easy access with ample room for drop-off and pick-up.

- (3) The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan.

The school will be consistent with the district character and land uses and the Town of Holly Springs Comprehensive Plan. The property is zoned R-10, Residential District, which is established to protect, promote, and maintain the development of medium-density, single-family dwellings and provide limited public and institutional uses, such as schools, that are compatible therewith. The Comprehensive Plan designates this property as Mixed Residential Neighborhood. The character area description identifies schools as a contextually appropriate use. The expansion of the existing school and architecture will be consistent with previous approvals.

- (4) The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as apart of a special exception use petition and approved by the Town Council in which case the proposed use shall conform to the terms and conditions of such waiver).

The school will conform to all development standards of the R-10 district, excepting the provisions previously approved in 17-SEU-02, 17-VARTC-03, and the associated waiver for alternate compliance with architectural design requirements. Thales Academy has developed a unique and attractive design configuration for use around the Triangle and would like to continue that tradition here.

- (5) Access drives or driveways are or will be sufficient in size and property located to ensure automotive and pedestrian traffic safety and convenience, traffic flow as set forth in Section 7.09 Pedestrian Circulation and Vehicular Area Design, and control and access in case of fire or other emergency.

Drives are sufficiently sized and located to ensure automotive and pedestrian safety and convenience, as required by the Town, and to allow for sufficient control and access in the event of fire or other emergency. Internal drives loop to encourage slow speed and allow for queuing during

drop-off and pick-up. Sidewalk connections and associated crosswalks are provided to encourage pedestrian access and site walkability. Fire and emergency services access meeting the Town's standards is provided.

- (6) Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood.

All off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located to be safe and convenient, to allow for emergency access, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood. Code-required off-street parking is provided on-site along with significant queuing area for drop-off and pick-up of school children. Trash facilities are enclosed away from the site perimeter, easily accessible, and conveniently located for school use and pick-up. The school building is located near the center of the site with the playground immediately behind it. No economic, glare, odor, or other impacts from the school are expected.

- (7) The lot, building, or structure proposed for the use has adequate restroom facilities, safety equipment (smoke alarms, floatation devices, etc.) or any other service or equipment necessary to provide for the needs of those persons who may work at, visit, or own property nearby to the proposed use.

Thales Academy is designed to have adequate restroom facilities, safety equipment, including smoke alarms, and all necessary services and equipment to provide for the needs of those who may work at or visit the school. Thales academy is a proven model. They have similarly equipped and successfully operated similar schools around the region. Thales Academy will comply with all state-level regulations for schools.

- (8) Utilities, schools, fire, police, and other necessary public and private facilities and services will be adequate to handle the proposed use.

Utilities, schools, fire, police, and other necessary public and private facilities and services will be adequate to handle the proposed use. Public water and sewer is available on the site to service the structure. As part of construction of the building, required off-site improvements will be made.

- (9) The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts.

The school building and playground are centrally located, away from adjacent properties. Driveways will be sufficiently setback from the property lines and the street. Landscape buffers and preservation of existing vegetation are proposed to meet applicable code requirements. Environmentally sensitive areas are preserved and protected providing a further transition for adjacent landowners in certain areas to the north and west. The school expansion is harmonious with the surrounding land uses.

- (10) The type, size, and intensity of the proposed use, including such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use, will not have significant adverse impacts on adjoining properties or the neighborhood.

Thales Academy will not have significant adverse impacts on adjoining properties or the neighborhood. The proposed upper school will operate on an ordinary school schedule. Landscaping, parking, access, drives, and stormwater all meet or exceed state and local requirements.

Part 2: Waiver: Alternate Compliance with Architectural Design Requirements Findings of Fact Submitted By Petitioner

Findings of Fact

1. The proposed development represents the use of (building materials, building massing and façade treatment, building orientation, signs, landscaping, lighting or open space which will result in a development pattern which is equivalent to or superior to that achievable under the applicable regulations;

The proposed Thales Academy High School and Gymnasium buildings have been designed to complement the existing Thales Academy Elementary School building. The brick selection and details, window colors and shapes and classical precast elements are consistent with the design of the existing school building. Thales Academy will comply with all developments standards with the exception of a waiver request regarding certain architectural elements of the building. The resulting development pattern will be equivalent to that achievable under the applicable regulations.

2. The proposed development will be compatible with and will enhance the use or value of area properties;

The proposed Thales Academy development includes the existing elementary school and the proposed High School and Gymnasium. The site has been carefully designed to complement and enhance the use and value of the surrounding community. Sidewalks and street connections are provided to promote walkability and improve interconnection with the surrounding area. Drives have been designed to provide ample access with room for drop off and pick up. Off-street parking, loading areas, trash enclosures and other services have been located in a manner to be safe and to minimize any negative impact on adjoining properties.

3. The proposed development is consistent with the intent of the Comprehensive Plan; and,

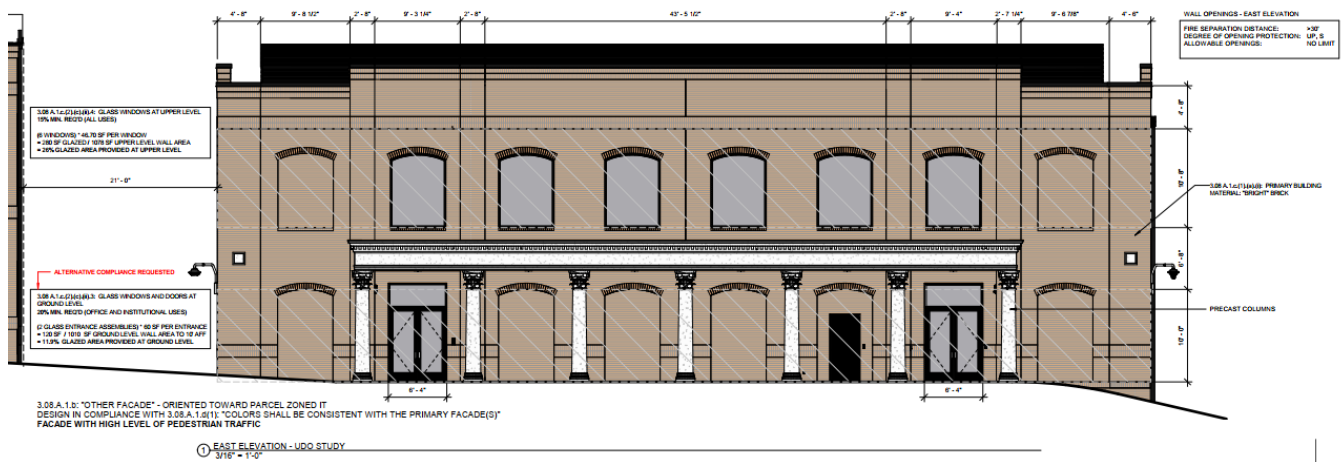
Thales Academy will be consistent with the land uses authorized in the Town of Holly Springs Comprehensive Plan. The subject property is zoned R-10, which is established to protect, promote and maintain the development of medium density single-family dwellings and to provide for limited public and institutional uses, such as schools, that are compatible with the residential uses. The Holly Springs Comprehensive Plan designates the site for development which includes limited institutional uses such as schools.

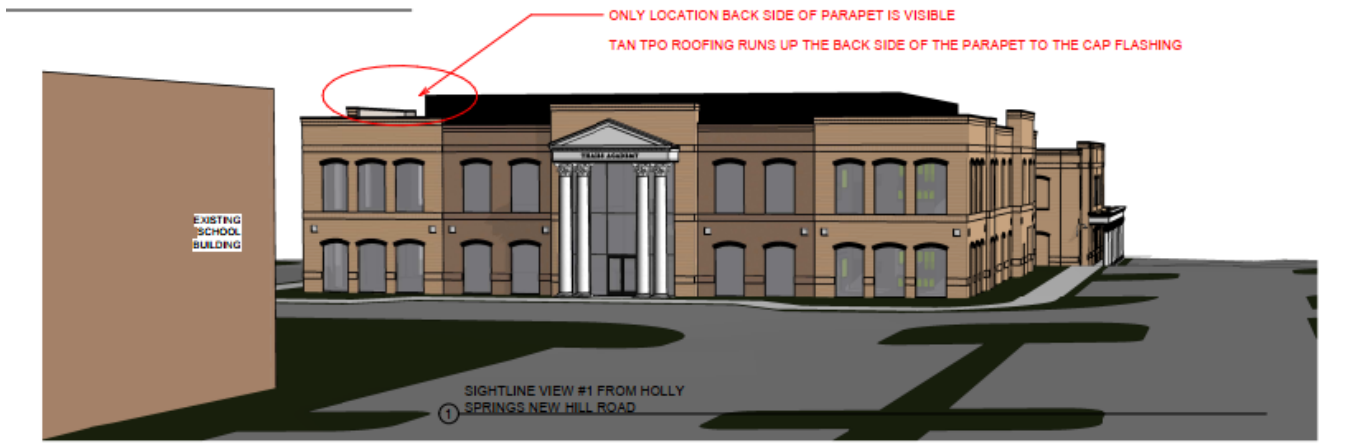
4. The proposed development is consistent with the intent and purpose of this UDO.

The Thales Academy proposed development, even with the requested waivers, falls well within the intent of the UDO. Each building, where required, has a discernable base and cap, adequate transparency, human element details within the first 15', variations in wall massing and parapet heights, and substantial brick exteriors.

RESOLUTION EXHIBIT B

SITE PLANS & ELEVATIONS





RESOLUTION EXHIBIT C

TOWN COUNCIL'S FINDINGS OF FACT

The Town Council accepts the findings of fact as presented in Exhibit A unless specified below:

The Town Council made the following additional findings:

Part 1: Special Exception Use (21-SEU-02)

☒ No additional findings

Part 2: Waiver: Alternate Compliance with Architectural Design Requirements

☒ No additional findings

RESOLUTION EXHIBIT D
CONDITIONS OF APPROVAL

The Town Council added the following conditions in order to adequately make and accept the Findings
of Fact:

Part 1: Special Exception Use (21-SEU-02)

1. All operations must adhere to the evidence submitted by the applicant as stated in the findings of fact submitted and those findings of fact specified by the Town Council in conjunction with 21-SEU-02.

Part 2: Alternate Compliance with Architectural Design Requirements

X No Conditions



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 11.

Public Hearings

Title: 301 Earp Street Special Exception Use & Variance 21-SEU-05/ 21-VARTC-02 - Quasi-Judicial Hearing

Strategic Priority Area: Responsible & Balanced Growth

Staff Resource: Bronwyn Bishop, Development Services

Action(s):

1. Conduct Quasi-Judicial Public Hearing to consider a Special Exception Use (SEU) to allow for a single family dwelling within the Village District Area Plan boundary and the R-15 Residential District.
2. Adopt Resolution 22-08 to make and accept the Findings of Fact for consideration of and to approve the SEU and Variance, with the conditions listed in the attachment.

Explanation:

- A new Unified Development Ordinance (2022 UDO) was effective March 1, 2022. Over the next 12-24 months, there will be a crossover period where some projects are able to utilize the old UDO (2002 UDO) due to state statutes. This section of the cover sheet will be utilized to specify the UDO version (2002 or 2022) and the approval type that the Council is considering for each respective case.
 - Applicable Ordinance: 2002 Unified Development Ordinance
 - Process: Quasi-Judicial Public Hearing, Special Exception Use + Variance Request
- The proposed Special Exception Use (SEU) is the first step in developing a single family home on this site and will be followed by an administratively reviewed Building Permit.
- A SEU is a Permitted Use within a specific zoning district that may not necessarily fit in the surrounding areas and uses and is subject to further review. Applicants requesting a SEU must be able to demonstrate that all required Findings of Fact are being met.
- The Town Council, through public hearing and sworn testimony, must be able to make findings that these facts will be met.
- The applicant is requesting SEU approval for one single family home to be located at 301 Earp Street.
- Since the parcel is within the boundary of the Village District Area Plan and zoned R-15 Residential, an SEU is required to evaluate the appropriateness of the single family home. The Village District Area Plan is a special area plan established in the Town's Comprehensive Plan and last updated in 2018.
- A Variance Request has been included with the SEU request to allow for a reduction in the required setback along Collins Street.

Background:

- The applicant is requesting a SEU to allow for new construction of one single family home at 301 Earp Street.
- A plot plan has been provided with the SEU application to demonstrate compliance with the Unified Development Ordinance, Engineering Design & Construction Standards, and the Village District Area Plan.

Planning Board Recommendation

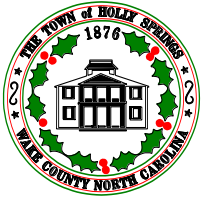
- The Planning Board discussed the proposal on February 22, 2022 and recommended the Town Council approve the proposed Special Exception Use (8-0).

Funding Source(s):

N/A

Attachment(s):

1. 301 Earp St_PB Staff Report 02222022
2. 301 Earp St_Variance Petition 21-VARTC-02
3. 301 Earp St_Development Petition. SEU. Plot Plan
4. 22-08 301 Earp St. 21SEU05_ResolutionFingsofFact_SEU_VARTC



Town of Holly Springs Staff Report to the Planning Board

REQUEST FOR SPECIAL EXCEPTION USE 301 Earp Street 21-SEU-05

PETITIONER(S):

Randy Miller
Thompson & Associates
1149 Executive Cir, Suite 02
Cary, NC 27511

DEVELOPER(S):

Jason Brown
Starcraft Builders
5804 Cleome Court
Holly Springs, NC 27540

PROPERTY OWNER(S):

Equity Trust Company
FBO John Brown IRA
740 Loch Highlands Dr.
Raleigh, NC 27606

LOCATION MAP

LOCATION: [X] Within Corporate Limits of Holly Springs [] Within Holly Springs ETJ [] Annexation Pending

ANTICIPATED REVIEW SCHEDULE:

Planning Board: February 22, 2022
Town Council Action: March 15, 2022

STAFF CONTACTS: Bronwyn Bishop, Planner I

ATTACHMENTS:

Petitioner's Response to the Special Exception Use Findings of Fact

Proposed Plot Plan

Variance of Development Standards Petition

Proposed Elevation sketch

PARCEL INFORMATION			
OWNER	PARCEL #	ZONING	AREA
Equity Trust Company, FBO John Brown IRA	0659023745	R-15	0.15
		Total:	0.15 acres

ADJACENT PROPERTY SITE DATA		
	ZONING	EXISTING LAND USE
Subject Property	R-15 Residential	Vacant
North	R-15 Residential	Existing single-family home
South	R-15 Residential	Street, then existing single family home
East	R-15 Residential	Existing single-family home
West	R-15 Residential District	Street, then single family home

PROPERTY HISTORY

Rezoning History N/A	Project History Map of Collins and Arpe Property (recorded plat): Recorded February 19, 1915
--------------------------------	---

SPECIAL EXCEPTION USE

Request to allow for a Special Exception Use as specified in Unified Development Ordinance Section 2.03 R-15 Residential District to allow for one (1) single family dwelling within the adopted Village District Area Plan boundary at the property located at 301 Earp Street, Wake County PIN 0659023745.

Special Exception Use Findings of Fact:

A special exception use may only be granted upon the presentation of sufficient evidence to enable a written determination that:

- The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare;
- The proposed use will not injure or adversely affect the adjacent area;
- The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan;
- The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved as set forth above, in which case the proposed use shall conform to the terms and conditions of such waiver).

- e. Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 – Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency;
- f. Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood;
- g. The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of those persons whom may work at, visit or own property nearby to the proposed use;
- h. Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the needs of the proposed use;
- i. The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts; and,
- j. The type, size, and intensity of the proposed use (including but not limited to such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use) will not have significant adverse impacts on adjoining properties or the neighborhood.

**VARIANCE OF REGULATIONS OF UDO REQUESTS
NOT FOR PLANNING BOARD DISCUSSION OR CONSIDERATION**

Request to allow for variance from UDO Section 2.03, B. 5. a Minimum Yards and Minimum Building Setbacks in the R-15 Residential District to allow a reduction in the front setback on Collins Street from 20' to 10' in association with Special Exception Use Petition #21-SEU-05.

UDO Requirements:

UDO Section 2.03, B. 5. a Minimum Yards and Minimum Building Setbacks in the R-15 Residential District

The following minimum yard and minimum building setback requirements shall apply to all buildings and structures, unless specifically provided otherwise:

- a. Front - a minimum front yard and minimum building setback measured from the greater of the proposed right-of-way or existing right-of-way shall be provided as follows:

Local Street/Cul-de-Sac Street: 20'

Variance Findings of Fact:

1. Unnecessary hardship would result from the strict application of the ordinance. It shall not be necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property.
2. The hardship results from conditions that are peculiar to the property, such as location, size, or topography. Hardships resulting from personal circumstances, as well as hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis for granting a variance.
3. The hardship did not result from actions taken by the applicant or the property owner. The act of purchasing property with knowledge that circumstances exist that may justify the granting of a variance shall not be regarded as a self-created hardship.
4. The requested variance is consistent with the spirit, purpose, and intent of the ordinance, such that public safety is secured, and substantial justice is achieved.

PROJECT OVERVIEW

Part 1: Special Exception Use

A Special Exception Use is a Permitted Use within a specific zoning district that may not necessarily fit in with the surrounding areas and uses and is subject to further review. Applicants requesting a Special Exception Use, must be able to demonstrate that all required Findings of Fact are being met. The Town Council through the public hearing and sworn testimony must be able to make findings that these facts will be met and/or adhered to as part of the motion. If the Town Council determines that a Fact cannot be met or adhered to, then the Special Exception should be denied.

The applicant has requested a Special Exception Use for one (1) single family dwelling in the R-15 Residential District that is located within the boundary of the Village District Area Plan (as indicated in the Comprehensive Plan).

Part 2: Plot Plan

Any Plot Plan for a single-family dwelling that is submitted along with a Special Exception Use is required to be reviewed by the Planning Board for recommendation to the Town Council and then ultimately acted upon by the Town Council after determination if the proposed Special Exception Use of the land is approved.

A Plot Plan has been submitted alongside the Special Exception Use Petition for a new single-family dwelling within the Village District Area Plan boundary. One single family home is proposed totaling 2,211 square feet. The proposal also includes new sidewalk construction and the installation of street trees.

PLANNING & ZONING

Vision Holly Springs Comprehensive Plan

Future Land Use & Character Plan Designation: Downtown Village District

Residential neighborhoods in the Downtown Village District offer different choices for residents to live near and experience the two activity centers (core area and medical campus). Preserving the character of existing homes is a high priority in this area, though some existing large-lot neighborhoods may be subdivided or redeveloped to introduce more housing units (including single dwelling homes on small lots, townhomes, duplexes, cottage dwellings, multi-unit houses and accessory dwelling units) and to increase the number of residents living near both the downtown core and the medical campus.

Land Use Policies that apply to this project include:

- Residential buildings should be traditional in design and orientation to mesh with the existing neighborhood fabric.
- Residential building types shall be small lot single-dwelling homes, townhomes, duplexes, cottage dwellings, multi-unit houses and accessory dwelling units.
- Lots are rear-loaded to maximize walkability and reduce the emphasis on automobiles.
- Parking is located in and accessed from the rear.
- Lots are relatively small, with a high percentage of frontage buildout along the street.
- Low-impact landscape design techniques and sustainable stormwater practices should be incorporated.

Development Standards & Architectural and Site Design Requirements

Gross Density/Lot Size:

Current Lot Size: 0.15 acres

Setbacks:

Minimum Required:

Front, Local Street (Earp St): 20 feet
Front, Local Street (Collins St): 20 feet
Side, East property line: 7 feet
Rear: 25 feet

Provided:

Front Adjacent to Earp St: 20 feet
Front Adjacent to Collins St: 10 feet, Variance requested
Side: 7 feet
Rear: 25 feet

Building Height:

Maximum Permitted: 35 feet
Proposed: 24 +/- feet

Gross Floor Area:

Proposed: 2,211 square feet

Parking & Loading:

Required: Two (2) parking spaces per dwelling unit
Provided: 2 car parking pad/driveway

Accessory Structures:

None proposed.

Fences:

There is no fence proposed with this project. If at any time a fence is proposed, it must comply with UDO requirements.

Building Materials, Colors, Textures, Architecture, Roof Treatment, and Façade Modulation:

There are no specific architectural requirements for single family dwellings which are not located within a Development Options neighborhood.

In accordance with NC General Statutes, the Town cannot require single-family dwellings to comply with any architectural design standards unless agreed to by the property owner. This includes:

1. Exterior building color;
2. Type or style of exterior cladding material;
3. Style or materials of roofs or porches;
4. Exterior nonstructural architectural ornamentation;
5. Location or architectural styling of windows and doors, including garage doors;
6. Location of rooms; and
7. Interior layout of rooms.

Building Orientation:

The proposed building will be oriented towards Earp Street and will be accessed with a private driveway from Collins Street.

Tree Preservation:

Projects or subdivisions within the adopted Village District Area Plan boundary as indicated in the Comprehensive Plan are not subject to the tree preservation area requirements. However: (1) The

removal of any tree twenty (20) inches or greater Diameter at breast height (DBH) must be approved by the Town Council or their designee.

The applicant has indicated on the site plan that the site does not currently contain any existing qualifying trees.

CIVIL IMPROVEMENTS

Water Service:

This project will be served by a new water service connection to the existing 12" waterline in Collins Street.

Sewer Service:

This project will be served by a new sewer service connection to the existing 8" gravity sewer main on Earp Street.

Transportation:

Right-of-way will be dedicated across the property frontage on Collins Street and accordance with the Comprehensive Transportation Plan and the Engineering Design & Construction Standards. New 5' sidewalk will be constructed across the property frontage on Collins Street. There is an existing 5' sidewalk across the property frontage on Earp Street in the ultimate location. Chapter 3 of the Comprehensive Plan does show a Sidepath along Earp Street and while the Sidepath is likely to be built on the south side of the street, an additional 5' of "Sidepath Easement" is being dedicated as part of this project on the north side in the event that this is the more feasible option.

Environmental:

This project will be required to meet the Town of Holly Springs NPDES Ph. II Post Construction Stormwater Ordinance

REQUESTED ACTION

Staff has reviewed the requested Special Exception Use Petition and has found that the Petition as submitted and presented to the Planning Board complies with the minimum requirements as specified in Town adopted land development policies and ordinances.

SUGGESTED MOTION:

Motion to recommend that the Town Council **approve/deny** Special Exception Use #21-SEU-05 as specified in Unified Development Ordinance Section 2.03 R-15 Residential District to allow for (1) single family dwelling within the adopted Village District Area Plan boundary as indicated in the Comprehensive Plan, in the R-15 District at the property located at 301 Earp Street, Wake County PIN 0659023745, as submitted by Thompson & Associates with the following conditions:

1. All operations must adhere to the evidence submitted by the applicant as stated in the findings of fact submitted and those findings of fact specified by the Town Council in conjunction with 21-SEU-05/PLSEU202100106.
2. Minor modifications to the height, bulk, orientation of the structure of the lot, location of the structure on the lot, and site design may be authorized by the Director of Development Services. If the Director determines that the proposed minor modifications are of such a nature as to adversely impact the purpose of intent of this approval, the petitioner shall be required to file a new petition for Special Exception Use approval.
3. This project will be required to meet the Town of Holly Springs NPDES PH. 2 Post Construction Ordinance.

VARIANCE OF DEVELOPMENT STANDARDS PETITION

The current Filing Fees can be found on-line in the Town of Holly Springs Fee Schedule:
<http://www.hollyspringsnc.us/planning>



Variance Request (please be specific)

UDO Section No.: 2.03 B 5 a
 Section Title: R-15 RESIDENTIAL DISTRICT
 Specific Variance Request: DEVELOPMENT STANDARDS
ALLOW REDUCTION OF COLLINS STREET
SETBACK TO BE A 10' SETBACK. THIS IS DUE
TO ADDITIONAL R/W DEDICATION

For DPZ Use only

Project # _____

Fees Paid: \$ _____

Date Received: _____

Project Information

Project Name 301 EARP STREET
 If this project is part of a previously approved plan, please specify:
 PUD/Master Plan/Subdivision N/A Shopping Center/Lot # N/A
 Project Location 301 EARP STREET
 Use street address. If none, use the closest intersection
☒ Within Corporate Limits ☐ Within Holly Springs ETJ ☐ Pending Annexation

PIN 0659-02-3745 Real Estate ID 0646364

Project Acreage 0.162 AC. Current Zoning R-15

Scoping Meeting Date: _____ Concept Meeting Date: _____

If the Concept Meeting Date is not within 8 weeks of the submittal date, another Concept Meeting is required prior to submittal.

Petition Contact Information (complete each contact in its entirety- please print or type)

Project Applicant/Contact

(check one) ☐ Owner ☐ Owner's Agent ☒ Design Professional ☐ Developer ☐ Other: _____

Name RANDY MILLER Company THOMPSON & ASSOCIATES

Mailing Address 1149 EXECUTIVE CIRCLE SUITE 02

City CARY State NC Zip 27511

Telephone # (919) 465-1566 E-Mail miller.p@att.net

How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Developer

Co. Name STARCRAFT BUILDERS NAME JASON BROWN

Mailing Address 5804 CLEOME COURT

City HOLLY SPRINGS State NC Zip 27540

Telephone # (919) 369-1228 E-Mail jason@starcraftbuilders.com

How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Property Owner

Name JASON BROWN Company EQUITY TRUST COMPANY

Mailing Address 5804 CLEOME COURT

City HOLLY SPRINGS State NC Zip 27540

Telephone # (919) 369-1228 E-Mail jason@starcraftbuilders.com

How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail

How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

VARIANCE OF DEVELOPMENT STANDARDS FINDINGS OF FACT

You must respond to all findings; please type or print legibly in blue or black ink.

Project Information

Project Name: 301 EARP STREET



Findings of Fact

A petition for Variance of Development Standards may only be approved upon the presentation of sufficient evidence. Please include as much detailed information or unique conditions that would enable the Board to make a written determination that:

SEE ATTACHED SHEET

- (1) Unnecessary hardship would result from the strict application of the ordinance. It shall not be necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property.

For DPZ Use only

Project # _____

Date Received: _____

- (2) The hardship results from conditions that are peculiar to the property, such as location, size, or topography. Hardships resulting from personal circumstances, as well as hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis for granting a variance.

- (3) The hardship did not result from actions taken by the applicant or the property owner. The act of purchasing property with knowledge that circumstances exist that may justify the granting of a variance shall not be regarded as a self-created hardship.

- (4) The requested variance is consistent with the spirit, purpose, and intent of the ordinance, such that public safety is secured, and substantial justice is achieved.

Certificate of Completion

I certify that all information presented in this petition is accurate to the best of my knowledge and belief. Further, I grant permission for members of the Board of Adjustment and Town Staff to visit the site in question for informational, advertisement, and inspection needs.

Signature of Applicant: Randall K. Apple

Date: 12-1-21

Signature of Owner: Don Bur

Date: 12/1/21

301 EARP STREET – VARIANCE

FINDINGS OF FACT

- (1) DUE TO THE TOWN REQUIRING 5.5' ADDITIONAL ROADWAY RIGHT OF WAY, ALONG COLLINS STREET AND ALONG WITH THE REQUIRED BUILDING SETBACKS, THE RESULTING BUILDABLE WIDTH OF THE LOT WOULD BE ~15'. OVERALL, WITH THE APPLICATION OF THE ADDITIONAL 5.5' RIGHT OF WAY AND THE APPLICATION OF THE BUILDING SETBACKS, THE TOTAL BUILDABLE AREA OF THE LOT WOULD BE ~1,406 SF. THIS PRESENTS ONLY ~20% OF THE TOTAL 7,047 SF AREA OF THE LOT. A 15' WIDE BUILDING WIDTH IS NOT FEASIBLE FOR THE CONSTRUCTION OF A SINGLE-FAMILY RESIDENCE.
- (2) DUE TO THE SIZE OF THE PROPERTY AND ITS LOCATION AT THE INTERSECTION OF COLLINS AND EARP STREETS, REQUIRING ADDITIONAL RIGHT OF WAY IMPEDES UPON BUILDABLE AREA. WITH THE EXISTING LOT WIDTH DIMENSION VARYING FROM ~48' TO ~50', THE DEDICATION OF ANOTHER 5.5' IN RIGHT OF WAY GREATLY REDUCES, AFTER APPLICATION OF A CORNER SIDE STREET SETBACK, THE AVAILABLE BUILDABLE WIDTH OF THE LOT.
- (3) THE HARDSHIP IS NOT THE RESULT OF ACTIONS BY THE PROPERTY OWNER/APPLICANT. THE LOT LOCATED AT 301 EARP STREET IS AN EXISTING PLATTED LOT AS PER WAKE COUNTY BOOK OF MAPS 1915 PAGE 22. THE LOT IS ZONED TO ALLOW FOR THE CONSTRUCTION OF A SINGLE FAMILY RESIDENTIAL UNIT. HOWEVER, WITH THE CURRENT REQUEST FOR ADDITIONAL DEDICATION OF ROADWAY RIGHT OF WAY, THE LOT WOULD HAVE A REDUCED AVAILABLE BUILDING FOOTPRINT. WITH THE ADDITIONAL DEDICATED RIGHT OF WAY, THE SUBJECT LOT WOULD HAVE AN UNBUILDABLE FOOTPRINT.
- (4) THE REQUESTED VARIANCE TO ALLOW FOR ENCROACHMENT INTO THE BUILDING SETBACK ALONG COLLINS STREET, AFTER THE DEDICATION OF 5.5' ADDITIONAL RIGHT OF WAY, IS CONSISTENT WITH THE SPIRIT, PURPOSE, AND INTENT OF THE ORDINANCE. AS REFERENCED ABOVE, THE PROPERTY IS LOCATED WITHIN THE VDAP AREA. PER THE VDAP PLAN, SINGLE FAMILY RESIDENTIAL IS ENCOURAGED. WITH THIS, THE VDAP STATES THAT CONSIDERATION SHOULD BE GIVEN TO ALLOW FOR REDUCED SETBACKS FOR RESIDENTIAL UNITS. WITH THE GRANTING OF A VARIANCE TO ALLOW FOR AN ENCROACHMENT TO THE CORNER SIDE OF COLLINS STREET WILL BE CONSISTENT WITH THE INTENT AND SPIRIT OF THE VDAP. IN ADDITION, IT WILL NOT BE OF HARM TO THE GENERAL PUBLIC AND WILL PROVIDE SUBSTANTIAL JUSTICE TO THE PROPERTY OWNER BY ALLOWING THE PLACEMENT OF A SINGLE FAMILY RESIDENCE ON A PLATTED LOT THAT IS ZONED FOR A SINGLE-FAMILY RESIDENCE,

DEVELOPMENT PETITION

The current Filing Fees can be found on-line in the Town of Holly Springs Fee Schedule:

<http://www.hollyspringsnc.us/planning>

Petition Type:

☐ Master Plan

- ☐ New Detailed ☐ New Schematic
☐ Major Amendment ☐ Minor Amendment*

☒ Preliminary Plan- Major Subdivision

- ☒ New ☐ Major Amendment ☐ Minor Amendment*

☐ Development Plan (check all that apply)

- ☐ New ☐ Major Amendment ☐ Minor Amendment*
☐ Gateway Non-Residential/Mixed Use Gross Building Floor Area _____
☐ Non-Gateway Non-Residential/Mixed Use Gross Building Floor Area _____
☐ Multifamily
☐ Residential Development Options or Infill Development Options

☒ Special Exception Use

- ☒ New ☐ Family Child Care Home

* Specify purpose of amendment on Certificate of Plan Revisions

For DPZ Use only

Project # _____

Fees Paid: \$ _____

Date Received: _____

☐ Initial ☐ Revised ☐ Final

Project Information:

Project Name: 301 EARP STREET

If this project is part of a previously approved plan, please specify:

PUD/Master Plan/Subdivision N/A Shopping Center/Lot# N/AProject Location: 301 EARP STREET HOLLY SPRINGS, NC

Use street address. If none, use the closest intersection

☒ Within Corporate Limits ☐ Within Holly Springs ETJ ☐ Pending AnnexationPIN: 659-02-3745 Real Estate ID: 0646364Project Acreage (rounded to nearest tenth): 0.162 AC Partial Parcel: ☒ No ☐ Yes (additional fee)Current Zoning: R-15 Proposed Use (see UDO Primary Use List): SINGLE FAMILY RESIDENCEOpen Space [See UDO Section 7.06(F)(4)]: ☐ Dedication ☐ Fee-in-lieu ☐ Combination ☒ N/AWaivers Requested: ☐ No ☒ Yes- Specify UDO Section Number(s): 7.06 (SETBACK)

If yes, complete and attach appropriate Waiver Petition(s) from Waiver Packet

Scoping Meeting Date: _____ Concept Meeting Date: _____

If the Concept Meeting Date is not within 8 weeks of the submittal date, another Concept Meeting is required prior to submittal.

Petition Contact Information: (complete each contact in its entirety- please print or type)

Project Applicant/Contact

(check one) ☐ Owner ☐ Owner's Agent ☒ Design Professional ☐ Developer ☐ Other _____Name RANDY MILLER Company THOMPSON & ASSOCIATESMailing Address 1149 EXECUTIVE CIRCLE SUITE D2City CARY State NC Zip 27511Telephone # (919) 465-1566 E-Mail millerr.peo@att.netHow would you like to receive staff review comments? ☒ E-Mail ☐ US MailHow would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- CertifiedDesign Professional if different than Applicant/Contact SAME

Name _____ Company _____

Mailing Address _____

City _____ State _____ Zip _____

Telephone # () _____ E-Mail _____

How would you like to receive staff review comments? ☐ E-Mail ☐ US MailHow would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Developer

Name JASON BROWN Company STARCRAFT BUILDERS
Mailing Address 5804 CLEONE COURT
City HOLLY SPRINGS State NC Zip 27540
Telephone # (919) 369-1228 E-Mail jason@starcraftbuilders.com
How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Architect N/A

Name _____ Company _____
Mailing Address _____
City _____ State _____ Zip _____
Telephone # () _____ E-Mail _____
How would you like to receive staff review comments? ☐ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Landscape Architect N/A

Name _____ Company _____
Mailing Address _____
City _____ State _____ Zip _____
Telephone # () _____ E-Mail _____
How would you like to receive staff review comments? ☐ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Other: _____ (any other contact that should receive comments and correspondence for this project)

Name _____ Company _____
Mailing Address _____
City _____ State _____ Zip _____
Telephone # () _____ Alternate Telephone # () _____
Fax # () _____ E-Mail _____
How would you like to receive staff review comments? ☐ Fax ☐ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☐ Fax ☐ E-Mail ☐ US Mail- Certified

Property Owner - Required

Name JASON BROWN Company EQUITY TRUST COMPANY
Mailing Address 740 LOCH HIGHLANDS DRIVE
City RALEIGH State NC Zip 27606
Telephone # (919) 369-1228 E-Mail jason@starcraftbuilders.com
How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Certificate of Submittal Completion

I, RANDALL L. MILLER, certify that the information provided on this petition, plans and checklist are complete and accurate to the best of my knowledge.

Signature: Randall L. Miller Date: 10/1/21

SPECIAL EXCEPTION USE FINDINGS OF FACT

You must respond to all findings; please type or print legibly in blue or black ink.



Project Information:

Address: 301 EARP STREET

Special Exception Use:

UDO Section No. 2 04 A 2 G

Single Family Residential

Specific Special Exception Use Request:

Single Family Residential within Village District Area

Findings of Fact:

A petition for Special Exception Use may only be approved upon the presentation of sufficient evidence. Please include as much detailed information or unique conditions that would enable the Board to make a written determination that:

- (1) The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare:

Proposed single family residence in a single family residential area with residential zoning is compatible with area.

- (2) The proposed use will not injure or adversely affect the adjacent area or property values therein:

Proposed use is same as surrounding area and thus will not injure or adversely affect surrounding property values.

- (3) The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan:

Proposed single family residential use is consistent with surrounding area current uses.

While comprehensive plan suggests park and open space use, to date there has been no indication of that use in the near future.

VARIOUS DESIGN FEATURES ARE PROPOSED ON THE ELEVATIONS VISIBLE FROM PUBLIC STREETS TO ADD VISUAL INTEREST SUCH AS WINDOWS, WINDOW GRILLS, BRACKETS, SHUTTERS, VARIOUS MATERIALS, ETC. AS SHOWN ON

- (4) The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved by the Town Council in which case the proposed use shall conform to the terms and conditions of such waiver):

Proposed use of single family residential will require a waiver. Residential use will adhere to all UDO requirements

except for a minor encroachment into the side setback along Collins Street.

- (5) Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 - Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency:

Single family residential driveway only. Proposed driveway to have required width of 16' and the parking area will have a depth of 25' from the new right of way line. All the meet TOWNS standards and specifications.

- (6) Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood:

This is not applicable. Use to be single family residential and all residential requirements will be adhered to.

- (7) The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of those persons whom may work at, visit or own property nearby to the proposed use:

This is not applicable. Use will be single family residential and all residential requirements will be adhered to.

- (8) Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the proposed use:

Proposed use/site is within all Town current service areas.

- (9) The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts:

Use of site to be residential and be akin to current existing surrounding residential properties.

There will be no adverse impacts to surrounding properties.

- (10) The type, size, and intensity of the proposed use, including such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use, will not have significant adverse impacts on adjoining properties or the neighborhood:

This is not applicable as the use will be single family residential.

Certificate of Completion

I certify that all information presented in this application is accurate to the best of my knowledge and belief. Further, I grant permission for members of the Planning Board, Town Council, and Town Staff to visit the site in question for informational, advertisement, and inspection needs.

Signature of Applicant:

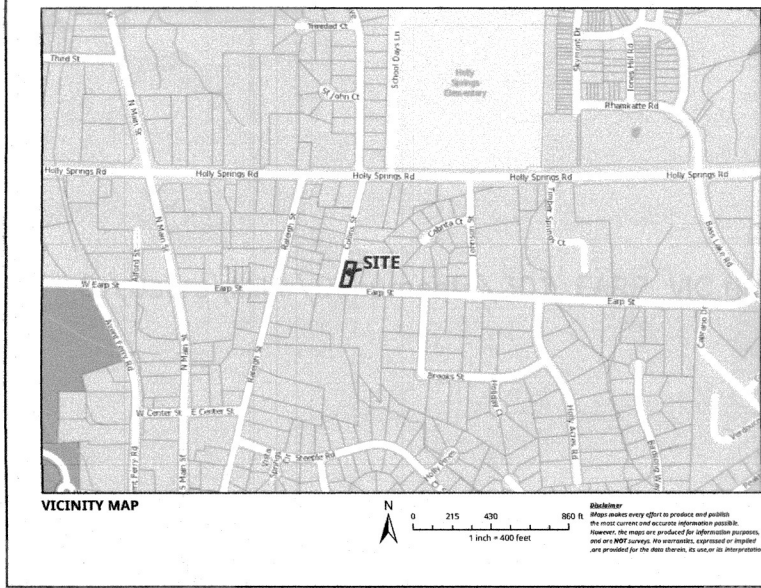
Randall G. Mills

Date: *10/1/21*

Signature of Owner:

[Signature]

Date: *10-1-21*



PRELIMINARY PLOT PLAN
EQUITY TRUST COMPANY
740 LOCH HIGHLANDS DR.
RALEIGH, NC 27606
PIN: 0659-02-3745
REID 0646364
301 EARP STREET
0.162 AC
7,047 SF
LOT 12 BENNETT LAND
DB 18823 PG 436
BM 1915 PG 22

21-SEU-05 PRELIMINARY SITE PLOT PLAN 301 EARP STREET

SURVEY BENCHMARK
MONUMENT INFORMATION
"PEARSALL"
Y = 692884.152
X = 2049363.977
Elev. 449.71

MINIMUM BUILDING SETBACKS
R-15 ZONING
FRONT - 20'
REAR - 25'
SIDES - 7'

SANITARY SEWER FLOW:
120 GPD x 4 BEDROOMS = 480 GPD

ALECIA MCNEIL, TRUSTEE
PIN: 0659-02-2734
SINGLE FAMILY RESIDENTIAL
ZONED R-15
0.31 ACRES

OWNER REQUESTS VARIANCE
TO REQUIRED SETBACK DISTANCE
FROM GRIGSBY AVE.
TO ALLOW FOR HOME CONSTRUCTION

TO BE COORDINATED WITH
TOHS PUBLIC WORKS DEPARTMENT

LAWRENCE AND GAIL FLESZAR TRUSTEES
PIN: 0659-02-4886
SINGLE FAMILY RESIDENTIAL
ZONED R-15
0.73 ACRES

JEFFREY AND MELISA JOHNSON
PIN: 0659-02-3794
SINGLE FAMILY RESIDENTIAL
ZONED R-15
0.14 ACRES

RUBY RAGLAND HEIRS
PIN: 0659-02-2546
SINGLE FAMILY RESIDENTIAL
ZONED R-15
1.07 ACRES

BALA KAMUJULI, MANJULA RANI
PIN: 0659-02-4336
SINGLE FAMILY RESIDENTIAL
ZONED R-MF-8
2.0 ACRES

MAXIMUM
PROPOSED IMPERVIOUS SURFACES:
HOUSE - 1,392 SF
CONCRETE - 730 SF

TOTAL - 2,122 SF

1-YEAR 24 HR STORM RUNOFF
EXISTING CONDITION - SITE ONLY
DA = 0.162 AC
WEIGHTED C = 51
Tc = 5 MIN.
Q 1-YR/24-HR = 23 CFS
POST HOUSE CONSTRUCTION - SITE ONLY
DA = 0.162 AC
WEIGHTED C = 71
Tc = 5 MIN.
Q 1-YR/24-HR = 0.32 CFS

PROPOSED DENUDED AREA: 6000 SF

ALECIA MCNEIL, TRUSTEE
PIN: 0659-02-2734
SINGLE FAMILY RESIDENTIAL
ZONED R-15
0.31 ACRES

LAWRENCE AND GAIL FLESZAR TRUSTEES
PIN: 0659-02-4886
SINGLE FAMILY RESIDENTIAL
ZONED R-15
0.73 ACRES

PROPOSED DIS GRASS AREA SIZING:
DIS 1
ROOF AREA = 467 SF
LENGTH = 0.04 x 467 = 19'
WIDTH = 0.5 x 24' = 9.5'
DIS 2
ROOF AREA = 476 SF
LENGTH = 0.04 x 476 = 19'
WIDTH = 0.5 x 19' = 9.5'
DIS 3
ROOF AREA = 229 SF
LENGTH = 0.04 x 229 = 9'
WIDTH = 0.5 x 12' = 4.5'
DIS 4
ROOF AREA = 229 SF
LENGTH = 0.04 x 229 = 9'
WIDTH = 0.5 x 12' = 4.5'

JEFFREY AND MELISA JOHNSON
PIN: 0659-02-3794
SINGLE FAMILY RESIDENTIAL
ZONED R-15
0.14 ACRES

SITE IS SUBJECT UTILIZE
NO DISCONNECTED
IMPERVIOUS SURFACE SCW'S
ROOF RUNOFF SHALL BE
DIRECTED TO A GRASS
SURFACE, EACH DOWN
SLOPE (FRONT & REAR)
SHALL BE DIRECTED TO
RELEASE ONTO GRASS
SURFACE AS REQUIRED.

RUBY RAGLAND HEIRS
PIN: 0659-02-2546
SINGLE FAMILY RESIDENTIAL
ZONED R-15
1.07 ACRES

BALA KAMUJULI, MANJULA RANI
PIN: 0659-02-4336
SINGLE FAMILY RESIDENTIAL
ZONED R-MF-8
2.0 ACRES

STREET TREE W/ TOHS
ROOT GUARD
REQ. 1/50'-60'
LOT FRONTAGE - 137.98' COLLINS ST.
PROPOSED STREET TREES: 3
PLACE BEHIND NEW SIDEWALK (INTO LOT)
2" CALIPER
SUGAR MAPLE
"ACER BARBATUM"
LOT FRONTAGE - 42.35' EARP ST.
PROPOSED STREET TREE: 1
PLACE BEHIND 5' SIDEWALK EASEMENT
2" CALIPER
GOLDEN RAIN TREE
"KOELREUTERIA PANICULATA"
4 TREES TOTAL

MINIMUM DESIGN CRITERIA FOR DISCONNECTED ROOFS:
MAX. OF 500 SF OF ROOF SHALL DRAIN TO EACH DISCONNECTED DOWNSPOUT
RECEIVING VEGETATED AREA SHALL BE RECTANGULAR IN SHAPE. THE LENGTH
OF THE RECTANGLE IN THE DIRECTION OF FLOW SHALL BE A MINIMUM OF 0.04
TIMES THE AREA OF THE ROOF THAT DRAINS TO IT. THE WIDTH OF THE
RECTANGLE SHALL BE 1/2 OF THE LENGTH OF THE RECTANGLE.
THE DOWNSPOUT SHALL DISCHARGE IN THE CENTER OF THE UPSLOPE END OF
THE VEGETATED RECEIVING AREA.
THE DOWNSPOUT SHALL BE EQUIPPED WITH A SPLASH PAD.
THE VEGETATED RECEIVING AREA SHALL NOT INCLUDE ANY BUILT UPON AREA.
VEGETATED RECEIVING AREAS SHALL HAVE A UNIFORM TRANSVERSE SLOPE OF 8%

THE pH, COMPACTION, AND OTHER ATTRIBUTES OF THE FIRST 8" OF THE SOIL SHALL BE
ADJUSTED IF NECESSARY TO PROMOTE PLANT ESTABLISHMENT AND GROWTH.
THE VEGETATED RECEIVING AREA SHALL BE PLANTED WITH A NON-CLUMPING,
DEEP ROOTED GRASS SPECIES.
SOILS SHALL BE STABILIZED WITH TEMPORARY MEANS SUCH AS STRAW OR
MATTING UNTIL THE PERMANENT VEGETATIVE COVER HAS TAKEN ROOT OR THE
RUNOFF SHALL BE DIRECTED ELSEWHERE UNTIL VEGETATION HAS ESTABLISHED.

DIS MAINTENANCE:
DO NOT REGRADE THE VEGETATED RECEIVING AREAS OR COVER THEM WITH
IMPERVIOUS SURFACES SUCH AS A SHED OR PATIO.
NO STOCKPILE SOIL, SAND, MULCH OR OTHER MATERIALS SHALL BE PLACED
ON THE VEGETATED RECEIVING AREA.
IMMEDIATELY REPAIR ANY AREAS THAT ARE ERODING OR WHERE VEGETATION HAS DIED.
IMMEDIATELY REMOVE SEDIMENT AND DEBRIS FROM CONTRIBUTING IMPERVIOUS SURFACES.
AFTER DIS IS CONSTRUCTED, IT SHALL BE INSPECTED ONCE A QUARTER. INSPECTOR
SHALL CHECK COMPONENTS AND ADDRESS DEFICIENCIES.
THE RESPONSIBLE MAINTENANCE PARTY SHALL KEEP A SIGNED AND NOTARIZED OPERATION
AND MAINTENANCE AGREEMENT AND INSPECTION RECORDS.

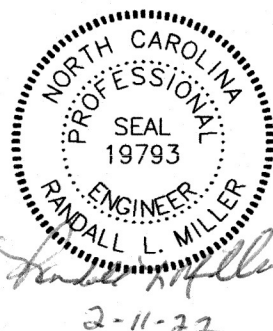
TO ENSURE PROPER OPERATION AS DESIGNED, A LICENSED PROFESSIONAL ENGINEER, LANDSCAPE
ARCHITECT OR OTHER QUALIFIED PROFESSIONAL SHALL INSPECT THE SYSTEM ANNUALLY.
THE SYSTEM COMPONENTS SHALL BE REPAIRED OR REPLACED AS NEEDED WHEN THEY FAIL
TO FUNCTION PROPERLY.

NOTE:
CONSTRUCTION DRAWING APPROVAL IS REQUIRED
BEFORE CONSTRUCTION ON THIS PROJECT MAY BEGIN.
DEVELOPMENT FEES
ARE DUE BEFORE CONSTRUCTION DRAWING APPROVAL.

PER FEMA MAP 3720064900J DATED 5/2/2006
AREA IS NOT WITHIN A FEMA 100 YEAR FLOOD AREA

ALL CONSTRUCTION SHALL CONFORM
TO TOWN OF HOLLY SPRINGS DESIGN
AND CONSTRUCTION STANDARDS.

SPECIAL EXCEPTION USE
TOWN OF HOLLY SPRINGS PROJECT: 21-SEU-05/
PLSEU202100106



SITE NOTES:
SITE IS NOT SUBJECT TO TREE
PRESERVATION AREAS PER SECTION
7.01. FURTHERMORE, SITE DOES
NOT CURRENTLY CONTAIN ANY EXISTING
QUALIFYING TREE OF 20" OR GREATER
IN DIAMETER AT DBH.

OWNER:
EQUITY TRUST COMPANY
740 LOCH HIGHLANDS DR.
RALEIGH, NC 27606
919-369-1228

PRELIMINARY PLOT PLAN 301 EARP STREET EQUITY TRUST COMPANY

THOMPSON & ASSOCIATES, PA
1149 EXECUTIVE CIRCLE
SUITE D2
CARY, NC 27511
(919) 465-1566
FAX (919) 465-1585
NC LIC# C-0343

HOLLY SPRINGS TOWNSHIP		TOWN OF HOLLY SPRINGS	
WAKE COUNTY	NORTH CAROLINA	ZONED: R-15	
DATE: 9/30/21	DRAWN: MTH	JOB NO.	
SCALE 1" = 20'	SURVEYED: REM	DWG: JB-301 EARP(2)	
REVISIONS: 12/3/21 1/14/22 2/7/22:2/11/22		PIN: 0659-02-3745	

ENGINEERING LAND SURVEYING PLANNING



301 EARP ST. PROPOSED ELEVATION



Resolution No.: 22-08

Date Adopted: March 15, 2022

Effective Date: March 15, 2022

**RESOLUTION OF THE TOWN OF HOLLY SPRINGS TOWN COUNCIL
MAKING FINDINGS OF FACT FOR
SPECIAL EXCEPTION USE (21-SEU-05); & VARIANCE (21-VARTC-02) FOR
301 EARP STREET**

WHEREAS, the Town of Holly Springs Town Council adopted *Town of Holly Springs Unified Development Ordinance* ("UDO") in November 2002; and

WHEREAS, pursuant to NCGS §§160D and the UDO, the town council of Holly Springs ("Town Council") has the authority to grant special exception uses and variances if competent and substantial evidence is presented by the Petitioner which allows the Town Council to find as a fact that conditions either currently exist or may exist after implementation of conditions by the Town Council. Such findings are each of the following:

Special Exception Use Findings of Fact:

A special exception use may only be granted upon the presentation of sufficient evidence to enable a written determination that:

- a. The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare;
- b. The proposed use will not injure or adversely affect the adjacent area;
- c. The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan;
- d. The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved as set forth above, in which case the proposed use shall conform to the terms and conditions of such waiver).
- e. Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 – Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency;
- f. Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood;
- g. The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of those persons whom may work at, visit or own property nearby to the proposed use;

- h. Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the needs of the proposed use;
- i. The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts; and,
- j. The type, size, and intensity of the proposed use (including but not limited to such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use) will not have significant adverse impacts on adjoining properties or the neighborhood.

Variance Findings of Fact:

A *variance* may be granted by the Board if competent and substantial evidence is presented by the applicant which persuades the Board to either reach each of the following conclusions independently or be reasonably able to meet these conclusions upon implementation of conditions by the Board:

1. Unnecessary hardship would result from the strict application of the ordinance. It shall not be necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property.
2. The hardship results from conditions that are peculiar to the property, such as location, size, or topography. Hardships resulting from personal circumstances, as well as hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis for granting a variance.
3. The hardship did not result from actions taken by the applicant or the property owner. The act of purchasing property with knowledge that circumstances exist that may justify the granting of a variance shall not be regarded as a self-created hardship.
4. The requested variance is consistent with the spirit, purpose, and intent of the ordinance, such that public safety is secured, and substantial justice is achieved.

WHEREAS, the Town Council has heard sworn testimony and has accepted and entered the Petitioner's written findings of fact into the minutes (Exhibit A) and have received site plans and elevations (Exhibit B) for the following requested Special Exception Use and Variance of Development Standards:

Part 1: Special Exception Use (21-SEU-05)

Special Exception Use #21-SEU-05 as specified in Unified Development Ordinance Section 2.03 R-15 Residential District to allow for one (1) single family dwelling within the adopted Village District Area Plan boundary at the property located at 301 Earp Street, Wake County PIN 0659023745.

Part 2: Variance (21-VARTC-02)

Variance Request #21-VARTC-02 of Unified Development Ordinance Section 2.03, B. 5. A R-15 Residential District Development Standards to allow for the front setback on Collins Street to be reduced from 20' to 10' at the property located at 301 Earp Street, Wake County PIN 0659023745.

WHEREAS, the Town Council has received competent and substantial evidence and has therefore found the Petitioner's written findings of fact. The Town Council finds that the Petitioner's findings of fact to be consistent with the public testimony received on the requested Special Exception Uses and Variance of Development Standards, and therefore the Town Council is able to reach conclusions independently (Exhibit C) or be reasonably able to meet the

conclusions on the Findings of Fact upon implementation of conditions listed on Exhibit D to this Resolution.

THEREFORE, BE IT RESOLVED by the Town Council to make and accept the Findings of Fact for Special Exception Use (21-SEU-05); and Variance Of Development Standards (21-VARTC-02); as submitted by Randy Miller.

Adopted by the Holly Springs Town Council on this, the 15th day of MARCH, 2022.

Town of Holly Springs by

ATTEST:

Sean Mayefskie, Mayor

Linda McKinney, Town Clerk



RESOLUTION EXHIBIT A

Part 1: Special Exception Use (21-SEU-05) Findings of Fact Submitted By Petitioner

- (1) The proposed use will not be injurious to the public health, safety, comfort, community moral standards, convenience or general welfare:

Proposed single family residence in a single family residential area with residential zoning is compatible with area.

- (2) The proposed use will not injure or adversely affect the adjacent area or property values therein:

Proposed use is same as surrounding area and thus will not injure or adversely affect surrounding property values.

- (3) The proposed use will be consistent with the character of the district, land uses authorized therein, and the Town of Holly Springs Comprehensive Plan:

Proposed single family residential use is consistent with surrounding area current uses.

While comprehensive plan suggests park and open space use, to date there has been no indication of that use in the near future. VARIOUS DESIGN FEATURES ARE PROPOSED ON THE

- (4) The proposed use shall conform to all development standards of the applicable district (unless a waiver of such development standards is requested as part of the special exception use petition and approved by the Town Council in which case the proposed use shall conform to the terms and conditions of such waiver):

Proposed use of single family residential will require a waiver. Residential use will adhere to all UDO requirements

except for a minor encroachment into the side setback along Collins Street.

- (5) Access drives or driveways are or will be sufficient in size and properly located to: ensure automotive and pedestrian safety and convenience, traffic flow as set forth in Section 7.09 – Pedestrian Circulation and Vehicular Area Design; and, control and access in case of fire or other emergency:

Single family residential driveway only. Proposed driveway to have required width of 16' and the parking area will have a depth of 25' from the new right of way line. All the meet TOTS standards and specifications.

- (6) Off-street parking areas, off-street loading areas, trash enclosures, trash pick-up and removal, and other service areas are located so as to be safe, convenient, allow for access in case of emergency, and to minimize economic, glare, odor, and other impacts on adjoining properties and properties in the general neighborhood:

This is not applicable. Use to be single family residential and all residential requirements will be adhered to.

- (7) The lot, building or structure proposed for the use has adequate restroom facilities, cooking facilities, safety equipment (smoke alarms, floatation devices, etc.), or any other service or equipment necessary to provide for the needs of those persons whom may work at, visit or own property nearby to the proposed use:

This is not applicable. Use will be single family residential and all residential requirements will be adhered to.

- (8) Utilities, schools, fire, police and other necessary public and private facilities and services will be adequate to handle the proposed use:

Proposed use/site is within all Town current service areas.

(9) The location and arrangement of the use on the site, screening, buffering, landscaping, and pedestrian ways harmonize with adjoining properties and the general area and minimize adverse impacts:
Use of site to be residential and be akin to current existing surrounding residential properties.
There will be no adverse impacts to surrounding properties.

(10) The type, size, and intensity of the proposed use, including such considerations as the hours of operation and numbers of people who are likely to utilize or be attracted to the use, will not have significant adverse impacts on adjoining properties or the neighborhood:
This is not applicable as the use will be single family residential.

Part 2: Variance (21-VARTC-02) Findings of Fact Submitted By Petitioner

- (1) **Unnecessary hardship would result from the strict application of the ordinance. It shall not be necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property.**

(1) DUE TO THE TOWN REQUIRING 5.5' ADDITIONAL ROADWAY RIGHT OF WAY, ALONG COLLINS STREET AND ALONG WITH THE REQUIRED BUILDING SETBACKS, THE RESULTING BUILDABLE WIDTH OF THE LOT WOULD BE ~15'. OVERALL, WITH THE APPLICATION OF THE ADDITIONAL 5.5' RIGHT OF WAY AND THE APPLICATION OF THE BUILDING SETBACKS, THE TOTAL BUILDABLE AREA OF THE LOT WOULD BE ~1,406 SF. THIS PRESENTS ONLY ~20% OF THE TOTAL 7,047 SF AREA OF THE LOT. A 15' WIDE BUILDING WIDTH IS NOT FEASIBLE FOR THE CONSTRUCTION OF A SINGLE-FAMILY RESIDENCE.

-
- (2) **The hardship results from conditions that are peculiar to the property, such as location, size, or topography. Hardships resulting from personal circumstances, as well as hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis for granting a variance.**

(2) DUE TO THE SIZE OF THE PROPERTY AND ITS LOCATION AT THE INTERSECTION OF COLLINS AND EARP STREETS, REQUIRING ADDITIONAL RIGHT OF WAY IMPEDES UPON BUILDABLE AREA. WITH THE EXISTING LOT WIDTH DIMENSION VARYING FROM ~48' TO ~50', THE DEDICATION OF ANOTHER 5.5' IN RIGHT OF WAY GREATLY REDUCES, AFTER APPLICATION OF A CORNER SIDE STREET SETBACK, THE AVAILABLE BUILDABLE WIDTH OF THE LOT.

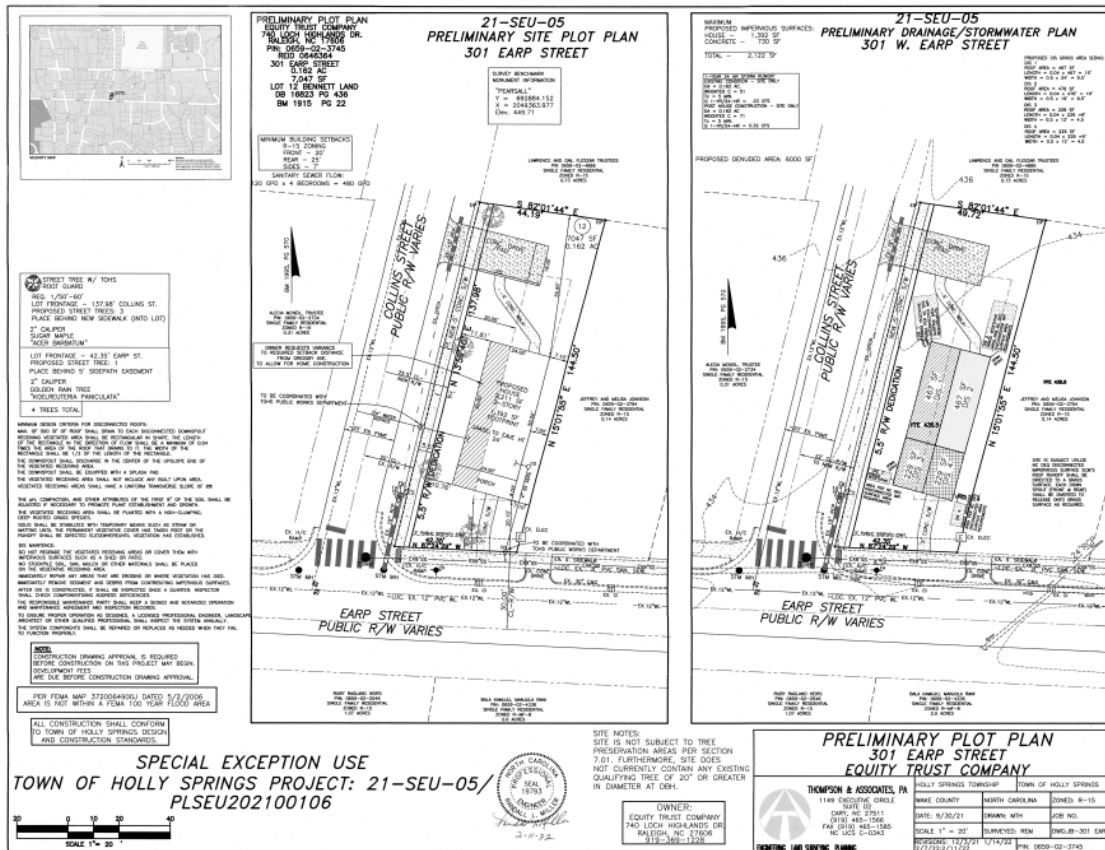
- (3) **The hardship did not result from actions taken by the applicant or the property owner. The act of purchasing property with knowledge that circumstances exist that may justify the granting of a variance shall not be regarded as a self-created hardship.**

(3) THE HARDSHIP IS NOT THE RESULT OF ACTIONS BY THE PROPERTY OWNER/APPLICANT. THE LOT LOCATED AT 301 EARP STREET IS AN EXISTING PLATTED LOT AS PER WAKE COUNTY BOOK OF MAPS 1915 PAGE 22. THE LOT IS ZONED TO ALLOW FOR THE CONSTRUCTION OF A SINGLE FAMILY RESIDENTIAL UNIT. HOWEVER, WITH THE CURRENT REQUEST FOR ADDITIONAL DEDICATION OF ROADWAY RIGHT OF WAY, THE LOT WOULD HAVE A REDUCED AVAILABLE BUILDING FOOTPRINT. WITH THE ADDITIONAL DEDICATED RIGHT OF WAY, THE SUBJECT LOT WOULD HAVE AN UNBUILDABLE FOOTPRINT.

-
- (4) **The requested variance is consistent with the spirit, purpose, and intent of the ordinance, such that public safety is secured, and substantial justice is achieved.**

(4) THE REQUESTED VARIANCE TO ALLOW FOR ENCROACHMENT INTO THE BUILDING SETBACK ALONG COLLINS STREET, AFTER THE DEDICATION OF 5.5' ADDITIONAL RIGHT OF WAY, IS CONSISTENT WITH THE SPIRIT, PURPOSE, AND INTENT OF THE ORDINANCE. AS REFERENCED ABOVE, THE PROPERTY IS LOCATED WITHIN THE VDAP AREA. PER THE VDAP PLAN, SINGLE FAMILY RESIDENTIAL IS ENCOURAGED. WITH THIS, THE VDAP STATES THAT CONSIDERATION SHOULD BE GIVEN TO ALLOW FOR REDUCED SETBACKS FOR RESIDENTIAL UNITS. WITH THE GRANTING OF A VARIANCE TO ALLOW FOR AN ENCROACHMENT TO THE CORNER SIDE OF COLLINS STREET WILL BE CONSISTENT WITH THE INTENT AND SPIRIT OF THE VDAP. IN ADDITION, IT WILL NOT BE OF HARM TO THE GENERAL PUBLIC AND WILL PROVIDE SUBSTANTIAL JUSTICE TO THE PROPERTY OWNER BY ALLOWING THE PLACEMENT OF A SINGLE FAMILY RESIDENCE ON A PLATTED LOT THAT IS ZONED FOR A SINGLE-FAMILY RESIDENCE,

RESOLUTION EXHIBIT B SITE PLANS & ELEVATIONS



RESOLUTION EXHIBIT C

TOWN COUNCIL'S FINDINGS OF FACT

The Town Council accepts the findings of fact as presented in Exhibit A unless specified below:

The Town Council made the following additional findings:

Part 1: Special Exception Use (21-SEU-05)

No additional findings

Part 2: Variance (21-VARTC-02)

No additional findings

RESOLUTION EXHIBIT D
CONDITIONS OF APPROVAL

The Town Council added the following conditions in order to adequately make and accept the Findings of Fact:

Part 1: Special Exception Use (21-SEU-05)

1. All operations must adhere to the evidence submitted by the applicant as stated in the findings of fact submitted and those findings of fact specified by the Town Council in conjunction with 21-SEU-05.

Part 2: Variance (21-VARTC-02)

1. This Variance shall only apply to 21-SEU-05 301 Earp Street.



Holly Springs Town Council

Town Council Meeting Agenda Cover Sheet

Agenda Item#: 12.

New Business

Title: Green Oaks Tech Center Detailed Master Plan 21-MAS-05

Strategic Priority Area: Responsible & Balanced Growth
Economic Prosperity & Diversity

Staff Resource: Cheryl Caines, Development Services

Action(s):

Approve/deny/table the Master Plan 21-MAS-05 for Green Oaks Tech Center Detailed Master Plan with the conditions stated in the attachment. (Administrative determination with simple majority)

Explanation:

- A new Unified Development Ordinance (2022 UDO) was effective March 1, 2022. Over the next 12-24 months, there will be a crossover period where some projects are able to utilize the old UDO (2002 version) due to state statutes. This section of the cover sheet will be utilized to specify the UDO version (2002 or 2022) and the approval type that the Council is considering for each respective case.
 - Applicable Ordinance: 2002 Unified Development Ordinance
 - Process: Administrative, Detailed Master Plan
- The proposed Detailed Master Plan is the first step in dividing the Green Oaks Tech Center Planned Unit Development (PUD) into development sites.
- A Detailed Master Plan establishes the primary transportation network, utility layout, command landscaping, tree preservation areas, and trails for the entire project area. If the Detailed Master Plan is approved, the next step in the development process will be detailed development plans for individual sites in accordance with the standards outlined in the adopted PUD.

Planning Board Recommendation

The Planning Board discussed the following issues and concerns on February 22, 2022:

- Traffic concerns in the area
- Transportation improvements associated with the development and timing of these improvements including the realignment and extension of Old Holly Springs Apex Road at Holly Springs New Hill Road

The Planning Board recommended approval of the Detailed Master Plan (5-3). The dissenting votes were due to traffic concerns.

The Planning Board passed another motion that Town Council prioritize the intersection of Holly

Town Council Business Meeting
March 15, 2022

Springs New Hill Rd. and also the extension of Old Holly Springs Apex Rd south to Thomas Mill Road to help with traffic congestion and projects in this area.

Transportation Follow-up:

It should be noted that the developer has accelerated the design and construction for the intersection realignment at Holly Springs New Hill Rd./Old Holly Springs Apex Rd. and has begun surveying. It is anticipated that construction will begin in late 2022/early 2023.

Background:

- The site was annexed into the town limits on July 11, 1989.
- A portion of the site was rezoned from Wake County R-80 to BT CU Business & Technology Conditions Use on April 16, 2013.
- The entire site was rezoned to PUD Planned Unit Development (Green Oaks Tech Center PUD) on October 19, 2021.

Funding Source(s):

N/A

Attachment(s):

1. 21MAS01_GreenOaksTechCtr_PB Staff Report
2. 21MAS05_GreenOaksTechCtr_Petition_Plans_TC
3. GOTC Proposed Motions and Conditions



Town of Holly Springs Staff Report to the Planning Board

REQUEST FOR MASTER PLAN Green Oaks Tech Center 21-MAS-05

APPLICANT(S):

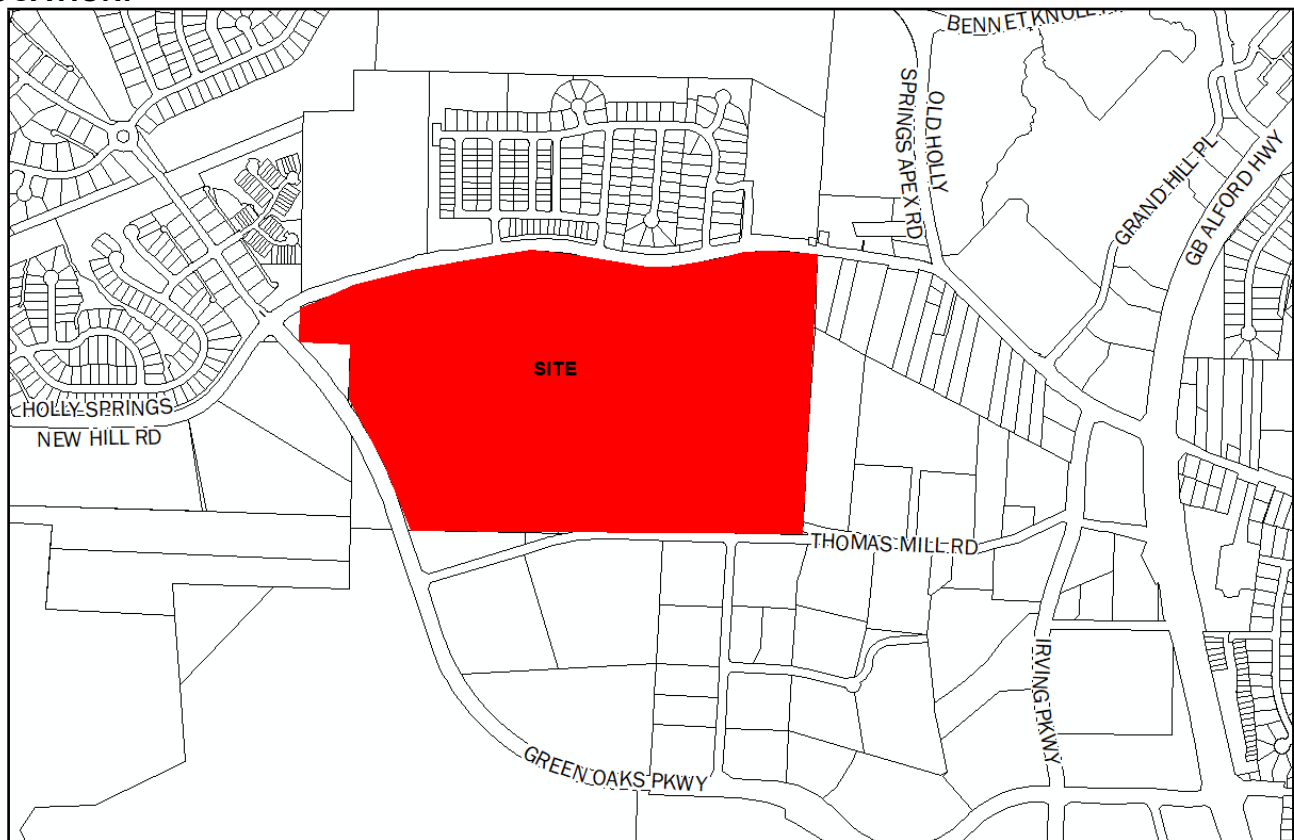
Crescent Communities
Elizabeth McMillan
227 W Trade St.
Charlotte, NC 28202

DEVELOPER(S):

Crescent Communities
Elizabeth McMillan
227 W Trade St.
Charlotte, NC 28202

OWNER(S):

CC TGA The Yield LLC
227 W Trade St., Suite 1000
Charlotte, NC 28202

LOCATION:

☐ Within Corporate Limits of Holly Springs

☒ Within Holly Springs ETJ

☒ Annexation Pending

ANTICIPATED REVIEW SCHEDULE:

Planning Board: February 22, 2022

Town Council: March 15, 2022

STAFF CONTACTS: Cheryl Caines, Senior Planner
Rachel Jones, Development Review Engineer

ATTACHMENTS: Development Petition, Preliminary Plans

PARCEL INFORMATION			
OWNER	PARCEL #	ZONING	AREA
CC TGA The Yield LLC	0649255277	Planned Unit Development PUD	4.23± acres
	0649253306	Planned Unit Development PUD	1.39± acres
	0649252098	Planned Unit Development PUD	1.00± acres
	0649158281	Planned Unit Development PUD	9.09± acres
	0649151168	Planned Unit Development PUD	9.62± acres
	0649054147	Planned Unit Development PUD	10.36± acres
	0639957154	Planned Unit Development PUD	1.30± acres
	0639955037	Planned Unit Development PUD	2.00± acres
	0649049486	Planned Unit Development PUD	52.33± acres
	0649240007	Planned Unit Development PUD	27.92± acres
	0639959107	Planned Unit Development PUD	1.52± acres
Town of Holly Springs	0639949124	Planned Unit Development PUD	.77± acres
TOTAL			121.53± acres

ADJACENT PROPERTY SITE DATA		
	ZONING	EXISTING LAND USE
Subject Property	Planned Unit Development PUD	Vacant Residential
North	R-10 Residential R-8-CU Residential Conditional Use R-MF-15 High Density Multifamily Residential	Residential Public School Private School
South	Planned Unit Development PUD RT Research & Technology	Research & Development Flex Space
East	R-10 Residential R-30 Residential	Vacant Residential
West	Local Business RT Research & Technology	Vacant

PROPERTY HISTORY	
Annexation History Project Number A89-09 Description: 204.36 acres Approved by Town Council on 07/11/89 Project Number: A13-05 Description: Shaffer Property 10.69 acres Approved by Town Council on 04/16/13	Rezoning History PIN: 0649054147, 0649151168 Original Zoning: Wake County R-80 Proposed Zoning: BT CU Approved by Town Council on: 04/16/13
	Rezoning Number: 21-PUD-01 PIN: 0649255277, 0649253306, 0649252098, 0649158281, 0649151168, 0649054147, 0639957154, 0639955037, 0649049486 0649240007, 0639959107, 0639949124, & 0639949124 Original Zoning: R-30, R-10, BT-CU, & RT Proposed Zoning: PUD Approved by Town Council on: 10/19/21

PROJECT OVERVIEW

The Town has received a request for a Detailed Master Plan for a mixed-use project for properties generally located at the intersection of Holly Springs New Hill Road, Green Oaks Parkway, and Thomas Mill Road. The project area includes approximately 120 acres. The applicant has submitted a detailed master plan which establishes the transportation network, utility layout, lot lines, common landscaping, and tree preservation for future development of the property. The previously approved Planned Unit Development established the permitted uses and specific site and architectural design standards for the site.

As shown on the proposed Detailed Master Plan, the mix of uses will be found within three districts on the site. The Commercial District is located on the northern portion of the site nearest to Holly Springs New Hill Road and will be developed with research and technology, office and retail uses. The central area of the site will be the Innovation District with research and technology and office uses. The Southern Edge District will be located on the southern portion of the site south of the creek and adjacent to Thomas Mill Road. Uses will include office and industrial.

If the master plan is approved, the next step in the development process would be a detailed development plan for each outlot. The detailed development plan will determine the specific use of the property (based on the permitted or special exception uses permitted in PUD) and specific design standards such as pedestrian circulation, building location, parking lot layout, loading locations, internal landscaping, site lighting, and building elevations.

PLANNING & ZONING

Vision Holly Springs Comprehensive Plan

Future Land Use & Character Plan Designation: Innovation Village

An Innovation Village abandons the idea of a conventional business or industrial park and imagines a mixed-use village that concentrates employment uses in a discernible center surrounded by one or more neighborhoods that support a variety of home densities and choices — including live-work units in the employment center. The design, scale, character, and intensity of development in the Innovation Village emphasizes technology, creativity, and innovation, and may support a corporate headquarters, research and development campus, manufacturing center, or other center of excellence and the nearby retail businesses and housing options needed for its employees.

A grid network of walkable streets connects destinations within the employment center and the surrounding neighborhoods. Connected open space throughout the village accommodates recreation facilities, small parks, greenways, and gathering places; preserves tree stands; and helps reduce stormwater runoff.

The Innovation Village is the next generation of business park for business owners, entrepreneurs, artists and manufacturers. The design, scale, character, and intensity of development in the Innovation Village emphasizes technology, creativity, and innovation.

This area provides unique economic development opportunities for Holly Springs, and is envisioned as a progressive employment hub that may support a corporate headquarters, research and development, manufacturing and the biotech/pharmaceutical industries. While the Innovation Village is first an employment center, residential and supporting retail and service uses are integrated throughout, using traditional village design and planning principles.

Streets should be walkable and interconnected, and should include on-street parking, street trees, sidewalks and bike facilities for pedestrians and bicyclists. A network of connected open spaces can include parks and greenways, which provide places for recreation and gathering. Buildings should be located close to the street, with parking lots in the rear buildings rather than in the front.

An agrarian buffer along the adjacent arterial and collector roads could be preserved, or created, as for aesthetic purposes, but more importantly, to provide an opportunity for hyper-local food production for residents and employees of the Innovation Village.

Planning Concepts for Innovation Village

1. IV-1: Reserve key sites for future employment

The potential for additional employment in Town is increasing with regional growth. This area opens up the possibility of effectively recruiting major employers to Holly Springs.

2. IV-2: Encourage Variety

Here, a variety of large, medium, and small businesses can operate side by side, with some benefitting from proximity to large-scale employers, especially manufacturers, and access to US-1. Industrial uses of many types should be encouraged here, and “industrial” should be broadly defined to include maker spaces for a wide variety of artisans. Breweries and distilleries may also be accommodated in this location.

3. IV-3 Support Live-Work

Consistent with their unconventional work style, some artists and craftspeople choose unconventional living arrangements. Live-work units in which living space sits above first-floor studios, maker spaces, and offices provides an ideal setup. Allow live-work units in appropriate locations, and address parking standards to mitigate potential issues arising from having different occupants in the “live” and “work” portions of the units.

4. IV-4: Facilitate the creation of a “village.”

By introducing some supporting commercial uses, office buildings, and a limited amount of housing, this area can have a distinct identity as the village it is envisioned to become. The common areas—outdoor green spaces, courtyards, and co-working spaces—can foster an environment of collaboration, a key attribute in creating a breeding ground for innovation.

Development Standards

Lot Arrangement:

Minimum Number of Lots: 6

Maximum Number of Lots: 30

Minimum Lot Size: None

Maximum Lot Size: None

Minimum Lot Width (per PUD)

Southern Edge District: 50 feet

Commercial District: 50 feet

Innovation District: 100 feet

Minimum Perimeter Yards and Setbacks (per PUD)

Along Holly Springs New Hill Rd.: 30 feet street buffer

Along Green Oaks Parkway: 30 feet street buffer

Thomas Mill Rd.: 30 feet street buffer

Eastern property line: 15 feet

Interior Yards:

Out Lots: 10 feet

Building Height (per PUD):

Maximum Building Height

Southern Edge District: 50 feet

Commercial District: 100 feet

Innovation District: 100 feet

Further height restrictions may apply per PUD requirements

Minimum Building Height: 20 feet

Parking & Loading:

Parking & Loading requirements will be reviewed at time of site-specific development plan.

Outdoor Operations:

Outdoor operations will be reviewed at time of site-specific development plan.

Landscape Requirements:

Perimeter Yard/Bufferyard

Existing vegetation will be used to meet the minimum requirements for all yards. When existing vegetation is insufficient, perimeter yards and bufferyards will be supplemented to meet the minimum Plant Unit Value (PUV) or PUD requirements using the proposed planting details provided in the Master Plan. Detailed tree survey information must be provided at time of site-specific development plan to confirm that PUV or PUD requirements have been achieved.

Along Holly Springs New Hill Road: 30 feet per PUD

Along Green Oaks Parkway: 30 feet, per PUD

Along Thomas Mill Road: 20 feet, per PUD

Eastern property line: 15 feet per PUD, Type C-225

Out Lots: Type A-20

Street Trees

Street trees will be provided along internal roadways.

Tree Preservation (per PUD)

Required: 10% of project area

Provided: 10% of project area

Foundation, Interior Parking Lot, and Parking Area Screening will be reviewed at time of site-specific development plan

Developed Recreational Open Space Requirements (per PUD)

Required: 10% of project area of both passive and active open space

Provided: Common pathways are shown on the site plan. Additional open space will be reviewed at time of site-specific development plan review to ensure the 10% minimum and mix of open space types is met.

General Regulations

Fences:

A decorative black fence detail has been provided for all common area fencing. Fencing location will be reviewed at time of site-specific development plan.

Architectural and Site Design Requirements

Architectural details are called out in the PUD for each of the districts (Innovation, Commercial & Southern Edge). Architectural design standards will be reviewed at time of site-specific development plan.

Master Sign Plan:

Guidelines have been provided to require a unifying look for entry signs. A Master Sign Plan will be submitted in the future to establish the design of signs.

Lighting:

Lighting will be reviewed for compliance with the Unified Development Ordinance for each outlot. The Town has maximum light levels at property lines, which are stricter along residential property lines to prevent light pollution spilling onto residential properties.

Site lighting will be shoe box style LED lighting with black poles and fixtures. A detail has been provided.

Pedestrian Circulation and Vehicular Area Design (UDO Section 7.09)

Walkways or Pedestrian/Bikeway System Design:

Sidewalks will be provided on both sides of all streets. A connection to the public sidewalk system will be required for each building.

PARKS & RECREATION

Greenways (UDO Section 7.06, C.):

A 10' wide sidepath will be provided along Holly Springs New Hill Rd in accordance with the approved Greenway Masterplan. A 10' off-street Greenway will also be provided on site generally tracking east to west connecting from the existing 8' Sidepath on Green Oaks Parkway through the site, providing a connection to "Pod 6" fronting on Thomas Mill Rd by crossing a creek, and ultimately tying in to the proposed 10' Sidepath on Holly Springs New Hill Rd at a location consistent with a signalized crossing point to the north side of Holly Springs New Hill Rd. The exact location of the greenway may shift during Development Plan Review as the individual Pods are reviewed, but these connection points will be required.

CIVIL IMPROVEMENTS

Utility Availability and Impacts due to change of Permitted Uses:

Water Service:

With the development of this Master Plan, potable water will be provided through connection with the existing 12-inch water main in Holly Springs New Hill Rd., Green Oaks Parkway and Thomas Mill Rd. Potable water mains will be extended through the internal streets proposed with the plan to serve the PODs as they develop. A Hydraulic Water Model and Fire Flow Analysis (FFA) Report has been completed. Additional analysis will be required with each subsequent development petition.

Reclaimed Water Service:

This project is in the Town's Reclaimed Water Distribution Service Area. With the development of this project, reclaimed water will be provided through connection with the existing 12-inch reclaimed water main in Holly Springs New Hill Rd. and Green Oaks Parkway. Reclaimed water mains will be extended through the proposed internal street network to serve the PODs as they develop. A Hydraulic Reclaimed Water Model Report is required to be completed with this plan. Additional analysis may be required with each subsequent development petition.

Sewer Service:

With the development of this project, sanitary sewer will be provided through a main extension under Green Oaks Parkway to complete the connection to the future gravity sewer outfall being constructed as part of the Oakview Innovation Master Plan. This outfall will discharge to the Business Park Pump Station which is also receiving upgrades and improvements by others. The proposed gravity sewer network will be extended throughout the Master Plan site to serve all PODs as they develop. A downstream sanitary sewer evaluation has been completed with this project. Each subsequent development petition will be required to confirm they are within the originally approved parameters. If a development within the Master Plan exceeds what was previously approved, additional analysis and potential improvements may be required. With this project, any upstream, adjacent properties will be provided a sanitary sewer stub for connection in the future when it develops in accordance with Town standards.

Transportation:

With the development of this project, Holly Springs New Hill Rd. will be widened to ½ of the ultimate street cross section, across the development property frontage in accordance with the Town's Unified Development Ordinance (UDO). According to the Town's Comprehensive Transportation Plan (CTP) and Parks, Recreation and Greenways Master Plan, Holly Springs New Hill Rd. will be a 4-lane, median divided thoroughfare and will include a 10-ft sidepath.

A Traffic Impact Analysis (TIA) was completed with this project after review by the Town and the NCDOT. The TIA shows the various Phases expected with the Development of the Master Plan and highlights the associated improvements triggered with each phase. As the phases of development occur, subsequent TIA confirmation letters or additional traffic analysis will be required to verify project impact is mitigated appropriately and in accordance with the Town and NCDOT comments per the approved TIA.

In addition to the required thoroughfare widening, below is an overview of recommended improvements from the TIA:

- Design and construction of the realignment of Old Holly Springs Apex/Holly Springs New Hill Rd.
- Fee-in-lieu for future widening of NC-55 (GB Alford Hwy).
- Design and Installation of new traffic signalization at the intersection of Site Access #2 and Hensley Place at Holly Springs New Hill Rd. various proposed access points along the property frontage of Holly Springs New Hill Rd. and Green Oaks Parkway.
- Fee-in-lieu toward future improvements at Bennett Knoll Pkwy/Old Holly Springs Apex Rd.
- Other intersections and access drives will continue to be monitored for signalization as the master plan develops.
- Turn lanes will be constructed at the various site access drives.

Internal vehicular and pedestrian connectivity within the Master Plan as well as interconnectivity with adjacent parcels will be provided with this project. The detail of that design will be reviewed to determine compliance with Town standards and ordinances with each Development Plan.

Environmental/Stormwater:

Storm Water: This project will be required to meet the Town of Holly Springs NPDES Ph. II Post Construction Stormwater Ordinance.

Environmental Buffers: This project is located in the Cape Fear River Basin and will be subject to all applicable requirements of that basin.

Infrastructure Reimbursement Agreement:

This project will adhere to the parameters in the executed Infrastructure Reimbursement Agreement associated with the Green Oaks Tech Center PUD.

REQUESTED ACTION

Motion that the Planning Board recommend the Town Council approve / deny Detailed Master Plan 21-MAS-05 for Green Oaks Tech Center as submitted by the Land Design, Project Number 1020339, with the following conditions:

1. All previous conditions of approval for Green Oaks Tech Center PUD apply to this plan except for any condition that describes a fee or a fee-in-lieu to be paid shall now comply with the current amounts due pursuant to the Town's current annual budget or any unexpired development agreement.
2. This project will be required to meet Town's NPDES Phase II Post Construction Stormwater ordinance.
3. There is an existing downstream flood study in this area. It must be demonstrated that this project does not result in a rise to the downstream 100 yr. water surface elevation.
4. This Master Plan must adhere to articles in the Executed Infrastructure Reimbursement Agreement associated with the Green Oaks Tech Center PUD.
5. *ALL recommendations from the TIA, and as a result of Town and NCDOT review associated with this project, must be incorporated into the plans and final design completed as part of the construction drawing review process with the associated phases.*
6. The Build-out analysis in the Traffic Impact Analysis (TIA) associated with this development, included a mix of background improvements and recommended development mitigations. If the assumed background projects do not occur, it should be the developer's sole responsibility to construct all of the background improvements included in the TIA unless additional analysis can be provided to demonstrate the background mitigations are not warranted by the subject development.
7. If build out exceeds the anticipated time frame in the approved TIA, an update of the TIA will be required prior to or with the Development Plan for the associated phase. Recommended improvements will be required to be completed prior to plat approval of that phase.
8. Prior to or with the 1st Construction Drawing Submittal, the following items must be addressed
 - a. Thoroughfares, collectors and boulevards will require a calculated pavement design with 1st construction drawing submittal. This may result in a pavement cross section bigger than the specified minimum.
 - b. Provide documentation in the form of a recorded plat of any required offsite sewer easements prior to first construction drawing submittal.
 - c. If changes have been made to the gravity sewer network between Town Council Approval of this Master Plan and first Construction Drawing Submittal, a Final Gravity Sewer Line Sizing Report will be required with first construction drawing submittal for all lines that are stubbed to adjacent upstream properties. Include calculations to document line sizes, adequacy of proposed sanitary sewer lines to serve all future upstream development.
 - d. All items listed on the Stormwater Submittal Checklist, Form #16003, must be included with the first construction drawing submittal.
9. Prior to Construction Drawing Approval, the following items must be addressed:
 - a. Street Tree locations shall be shown with approved lighting fixture locations shall be positioned as to not interfere with any lighting fixtures or any site distance triangles.
 - b. All new and existing overhead power lines and services must be installed underground with this development. If the relocation of existing overhead power lines underground is deemed not feasible by the Town and/or the Utility company, a waiver of UDO Section 7.08 must be

submitted with this project and a fee-in-lieu will be required prior to Construction Drawing approval.

- c. Invoiced fees from Special Study third party review must be paid prior to first Construction Drawing Submittal, and no later than prior to Construction Drawing Approval.
 - d. Offsite Sewer Infrastructure: Since this project is dependent on completion of off site sewer facilities to serve the project, they must be completed by others and accepted by the Town *prior to the 1st construction drawing approval* related to the Master Plan, unless otherwise approved by the Executive Director of Utilities and Infrastructure. The Town is not responsible for completion of off-site sewer facilities, and will not guarantee completion of such facilities by any other party.
 - e. The Hydraulic Reclaimed Water Model Report must be finalized prior to Construction Drawing Approval.
 - f. Per the Executed Developer Agreement, the following is required:
 - a. Design and construct improvements, or pay fee-in-lieu proportionate to project impact for construction of improvements, at the intersection of Old Holly Springs Apex Rd. and Bennett Knoll Parkway in the amount of \$21,000 . A fee-in-lieu payment is required to be paid with Phase 3. Construction Drawing Approval. Refer to the Executed Infrastructure Reimbursement Agreement for payment details.
 - b. Fee-in-lieu proportionate to project impact for construction of improvements along NC-55 in the amount of \$486,800. Refer to Executed Infrastructure Reimbursement Agreement for details of timing and amounts for this fee-in-lieu.
 - c. Old Holly Springs Apex Road/New Hill Road intersection:
 - i. Provide final cost estimate of the Total Realignment Costs with 1st Development Site Plan Application.
 - ii. The Developer is responsible for payment of Fee-in-lieu equivalent to 15% of the Realignment Costs with Construction Drawing Approval of the 1st phase of this development. Refer to Executed Infrastructure Reimbursement Agreement for details of timing and amounts.
 - g. Off-site right-of-way dedication will be required in the form of a recorded plat prior to receiving construction drawing approval
 - h. Approval of Stormwater Management Plan is required prior to issuance of a land disturbance permit or construction drawing approval.
 - i. Payment of the Stormwater Fee-in-Lieu will be required prior to construction drawing approval.
 - j. Stormwater sureties are required on this project. A performance surety in the form of a bond, letter of credit or cash is required in the amount of 125% estimated construction cost of the stormwater BMP prior to the preconstruction meeting and a maintenance surety in the form of a cash escrow account in the amount of 35% the actual construction cost of the SCM is required at the end of the performance monitoring period for the project.
 - k. All environmental permits must be obtained prior to construction drawing approval and/or issuance of a land disturbance permit for the entire project.
10. Prior to the submittal of any UDO Permit for Sign Installation for permanent signage, a Master Sign Plan must be submitted for review and approval if desired.
 11. A new traffic signal is warranted at the intersection of Proposed Road C and Hensley Place. This development is responsible for traffic signal design and installation; including mast arm pole construction and fiber connection/extension, in accordance with Town and NCDOT standards.
 12. This development is responsible to determine optimal location, design and installation of Rectangular Rapid Flashing Beacon (RRFB) pedestrian signalization, or other approved alternative, in coordination with the Town and NCDOT
 13. A Deed of Easement is required to be executed for public vehicular & public pedestrian access between the property owners at the time of plat.
 14. With each subsequent Development Petition (i.e. Development Plan, Subdivision Plan), the following is required:

- a. A TIA verification letter is required to be submitted to confirm the specific development is within the parameters of the TIA approved with this PUD. If the development exceeds what was previously approved, a TIA revision will be required.
 - b. A Downstream Sewer verification letter is required to be submitted to confirm the specific development is within the parameters of the study approved with this PUD. If the development exceeds what was previously approved, a Downstream sewer Evaluation revision will be required.
 - c. A Hydraulic Water Model and Fire Flow Analysis Report (FFA) is required with each development.
 - d. A Hydraulic Reclaimed Water Model Report is required for the reclaimed water main extensions and must be approved prior to Construction Drawing Submittal.
 - e. Provide completed Industrial Waste survey short form. Note that information on this form may result in additional permitting or information being required.
 - f. Provide the Grease Trap Form as required for all businesses that will be handling fats, oils, or grease (i.e. restaurants).
 - g. For any vehicular street stub that will cross a stream, provide environmental impact information including preliminary vertical alignment for a distance of 100' beyond the property line to demonstrate constructability.
 - h. Developer is responsible to continue to monitor the following intersections for additional mitigation measures with each Development Petition.
 - i. Driveway #1 on Holly Springs New Hill Rd, opposite Oakview Elementary School
 - ii. Driveway #3 on Holly Springs New Hill Rd, opposite Thales Academy – if a future traffic signal is not feasible or warranted at this location, other mitigation measures should be evaluated.
 - iii. Driveway #5 on Green Oaks Parkway, opposite Crescent Commons (Oakview Innovation) – additional improvements being added after final TIA review:
 1. two (2) egress lanes are required at the site drive
 2. A northbound, right turn lane
 3. A southbound left
 - iv. Green Oaks Parkway / Seqirus Driveway / Thomas Mill Road
 - v. Green Oaks Parkway / Premier Drive
15. Prior to Town Council, the following must be finalized:
- a. Finalize remaining minor plan revisions.
 - b. the following updates shall be made to the Site Data table on the plan cover sheet:
 - i. correct PINs (parcel identification numbers)
 - ii. correct "MAXIMUM" to "MINIMUM" NUMBER OF LOTS FOR THE OVERALL SITE: 6

DEVELOPMENT PETITION

The current Filing Fees can be found on-line in the Town of Holly Springs Fee Schedule:
<http://www.hollyspringsnc.us/planning>



Petition Type:

■ Master Plan

- ☐ New Detailed ☒ New Schematic
☐ Major Amendment ☐ Minor Amendment*

☐ Preliminary Plan- Major Subdivision

- ☐ New ☐ Major Amendment ☐ Minor Amendment*

☐ Development Plan (check all that apply)

- ☐ New ☐ Major Amendment ☐ Minor Amendment*
☐ Gateway Non-Residential/Mixed Use Gross Building Floor Area _____
☐ Non-Gateway Non-Residential/Mixed Use Gross Building Floor Area _____
☐ Multifamily
☐ Residential Development Options or Infill Development Options

☐ Special Exception Use

- ☐ New ☐ Family Child Care Home

* Specify purpose of amendment on Certificate of Plan Revisions

For DPZ Use only

Project # _____

Fees Paid: \$ _____

Date Received: _____

☐ Initial ☐ Revised ☐ Final

Project Information:

Project Name: Green Oaks Tech Center

If this project is part of a previously approved plan, please specify:

PUD/Master Plan/Subdivision Master Plan Shopping Center/Lot# _____Project Location: Southeast corner of Holly Springs New Hill and Green Oaks Parkway

Use street address. If none, use the closest intersection

☐ Within Corporate Limits ☐ Within Holly Springs ETJ ☐ Pending Annexation

PIN: _____ Real Estate ID: _____

Project Acreage (rounded to nearest tenth): _____ Partial Parcel: ☐ No ☐ Yes (additional fee)Current Zoning: Pending PUD Proposed Use (see UDO Primary Use List): _____Open Space [See UDO Section 7.06(F)(4)]: ☒ Dedication ☐ Fee-in-lieu ☐ Combination ☐ N/AWaivers Requested: ☒ No ☐ Yes- Specify UDO Section Number(s): _____

If yes, complete and attach appropriate Waiver Petition(s) from Waiver Packet

Scoping Meeting Date: _____ Concept Meeting Date: _____

If the Concept Meeting Date is not within 8 weeks of the submittal date, another Concept Meeting is required prior to submittal.

Petition Contact Information: (complete each contact in its entirety- please print or type)

Project Applicant/Contact

(check one) ☐ Owner ☐ Owner's Agent ☐ Design Professional ☒ Developer ☐ Other _____

Name Elizabeth McMillan Company Crescent Communities, LLCMailing Address 227 West Trade Street, Suite 100City Charlotte State NC Zip 28202Telephone # (980) 321-6161 E-Mail emcmillan@crescentcommunities.comHow would you like to receive staff review comments? ☒ E-Mail ☐ US MailHow would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Design Professional if different than Applicant/Contact

Name Lori Milam Company LandDesignMailing Address 223 North Graham StreetCity Charlotte State NC Zip 28202Telephone # (704) 333-0325 E-Mail lmilam@landdesign.comHow would you like to receive staff review comments? ☒ E-Mail ☐ US MailHow would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Developer

Name See above - Project Contact Company _____
Mailing Address _____
City _____ State _____ Zip _____
Telephone # (_____) _____ E-Mail _____
How would you like to receive staff review comments? ☐ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Architect

Name Steven Harris Company O'Brien Atkins
Mailing Address 5001 South Miami Blvd
City Durham State NC Zip 27703
Telephone # (919) 941-9000 E-Mail sharris@obrienatkins.com
How would you like to receive staff review comments? ☒ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☒ E-Mail ☐ US Mail- Certified

Landscape Architect

Name See above - Design Professional Company _____
Mailing Address _____
City _____ State _____ Zip _____
Telephone # (_____) _____ E-Mail _____
How would you like to receive staff review comments? ☐ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Other: _____ (any other contact that should receive comments and correspondence for this project)

Name _____ Company _____
Mailing Address _____
City _____ State _____ Zip _____
Telephone # (_____) _____ Alternate Telephone # (_____)
Fax # (_____) _____ E-Mail _____
How would you like to receive staff review comments? ☐ Fax ☐ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☐ Fax ☐ E-Mail ☐ US Mail- Certified

Property Owner - Required

Name _____ Company _____
Mailing Address _____
City _____ State _____ Zip _____
Telephone # (_____) _____ E-Mail _____
How would you like to receive staff review comments? ☐ E-Mail ☐ US Mail
How would you like to receive Official Action Notices? ☐ E-Mail ☐ US Mail- Certified

Certificate of Submittal Completion

I, _____, certify that the information provided on this petition, plans and checklist are complete and accurate to the best of my knowledge.

Signature: _____ Date: _____

MASTER PLAN FIFTH SUBMITTAL

GREEN OAKS TECH CENTER

DETAILED MASTER PLAN

TOWN OF HOLLY SPRINGS, NC

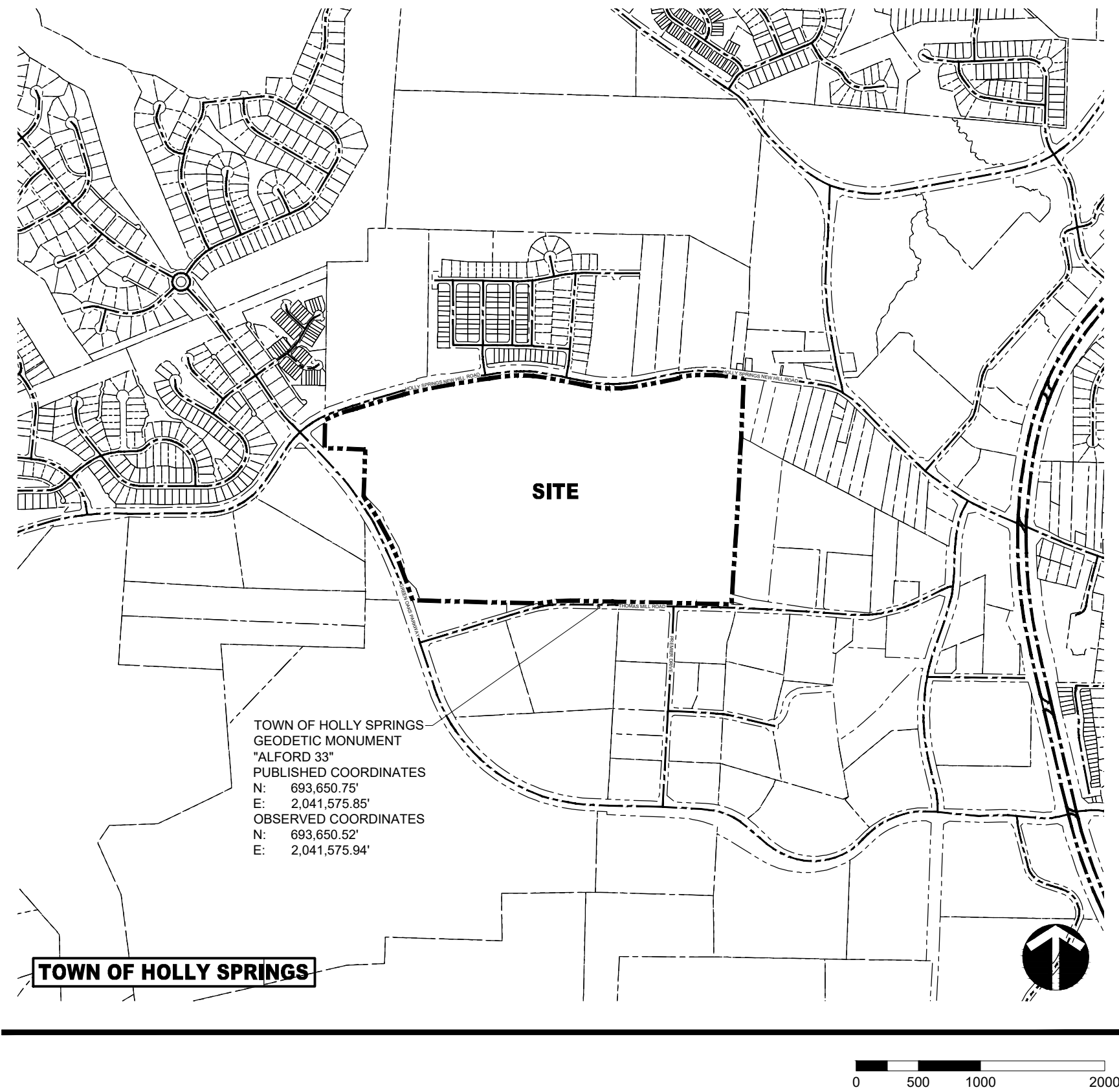
DATE: 01.28.2022

CHAPTER INDEX

SHEET INDEX	
Sheet Number	Sheet Title
L0-00	COVER
L0-01	GENERAL NOTES
L1-00	EXISTING CONDITIONS
L2-00	PUD LAND USE PLAN
L3-00	SITE PLAN
L3-01	SITE PLAN ENLARGEMENT
L3-02	SITE PLAN ENLARGEMENT
L4-00	GRADING PLAN
L5-00	TREE PRESERVATION
L5-01	TREE INVENTORY PLAN
L6-00	PLANTING PLAN
L7-00	STORMWATER PLAN
L8-00	UTILITY PLAN
L8-01	UTILITY PLAN ENLARGEMENT
L8-02	UTILITY PLAN ENLARGEMENT
L9-00	SEWER BASIN EXHIBIT
L10-00	DEV. PHASING PLAN
L11-00	SITE DETAILS
L11-01	SITE DETAILS
L12-00	OVERALL ROADWAY IMPROVEMENTS
L12-01	ROADWAY IMPROVEMENTS ENLARGEMENT
L12-02	ROADWAY IMPROVEMENTS ENLARGEMENT
L12-03	ROADWAY IMPROVEMENTS ENLARGEMENT
L12-04	ROADWAY IMPROVEMENTS ENLARGEMENT
L12-05	ROADWAY IMPROVEMENTS ENLARGEMENT
L12-06	ROADWAY IMPROVEMENTS ENLARGEMENT
L12-07	ROADWAY IMPROVEMENTS ENLARGEMENT
L12-08	ROADWAY IMPROVEMENTS ENLARGEMENT

- NOTES:
- PLAN IS SUBJECT TO REVISIONS DURING CONSTRUCTION DRAWING APPROVAL PLANS.
 - ALL CONSTRUCTION SHALL CONFORM TO TOWN OF HOLLY SPRINGS ENGINEERING DESIGN AND CONSTRUCTION STANDARDS.
 - CONSTRUCTION DRAWING APPROVAL IS REQUIRED BEFORE CONSTRUCTION ON THIS PROJECT MAY BEGIN. DEVELOPMENT FEES ARE DUE BEFORE CONSTRUCTION DRAWING APPROVAL.

VICINITY MAP



PRELIMINARY UTILITY/SEWER FLOWS			
Discharge Facility	Design Units	Flow Unit (gpd)	Total
Green Oaks Tech Park	119 ac @ 1,500 gpd/acre	178,500	178,500
Total Average Daily Flow (gpd)		178,500	178,500
Total Average Daily Flow (gpm)		123.9583	123.9583
Total Peak Flow (gpm) (2.5 Peaking Factor)		309.8958	309.8958

NOTE: SEWER ASSUMPTIONS ARE IN ACCORDANCE WITH THE ED&CS AND ALSO NCDENR 2T RULES. THESE FLOWS ALSO MATCH CURRENT SEWER STUDY REPORT BY TIMMONS.

PROJECT TEAM

APPLICANT/DEVELOPER

CRESCENT COMMUNITIES
227 W. TRADE ST #1000
CHARLOTTE, NC, 28202
980.321.6000

LANDSCAPE ARCHITECT

LANDDESIGN
223 NORTH GRAHAM STREET
CHARLOTTE, NC 28202
704.333.0325
CONTACT NAME: RHETT CROCKER

CIVIL ENGINEER

LANDDESIGN
223 NORTH GRAHAM STREET
CHARLOTTE, NC 28202
704.333.0325
CONTACT NAME: NATHAN DOOLITTLE, PE

CIVIL ENGINEER (ROADWAY IMPROVE.)

TIMMONS GROUP
5410 TRINITY ROAD, SUITE 102
RALEIGH, NC 27607
919.866.4951
CONTACT NAME: BLAKE HALL

SITE DATA TABLE	
PINS:	0649255277, 0649253306, 0649252098, 0649158281, 0649151168, 0649054147, 0639957154, 0639955037, 0649049486, 0649240007, 0639959107, 0639949124
SITE AREA:	±119.31 ACRES
ZONING:	PUD
MIN. LOT WIDTH	SOUTHERN EDGE DISTRICT (50'), COMMERCIAL DISTRICT (50'), INNOVATION DISTRICT (100')
MAXIMUM BUILDING HEIGHT*	SOUTHERN EDGE DISTRICT (50'), COMMERCIAL DISTRICT (100'), INNOVATION DISTRICT (100')
MINIMUM BUILDING HEIGHT	20'
MINIMUM NUMBER OF LOTS IN EACH POD	(1)
MAXIMUM NUMBER OF LOTS IN EACH POD	(5)
MINIMUM NUMBER OF LOTS FOR THE OVERALL SITE	(6)
MAXIMUM NUMBER OF LOTS FOR THE OVERALL SITE	(30)
MIN. OPEN SPACE REQ.	±11.93 AC
MIN. TREE PRESERVATION REQ.	±11.93 AC

NOTES:
* SEE PUD REQUIREMENTS FOR FULL MAXIMUM HEIGHT RESTRICTIONS
SITE PARCEL OWNERSHIP TO BE UPDATED.

MATERIALS + PAVING NOTES:

1.

ALL MATERIALS, CONSTRUCTION METHODS, WORKMANSHIP, EQUIPMENT SERVICES AND TESTING FOR ALL IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THE PROJECT DOCUMENTS AND THE GOVERNING AUTHORITIES' REQUIREMENTS. IN THE EVENT OF A CONFLICT BETWEEN THE PROJECT DOCUMENTS AND THE GOVERNING AUTHORITIES' REQUIREMENTS, THE MORE STRINGENT SHALL APPLY.
2.

SUBGRADE PREPARATION, PAVEMENT STRENGTH AND THICKNESS SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT PREPARED FOR THIS PROJECT
- 2.1.

PROOF-ROLL SUBGRADE: PRIOR TO PREPARATION OF THE SUBBASE, THE SUBGRADE SHALL BE PROOF-ROLLED WITH HEAVY PNEUMATIC EQUIPMENT. ANY SOFT OR PUMPING AREAS SHALL BE EXCAVATED TO FIRM SUBGRADE AND BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
- 2.2.

PAVEMENT SUBGRADE SHALL BE GRADED TO PREVENT PONDING AND INFILTRATION OF EXCESSIVE MOISTURE ON OR ADJACENT TO THE PAVEMENT SUBGRADE.
3.

THE USE OF "LEVEL UP" SAND UNDER PAVEMENT WILL NOT BE ACCEPTED, UNLESS NOTED OTHERWISE..
4.

CONCRETE SHALL NOT BE PLACED WHEN THE TEMPERATURE IS BELOW 40 DEGREES FAHRENHEIT AND FALLING, BUT MAY BE PLACED WHEN THE TEMPERATURE IS ABOVE 35 DEGREES FAHRENHEIT AND RISING. THE TEMPERATURE READING SHALL BE TAKEN IN THE SHADE AWAY FROM ARTIFICIAL HEAT.
- 4.1.

DO NOT PLACE CONCRETE WHILE IT IS RAINING OR WHEN RAIN IS IMMINENT.
5.

CAST IN PLACE CONCRETE SHALL MEET THE FOLLOWING REQUIREMENTS:
- 5.1.

MINIMUM 3,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS, UNLESS NOTED OTHERWISE.
- 5.2.

AGGREGATES: ASTM C33 MAX 3/4" IN SIZE, UNLESS NOTED OTHERWISE
- 5.3.

SLUMP: 3 TO 5 INCHES
- 5.4.

AIR CONTENT: 4 TO 6 PERCENT BY VOLUME
6.

CONCRETE THICKNESS:
- 6.1.

PEDESTRIAN AREA: 4" THICK, UNLESS NOTED OTHERWISE.
- 6.2.

ALL OTHER CONCRETE COMPONENTS INSTALL PER SIZE SPECIFIED IN DRAWINGS
7.

CONCRETE REINFORCING:
- 7.1.

4" THICK PAVING: #3's AT 24" SPACING UNLESS NOTED OTHERWISE IN DRAWINGS
- 7.2.

6" THICK PAVING: #4s AT 24" SPACING UNLESS NOTED OTHERWISE IN DRAWINGS
- 7.3.

8" THICK PAVING: #5's AT 24" SPACING UNLESS NOTED OTHERWISE IN DRAWINGS
- 7.4.

ALL PAVEMENT REINFORCING BARS SHALL BE GRADE 60 KSI DEFORMED BILLET STEEL BARS, UNCOATED FINISH. SIZE AND SPACING SHALL BE IN ACCORDANCE WITH THE PAVING PLAN AND DETAILS.
- 7.5.

ALL REINFORCING STEEL AND DOWEL BARS IN PAVEMENT SHALL BE SUPPORTED AND MAINTAINED AT THE CORRECT CLEARANCES BY THE USE OF BAR CHAIRS.
8.

CONTROL JOINTS (TROWEL OR SAW CUT)
- 8.1.

TO BE PLACED AS INDICATED ON PLANS AND DETAILS TO A MINIMUM DEPTH OF 1/8 OF CONCRETE THICKNESS.
- 8.2.

SAW CUT JOINTS TO BE EXECUTED WITHIN 12 HOURS OF CONCRETE PLACEMENT.
- 8.3.

SAWN JOINTS ARE TO BE TRUE IN ALIGNMENT AND SHALL CONTINUE THROUGH ADJACENT CURBS. RADIAL JOINTS SHALL BE NO SHORTER THAN 18".
9.

EXPANSION JOINTS
- 9.1.

PLACE AT A MAXIMUM SPACING OF 30' O.C. AND COORDINATE WITH OVERALL PAVING PATTERN AND COLOR.
- 9.2.

PROVIDE DOWELS AS SPECIFIED IN DRAWING DETAILS.
- 9.3.

EXPANSION JOINTS TO BE CLEARED OF DEBRIS, DIRT, DUST, SCALE, CURING COMPOUND AND CONCRETE, BLOWN DRY AND IMMEDIATELY SEALED WITH A SELF-LEVELING, ELASTOMERIC POLYURETHANE OR EQUIVALENT, SEALANT COLOR SHALL MATCH PAVEMENT.
- 9.4.

CONTRACTOR SHALL PREPARE A JOINT LAYOUT AND PROVIDE IT TO THE ENGINEER FOR REVIEW. THE JOINT LAYOUT SHALL BE PROVIDED A MINIMUM OF ONE WEEK PRIOR TO PLACING CONCRETE. PATTERN SHALL BE CAREFULLY DESIGNED BY THE CONTRACTOR TO AVOID IRREGULAR SHAPES. EXPANSION JOINTS SHALL NOT BE LOCATED ALONG VALLEYS IN PAVEMENT.
10.

ALL CONSTRUCTION JOINTS SHALL BE SAWN, CONCRETE FINISHES TO BE PER DRAWING DETAILS AND SPECIFICATIONS.
11.

CONCRETE SHALL BE BROOM FINISHED AND CURED FOR A MINIMUM OF 72 HOURS UNLESS NOTED OTHERWISE.
12.

BREAKOUTS FOR REMOVAL OF EXISTING PAVEMENT AND CURBS SHALL BE MADE BY FULL DEPTH SAW CUT WHEN ADJACENT TO PROPOSED PAVEMENT AND/OR CURBS.
13.

PROPOSED PAVEMENT AND/OR CURBS INTENDED TO TIE INTO EXISTING SHALL MATCH SHALL MATCH THE ELEVATION OF EXISTING PAVEMENT AND/OR CURBS.
14.

PAVEMENT MARKINGS
- 14.1.

PAVEMENT MARKINGS SHALL BE PROVIDED IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS "UNIFORM TRAFFIC MANUAL FOR PAVEMENT MARKINGS."
- 14.2.

FIRE LANES SHALL BE STRIPED AND/OR SIGNED IN ACCORDANCE WITH THE GOVERNING AUTHORITIES' REGULATIONS.
- 14.3.

ALL ACCESSIBLE PAVEMENT MARKINGS SHALL COMPLY WITH ADAAG STANDARDS AND STATE AND LOCAL CODES.
- 14.4.

PARKING SPACE STRIPES, ACCESSIBLE SPACES, PEDESTRIAN STRIPING, DIRECTIONAL ARROWS AND LETTERING SHALL BE SOLID WHITE, UNLESS A SPECIFIC COLOR IS REQUIRED BY LOCAL CODE. TWO (2) COATS OF VOC COMPLIANT, LOCAL DOT APPROVED, UNDILUTED, SOLVENT BASED OR LATEX TRAFFIC PAINT SHALL BE APPLIED. USE MANUFACTURER'S RECOMMENDED APPLICATION RATE, WITHOUT ADDITION OF A THINNER, WITH A MAXIMUM OF 100 SQUARE FEET PER GALLON OR AS REQUIRED. PROVIDING MINIMUM 15 MILS WET FILM THICKNESS AND 7 MILS DRY FILM THICKNESS PER COAT WITH A MINIMUM OF 30 DAYS BETWEEN APPLICATIONS. PAINT SHALL BE CRISP, STRAIGHT AND APPLIED UNIFORMLY ACROSS THE WIDTH OF THE LINE FOR A MINIMUM TOTAL DRY FILM THICKNESS OF 15 MILS.
15.

CONTRACTOR SHALL REFER TO THE SITE CIVIL, MEP AND IRRIGATION PLANS FOR CONDUIT TO BE INSTALLED UNDER PAVEMENT PRIOR TO COMMENCING PAVEMENT SUBGRADE PREPARATION.
16.

ALL TESTING SHALL BE PERFORMED BY A QUALIFIED TESTING LABORATORY, EMPLOYED AND PAID DIRECTLY BY THE OWNER. UNLESS NOTED OTHERWISE, TESTING SHALL BE PERFORMED AT A MINIMUM IN ACCORDANCE WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT. IN THE EVENT THE RESULTS OF THE INITIAL TESTING DO NOT COMPLY WITH THE PLANS AND THE SPECIFICATIONS, SUBSEQUENT TEST NECESSARY TO DETERMINE THE ACCEPTABILITY OF CONSTRUCTION SHALL BE AT THE CONTRACTOR'S EXPENSE. PAVEMENT FOUND TO BE DEFICIENT IN STRENGTH OR THICKNESS SHALL BE REMOVED AND REPLACED SOLELY AT THE EXPENSE OF THE CONTRACTOR.

ACCESSIBILITY NOTES:

1.

MAX CROSS SLOPE ON PAVED SURFACES SHALL BE 2% MAXIMUM, UNLESS NOTED OTHERWISE.
2.

MAX RUNNING SLOPE ON PAVED SURFACES SHALL BE 5% MAXIMUM, UNLESS NOTED OTHERWISE.
3.

ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM, AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80". CONTRACTOR SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL.
4.

ALL CURB RAMPS SHALL BE BROOM FINISHED PERPENDICULAR TO SLOPE.
5.

ALL CURB RAMPS SHALL HAVE A 1:12 MAX SLOPE IN THE DIRECTION OF TRAVEL. 2% MAX CROSS SLOPE.
6.

IT IS THE INTENT OF THE CONTRACT DOCUMENTS TO COMPLY WITH ALL APPROPRIATE FAIR HOUSING ACCESSIBILITY GUIDELINES AND GENERAL NOTES FOR PUBLIC AND COMMON USE FACILITIES. REPORT ANY DISCREPANCIES TO LANDESIGN.

GENERAL NOTES:

1.

BASE INFORMATION, INCLUDING EXISTING CONDITIONS, TOPOGRAPHY, EXISTING UTILITIES, AND BOUNDARY INFORMATION IS FROM PLANS BY: TIMMONS GROUP
2.

WRITTEN DIMENSIONS PREVAIL OVER SCALED DIMENSIONS. NOTIFY LANDESIGN OF ANY DISCREPANCIES.
3.

DIMENSIONS ARE TO FACE OF OBJECT, UNLESS NOTED OTHERWISE.
4.

THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL UNDERGROUND UTILITIES, PIPES, STRUCTURES, AND LINE RUNS IN THE FIELD PRIOR TO CONSTRUCTION. ANY DAMAGE TO NEW AND EXISTING UTILITIES ARE TO BE REPAIRED IMMEDIATELY AT NO ADDITIONAL EXPENSE TO THE OWNER. LANDESIGN ASSUMES NO RESPONSIBILITY FOR ANY UTILITIES NOT SHOWN ON PLANS.
5.

ALL PROPOSED FINISHED GRADES ARE BASED ON INFORMATION PROVIDED BY THE OWNER'S SURVEY AND OR CIVIL ENGINEER. ANY DISCREPANCIES IN ACTUAL FIELD MEASUREMENTS ARE TO BE REPORTED TO LANDESIGN IMMEDIATELY.
6.

PRIOR TO COMMENCEMENT OF HARDSCAPE CONSTRUCTION, ALL PIERS, FOOTINGS, AND WALLS SPECIFIC TO THE SCOPE OF THIS DRAWING PACKAGE ARE TO BE SURVEYED, LAID OUT, AND STAKED IN THE FIELD FOR REVIEW BY LANDESIGN. CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ANY DEMOLITION, ADJUSTMENTS, OR RECONSTRUCTION OF HARDSCAPE CONSTRUCTION RESULTING FROM INACCURATE CONSTRUCTION.
7.

CONTRACTOR IS RESPONSIBLE TO PROVIDE AND INSTALL ALL ITEMS PER DRAWINGS AND SPECIFICATION. NOTIFY LANDESIGN OF ANY MAJOR DISCREPANCIES BETWEEN CONTRACTOR'S VERIFIED QUANTITIES, BID BOOK, AND INTENT OF DRAWING.
8.

CONTRACTOR IS RESPONSIBLE FOR ALL FINAL QUANTITIES PER DRAWINGS AND SPECIFICATIONS ANY QUANTITIES PROVIDE BY LANDESIGN ARE PROVIDED FOR CONVENIENCE ONLY AND SHALL NOT BE CONSIDERED ABSOLUTE. LANDESIGN SHOULD BE NOTIFIED OF ANY GRADING DISCREPANCIES.
9.

THE CONTRACTOR SHALL EXAMINE AND BECOME FAMILIAR WITH ALL CONTRACT DOCUMENTS IN THEIR ENTIRETY. SURVEY THE PROJECT AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND SCOPE OF WORK. ALL COSTS SUBMITTED SHALL BE BASED ON THOROUGH KNOWLEDGE OF ALL WORK AND MATERIALS REQUIRED ANY DISCREPANCY AND/ OR UNCERTAINTY AS TO WHAT MATERIAL OR PRODUCT IS TO BE USED, SHALL BE VERIFIED WITH THE OWNER OR LANDESIGN PRIOR TO BIDDING.
10.

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES REQUIRED FOR SAFE EXECUTION AND COMPLETION OF WORK, AND FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
11.

IN THE EVENT A DISCREPANCY IS FOUND IN THE CONTRACT DOCUMENTS, THE OWNER & LANDESIGN SHALL BE NOTIFIED IMMEDIATELY.
12.

CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD AND NOTIFY LANDESIGN OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
13.

CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AT THIS SITE AND BE RESPONSIBLE FOR ACCURACY AND CORRECTNESS OF SAME.
14.

CONTRACTOR SHALL COORDINATE WORK WITH ALL OTHER TRADES AND NOTIFY OWNER & LANDESIGN OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
15.

ALL EXISTING WORK OR LANDSCAPING NOT SHOWN TO BE ALTERED OR REMOVED SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION. THE CONTRACTOR(S) SHALL BEAR THE TOTAL EXPENSE FOR, AND SHALL REPAIR ANY DAMAGE TO EXISTING CONDITIONS, OR IMPROVEMENTS NOT INDICATED IN THE DRAWINGS OR SPECIFICATIONS TO RECEIVE ALTERATION, ADDITIONS OR REMOVAL.

PLANTING NOTES:

1.

ALL QUANTITIES LISTED IN THE DRAWINGS ARE FOR INFORMATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL QUANTITIES AND TO PROVIDE ALL MATERIALS NECESSARY FOR FULL COVERAGE IN ALL PLANTING AREAS AS SPECIFIED ON THE DRAWINGS. ANY DISCREPANCY SHOULD BE REPORTED TO THE OWNER.
2.

ALL PLANTS SHOULD BE IN ACCORDANCE WITH ANSI Z60.1 -2014, AMERICAN STANDARD FOR NURSERY STOCK PUBLICATION, APPROVED APRIL 14, 2014.
3.

CALIPER SIZE OF CANOPY TREES ARE TO BE MEASURED PER LOCAL CITY LANDSCAPE ORDINANCE.
4.

ALL PLANT MATERIAL SHALL CONFORM TO THE SIZE SPECIFICATIONS (CALIPER, HEIGHT AND SPREAD) GIVEN IN THE PLANT SCHEDULE AND SHALL BE NURSERY GROWN UNLESS SPECIFIED OTHERWISE.
5.

ANY PLANT SUBSTITUTION SHALL BE APPROVED BY LANDESIGN PRIOR TO PURCHASE.
6.

SIZES LISTED ARE MIN. AND REFER TO HEIGHT, UNLESS OTHERWISE SPECIFIED.
7.

LANDSCAPE CONTRACTOR SHALL STAKE OUT LOCATIONS OF ALL TREES TO BE PLANTED FOR REVIEW BY LANDESIGN PRIOR TO INSTALLING. LANDESIGN RESERVES THE RIGHT TO ADJUST TREE LOCATIONS IN THE FIELD AS NECESSARY.
8.

SHRUB/GROUNDCOVER BEDS SHALL BE STAKED FOR REVIEW BY LANDESIGN/OWNER'S REPRESENTATIVE PRIOR TO EXCAVATION AND OR BED PREPARATION.
9.

LANDSCAPE CONTRACTOR SHALL INSTALL STEEL EDGING BETWEEN PLANTING BEDS AND LAWNS, OR AS SHOWN IN DETAILS.
10.

LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL UNDERGROUND UTILITIES. PIPES, STRUCTURES, AND LINE RUNS IN THE FIELD PRIOR TO THE INSTALLATION OF ANY PLANT MATERIAL.
11.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ADVISE LANDESIGN OF ANY CONDITION FOUND ON THE SITE WHICH PROHIBITS INSTALLATION AS SHOWN ON THE DRAWINGS
12.

LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION WITH OTHER CONTRACTORS ON SITE AS REQUIRED TO ACCOMPLISH ALL PLANTING OPERATIONS.
13.

ALL PLANT MATERIAL SHALL BE MAINTAINED IN A HEALTHY GROWING CONDITION AND MUST BE REPLACED WITH PLANT OF SAME VARIETY AND SIZE IF DAMAGED, DESTROYED, DEAD AND /OR REMOVED.
14.

LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR FINE GRADING AND REMOVAL OF DEBRIS PRIOR TO PLANTING IN ALL AREAS.
15.

FINAL FINISHED GRADING SHALL BE REVIEWED BY LANDESIGN. CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL TOPSOIL REQUIRED TO CREATE A SMOOTH CONDITION SUITABLE FOR PLANTING.
16.

TREES OVERHANGING INTO THE PUBLIC R.O.W. SHALL HAVE A MINIMUM CLEAR TRUNK HEIGHT OF FOURTEEN(14) FEET OVER STREETS, DRIVE AISLES, ALLEYS AND FIRE LANES. TREES OVERHANGING PRIVATE STREETS, WALKS, AND /OR PARKING LOTS SHALL HAVE A MINIMUM CLEAR TRUNK HEIGHT OF SEVEN (7) FEET.
17.

LANDSCAPE CONTRACTOR IS REQUIRED TO PERFORM A TREE PIT PERCOLATION TEST FOR EACH TREE PIT PRIOR TO INSTALLATION. IF TREE PIT DOES NOT DRAIN WITHIN A 24-HOUR PERIOD, THE CONTRACTOR WILL BE REQUIRED TO PROVIDE A GRAVEL SUMP, FILTER FABRIC AND STAND PIPE. ALL TREE PIT SUMPS SHALL BE INCLUDED IN N THE CONTRACTOR'S BASE BID AS A UNIT PRICE AND PROVIDE AS A DEDUCT ALTERNATE PER TREE PIT SUMPS NOT REQUIRED TO BE INSTALLED.
18.

LANDSCAPE CONTRACTOR IS RESPONSIBLE TO REVIEW SITE ENVIRONMENTAL CONDITIONS PRIOR TO AND DURING INSTALLATION OF PLANT MATERIAL. ANY DISCREPANCIES OR CONCERNS BETWEEN THE ENVIRONMENTAL SITE CONDITIONS (I.E., SOIL TYPE, WATER, CLIMATE, WIND, SUN EXPOSURE ETC.) AND THE PLANT MATERIAL SPECIFIED WITHIN THE DRAWING SHALL BE BROUGHT TO THE ATTENTION OF LANDESIGN AND/OR OWNER, AND SHALL BE DONE SO IN WRITING. CONTRACTOR SHALL PROVIDE SUGGESTED SOLUTIONS FOR ALTERNATE PLANT MATERIAL PROPOSED FOR SUBSTITUTION. LANDESIGN TO REVIEW CONDITIONS AND INFORMATION SUBMITTED BY CONTRACTOR AND WILL ISSUE DIRECTIVE. SHOULD PLANT MATERIAL DIE BECAUSE OF ENVIRONMENTAL CONDITIONS DESCRIBED ABOVE, THE LANDSCAPE CONTRACTOR ASSUMES ALL WARRANTY AND GUARANTEE OF THE PLANT MATERIAL INSTALLED.
19.

ALL NEW PLANTING AREAS SHALL BE BACKFILLED WITH PLANTING SOIL THAT IS A MIXTURE OF 40-50% IMPORTED UNSCREENED TOPSOIL, 40-45% COARSE SAND, AND 10% COMPOST. FINAL TESTED ORGANIC MATTER SHALL BE BETWEEN 2.75 AND 4% (BY DRY WEIGHT). BACKFILL SHALL BE TO A DEPTH OF 18" FOR SHRUB AND GROUNDCOVER ZONES AND 36" FOR TREE PITS.
20.

AFTER PLANTING SOIL MIXES ARE INSTALLED IN PLANTING BED AREAS AND JUST PRIOR TO THE INSTALLATION OF SHRUB OR GROUNDCOVER PLANTINGS, SPREAD 3-4 INCHES OF COMPOST OVER THE BEDS AND ROTO TILL INTO THE TOP 8 INCHES OF THE PLANTING SOIL. THIS WILL RAISE GRADES SLIGHTLY ABOVE THE FINISHED GRADES, IN ANTICIPATION GRADES WILL SETTLE WITHIN A FEW MONTHS AFTER INSTALLATION AS COMPOST BREAKS DOWN.
21.

IN ALL EXISTING PLANTING AREAS DESIGNATED TO RECEIVE NEW PLANTINGS, SPREAD 3-4 INCHES OF COMPOST OVER THE BEDS AND ROTO TILL INTO THE TOP 8 INCHES OF THE PLANTING SOIL. THIS WILL RAISE THE GRADES SLIGHTLY ABOVE THE FINISHED GRADES, IN ANTICIPATION GRADES WILL SETTLE WITHIN A FEW MONTHS AFTER INSTALLATION AS COMPOST BREAKS DOWN. IN NO CASE WILL THIS BE PERFORMED WHERE IT MAY NEGATIVELY IMPACT THE HEALTH OF ADJACENT, EXISTING PLANT MATERIALS WHICH ARE DESIGNATED TO REMAIN.
22.

LANDSCAPE CONTRACTOR TO WARRANTY ALL PLANT MATERIALS FOR A PERIOD OF ONE YEAR. THE CONTRACTOR AGREES TO REPLACE DEFECTIVE WORK AND DEFECTIVE PLANTS, AND THAT THE OWNER'S REPRESENTATIVE SHALL MAKE THE FINAL DETERMINATION IF PLANTS MEET THE REQUIRED SPECIFICATIONS OR THAT PLANTS ARE DEFECTIVE. PLANTS DETERMINED TO BE DEFECTIVE SHALL BE REMOVED IMMEDIATELY AND REPLACED WITHIN 90 DAYS BY THE OWNER'S REPRESENTATIVE AND NOT TO BE COST TO THE OWNER, AS SOON AS WEATHER CONDITIONS PERMIT AND WITHIN THE SPECIFIED PLANTING PERIOD. THE REPLACED MATERIALS SHALL ALSO RECEIVE A WARRANTY PERIOD OF ONE YEAR WHICH STARTS AT THE DATE OF INSTALLATION. BULBS, ANNUAL FLOWERS, AND SEASONAL COLOR PLANTS SHALL ONLY BE WARRANTED FOR THE PERIOD OF THE EXPECTED BLOOM OR PRIMARY DISPLAY.

LAYOUT NOTES:

1.

ALL MATERIALS AND CONSTRUCTION WITHIN RIGHT OF WAYS SHALL BE IN ACCORDANCE WITH THE TOWN OF HOLLY SPRINGS STANDARD SPECIFICATIONS STANDARDS
2.

EXISTING UTILITIES ARE SHOWN SCHEMATICALLY AND ARE FOR THE CONTRACTOR'S GUIDANCE ONLY. THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES.
3.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING IMPROVEMENTS IN THE CONSTRUCTION OF THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING IMPROVEMENTS DURING CONSTRUCTION. REPAIRS SHALL BE EQUAL TO OR BETTER THAN CONDITION PRIOR TO CONSTRUCTION.
4.

ALL ONSITE PAVING DIMENSIONS ARE TO THE FACE OF CURB, WHERE APPLICABLE, UNLESS NOTED OTHERWISE.
5.

ALL CURB RADI AND SIDEWALK RETURNS ARE 2' UNLESS NOTED OTHERWISE.
6.

ALL PAVING AND EARTHWORK OPERATIONS SHALL CONFORM TO THE PROJECT GEOTECHNICAL REPORT.
7.

BUILDING DIMENSIONS: THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS TO VERIFY THE EXACT BUILDING DIMENSIONS.
8.

LAY PAVERS IN PATTERN(S) SHOWN ON DRAWINGS. PLACE UNITS HAND TIGHT WITHOUT USING HAMMERS. MAKE HORIZONTAL ADJUSTMENTS TO PLACEMENT OF LAID PAVERS WITH RUBBER HAMMERS AS REQUIRED.
9.

PROVIDE JOINTS BETWEEN PAVERS BETWEEN 1/16 IN. AND 3/16 IN. (2 AND 5 MM) WIDE. NO MORE THAN 5% OF THE JOINTS SHALL EXCEED 1/4" WIDE TO ACHIEVE STRAIGHT BOND LINES.
10.

JOINT (BOND) LINES SHALL NOT DEVIATE MORE THAN ±1/2 IN. (±15 MM) OVER 50 FT. (15 M) FROM STRING LINES.
11.

FILL GAPS AT THE EDGES OF THE PAVED AREA WITH CUT PAVERS OR EDGE UNITS.
12.

CUT PAVERS TO BE PLACED ALONG THE EDGE WITH A MASONRY SAW.
13.

ADJUST BOND PATTERN AT PAVEMENT EDGES SUCH THAT CUTTING OF EDGE PAVERS IS MINIMIZED.
14.

IN NO CASE SHALL A CUT PAVES BE LESS THAN 1/3 FULL PAVES SIZE.
15.

PAVER DIMENSIONS ARE NOMINAL. PRIOR TO POURING SLABS, BANDING, OR OTHERWISE SETTING PAVER FIELDS, VERIFY ACTUAL PAVER SIZES AND LAYOUT OF THE PAVER FIELDS. MAKE MINOR ADJUSTMENTS TO EDGE CONSTRAINTS AS REQUIRED TO ACCOMMODATE ACTUAL PAVER SIZES. NOTIFY LANDESIGN IMMEDIATELY OF DISCREPANCIES AND/OR ADJUSTMENTS.

GRADING NOTES:

1.

STAKE PER SPOT ELEVATIONS AND NOTED SLOPES. CONTOURS ARE PROVIDED FOR MASS GRADING/INTENT ONLY.
2.

WRITTEN DIMENSIONS AND GRADES PREVAIL OVER SCALED DIMENSIONS. NOTIFY LANDESIGN OF ANY DISCREPANCIES.
3.

ALL SPOT ELEVATIONS SHOWN ON GRADING PLAN ARE TO BOTTOM OF CURB/TOP OF PAVEMENT UNLESS OTHERWISE NOTED. ALL RIM ELEVATIONS ARE TO EDGE OF PAVEMENT.
4.

REFER TO GEOTECHNICAL ENGINEER AND GEOTECH REPORT FOR INFORMATION ON SUBSURFACE MATERIALS, TOPSOIL, STRUCTURAL MATERIAL, DEEP FILLS, EXCAVATION, AND FOUNDATIONS.
5.

APPROVAL OF THIS PLAN IS NOT AN AUTHORIZATION TO GRADE ADJACENT PROPERTIES. WHEN FIELD CONDITIONS WARRANT OFF-SITE GRADING, PERMISSION MUST BE OBTAINED FROM THE AFFECTED PROPERTY OWNERS.
6.

IN ORDER TO ASSURE PROPER DRAINAGE, KEEP A MINIMUM OF .5% SLOPE ON THE CURB.
7.

ALL PLANTING ISLANDS SHALL BE GRADED TO MOUND TO PROVIDE POSITIVE DRAINAGE.
8.

CONTRACTOR TO VERIFY 2% MAX. CROSS-SLOPE ON ALL SIDEWALKS.
9.

CONTRACTOR TO VERIFY THAT ALL SIDEWALK SLOPES, HANDICAP RAMPS, AND HANDICAP PARKING SPACES MEET ADA REQUIREMENTS.
10.

CONCRETE SIDEWALKS ADJACENT TO TREE SAVE LOCATIONS SHOULD BE POURED ON TOP OF EXISTING GRADE.
11.

REFER TO LANDSCAPE PLAN FOR ALL TREE PROTECTION FENCE LOCATIONS AND INSTALLATION PROCEDURES. BEFORE GRADING/CONSTRUCTION BEGINS, CALL FOR INSPECTION OF TREE PROTECTION BARRICADES. NO SOIL DISTURBANCE OR COMPACTION, CONSTRUCTION MATERIALS, TRAFFIC, BURIAL PITS, TRENCHING, OR OTHER LAND DISTURBING ACTIVITY ALLOWED IN THE TREE PROTECTION ZONE.
12.

DIMENSIONS ON BUILDINGS ARE FOR GRADING PURPOSES ONLY AND ARE NOT TO BE USED TO LAYOUT FOOTINGS.
13.

GRADING CONTRACTORS SHALL NOTIFY AND COOPERATE WITH ALL UTILITY COMPANIES OR FIRMS HAVING FACILITIES ON OR ADJACENT TO THE SITE BEFORE DISTURBING, ALTERING, REMOVING, RELOCATING, ADJUSTING OR CONNECTING TO SAID FACILITIES. CONTRACTORS SHALL PAY ALL COSTS IN CONNECTION WITH THE ALTERATION OF OR RELOCATION OF THE FACILITIES. CONTRACTORS SHALL RAISE OR LOWER TOPS OF EXISTING MANHOLES AS REQUIRED TO MATCH FINISHED GRADES.
14.

GRADING CONTRACTOR SHALL COOPERATE AND WORK WITH ALL OTHER CONTRACTORS PERFORMING WORK ON THIS PROJECT TO INSURE PROPER AND TIMELY COMPLETION OF THIS PROJECT.

ABBREVIATIONS

A	AD	AREA DRAIN	L	L	LENGTH				
	ADJ	ADJACENT		LT	LIGHT				
	AFG	ABOVE FINISHED GRADE		LP	LOW POINT				
	ALT	ALTERNATE							
	ALUM	ALUMINUM							
	APPROX	APPROXIMATE							
	ARCH	ARCHITECT(URAL)	M	MAS	MASONRY				
				MATL	MATERIAL				
B	BC	BOTTOM OF CURB		MAX	MAXIMUM				
				MECH	MECHANICAL				
				MED	MEDIUM				
				MFR	MANUFACTURER				
			MIN	MINIMUM					
			MISC	MISCELLANEOUS					
	BLDG	BUILDING	MTL	METAL					
BLKG	BLOCKING								
BOC	BACK OF CURB								
BOT	BOTTOM								
BR	BOTTOM OF RAMP								
BS	BOTTOM OF STAIR								
BW	BOTTOM OF WALL								
C	CEM	CEMENT	N	N	NORTH				
				NIC	NOT IN CONTRACT				
				NO	NUMBER				
				NOM	NOMINAL				
				NTS	NOT TO SCALE				
				CIP	CAST IN PLACE	OC	ON CENTER		
								OD	OUTSIDE DIAMETER
								OPNG	OPENING
								OPP	OPPOSITE
CJ	CONTROL JOINT								
CMU	CONCRETE MASONRY UNIT								
CO	CLEANOUT								
COL	COLUMN								
CONT	CONTINUOUS								
CONC	CONCRETE								
CU FT	CUBIC FEET								
D	DD	DECK DRAIN	P	PB	PLANT BED				
				PERF	PERFORATED				
				PNL	PANEL				
				PNT	PAINT(ED)				
				PSI	POUNDS/SQUARE INCH				
				PT	PRESSURE TREATED				
				POB	POINT OF BEGINNING				
				POC	POINT OF CURVATURE				
				PROP	PROPOSED				
				DE	DRAINAGE EASEMENT				
DI	DRAIN INLET								
DIA	DIAMETER								
DIAG	DIAGONAL								
DIM	DIMENSION								
DN	DOWN								
DS	DOWN SPOUT								
DWG(S)	DRAWING(S)								
E	E	EAST	Q	QTY	QUANTITY				
EA	EACH	R	RAD	RADIUS					
EJ	EXPANSION JOINT		REIN	REINFORC(E), (ING)					
EL	ELEVATION		REQD	REQUIRED					
ELEC	ELECTRIC(AL)		REV	REVISION					
EOP	EDGE OF PAVEMENT		R.O.W	RIGHT OF WAY					
EQ	EQUAL								
EQUIP	EQUIPMENT								
ESMT	EASEMENT								
EW	EACH WAY								
EXP	EXPANSION								
EXIST	EXISTING		S	S	SOUTH				
EXT	EXTERIOR			SB	SETBACK				
		SCHED		SCHEDULE(E), (ED)					
		SD		STORM DRAIN					
		SF		SQUARE FOOT, FEET					
		SIM		SIMILAR					
		SQ		SQUARE					
		SSMHL		SANITARY SEWER MANHOLE					
		STL		STEEL					
		SSTL		STAINLESS STEEL					
		STD		STANDARD					
		SUSP		SUSPENDED					
		SW	SIDEWALK						
		SYM	SYMBOL						
F	FAB	FABRIC							
FDC	FIRE DEPT. CONNECTION								
FG	FINISHED GRADE								
FH	FIRE HYDRANT								
FIN	FINISH								
FOC	FACE OF CURB								
FT	FOOT, FEET								
FTG	FOOTING								

**NOT FOR
CONSTRUCTION**

CRESCENT COMMUNITIES

[illegible]

SCALE

NORTH

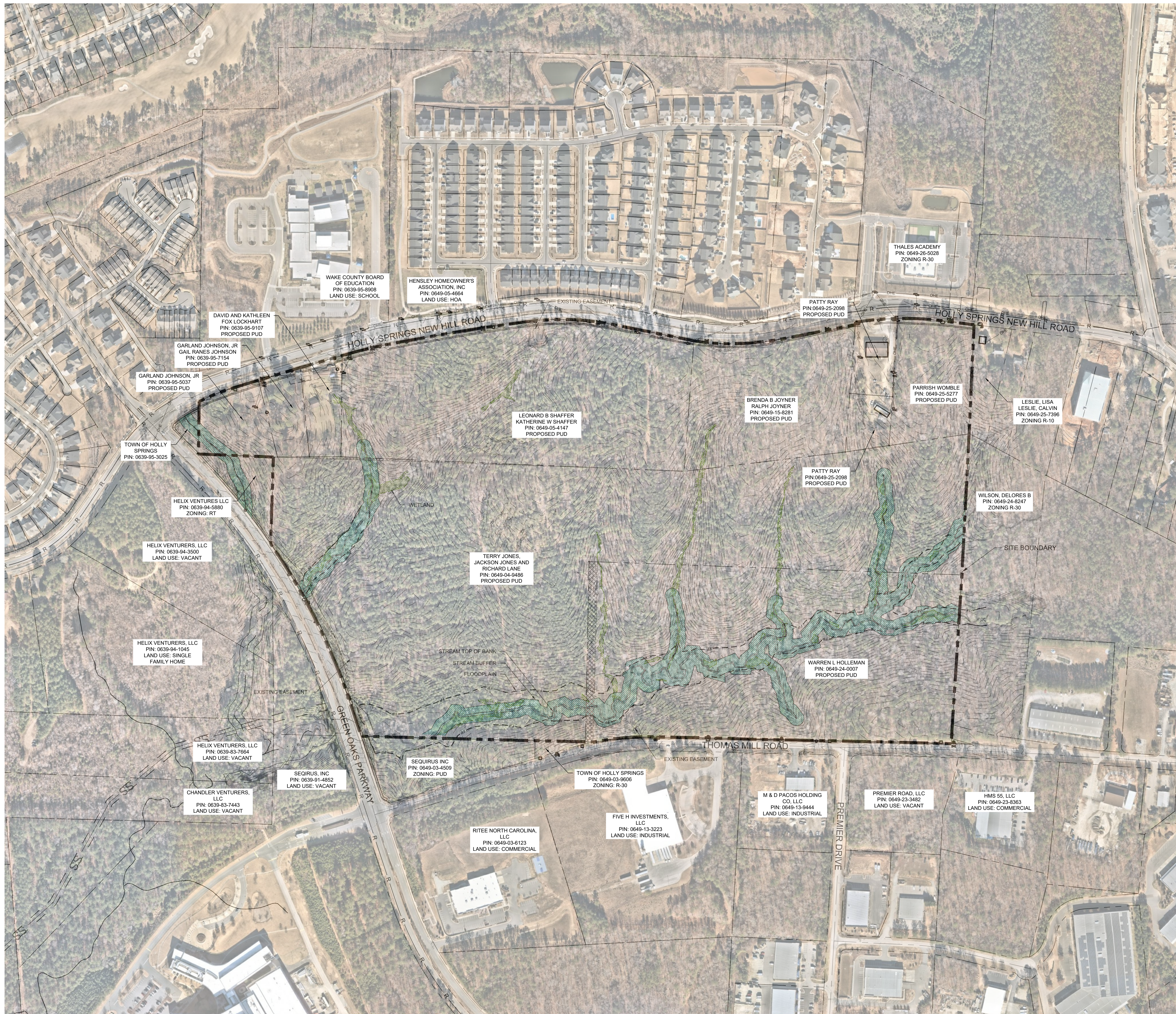
VERT: N/A
HORIZ: 1"=200'



0 100' 200' 400'

SHEET NUMBER _____

Page 580 of 60



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

**NOT FOR
CONSTRUCTION**

**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE		
NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE NORTH

VERT: N/A
HORZ: NTS

(NOT TO SCALE)

PUD LAND USE PLAN

SHEET NUMBER _____

L2-00



NOTE:
PER MP THIS IS PUD LAND USE OPTION FOR SITE

PROJECT _____

CRESCENT COMMUNITIES

1. **QUESTION**
 2. **ANSWER**
 3. **QUESTION**
 4. **ANSWER**
 5. **QUESTION**
 6. **ANSWER**
 7. **QUESTION**
 8. **ANSWER**
 9. **QUESTION**
 10. **ANSWER**
 11. **QUESTION**
 12. **ANSWER**
 13. **QUESTION**
 14. **ANSWER**
 15. **QUESTION**
 16. **ANSWER**
 17. **QUESTION**
 18. **ANSWER**
 19. **QUESTION**
 20. **ANSWER**
 21. **QUESTION**
 22. **ANSWER**
 23. **QUESTION**
 24. **ANSWER**
 25. **QUESTION**
 26. **ANSWER**
 27. **QUESTION**
 28. **ANSWER**
 29. **QUESTION**
 30. **ANSWER**
 31. **QUESTION**
 32. **ANSWER**
 33. **QUESTION**
 34. **ANSWER**
 35. **QUESTION**
 36. **ANSWER**
 37. **QUESTION**
 38. **ANSWER**
 39. **QUESTION**
 40. **ANSWER**
 41. **QUESTION**
 42. **ANSWER**
 43. **QUESTION**
 44. **ANSWER**
 45. **QUESTION**
 46. **ANSWER**
 47. **QUESTION**
 48. **ANSWER**
 49. **QUESTION**
 50. **ANSWER**
 51. **QUESTION**
 52. **ANSWER**
 53. **QUESTION**
 54. **ANSWER**
 55. **QUESTION**
 56. **ANSWER**
 57. **QUESTION**
 58. **ANSWER**
 59. **QUESTION**
 60. **ANSWER**
 61. **QUESTION**
 62. **ANSWER**
 63. **QUESTION**
 64. **ANSWER**
 65. **QUESTION**
 66. **ANSWER**
 67. **QUESTION**
 68. **ANSWER**
 69. **QUESTION**
 70. **ANSWER**
 71. **QUESTION**
 72. **ANSWER**
 73. **QUESTION**
 74. **ANSWER**
 75. **QUESTION**
 76. **ANSWER**
 77. **QUESTION**
 78. **ANSWER**
 79. **QUESTION**
 80. **ANSWER**
 81. **QUESTION**
 82. **ANSWER**
 83. **QUESTION**
 84. **ANSWER**
 85. **QUESTION**
 86. **ANSWER**
 87. **QUESTION**
 88. **ANSWER**
 89. **QUESTION**
 90. **ANSWER**
 91. **QUESTION**
 92. **ANSWER**
 93. **QUESTION**
 94. **ANSWER**
 95. **QUESTION**
 96. **ANSWER**
 97. **QUESTION**
 98. **ANSWER**
 99. **QUESTION**
 100. **ANSWER**

LANDOESIGN PROJ.# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE

NORTH

VERT: N/A
HORZ: 1"=200'

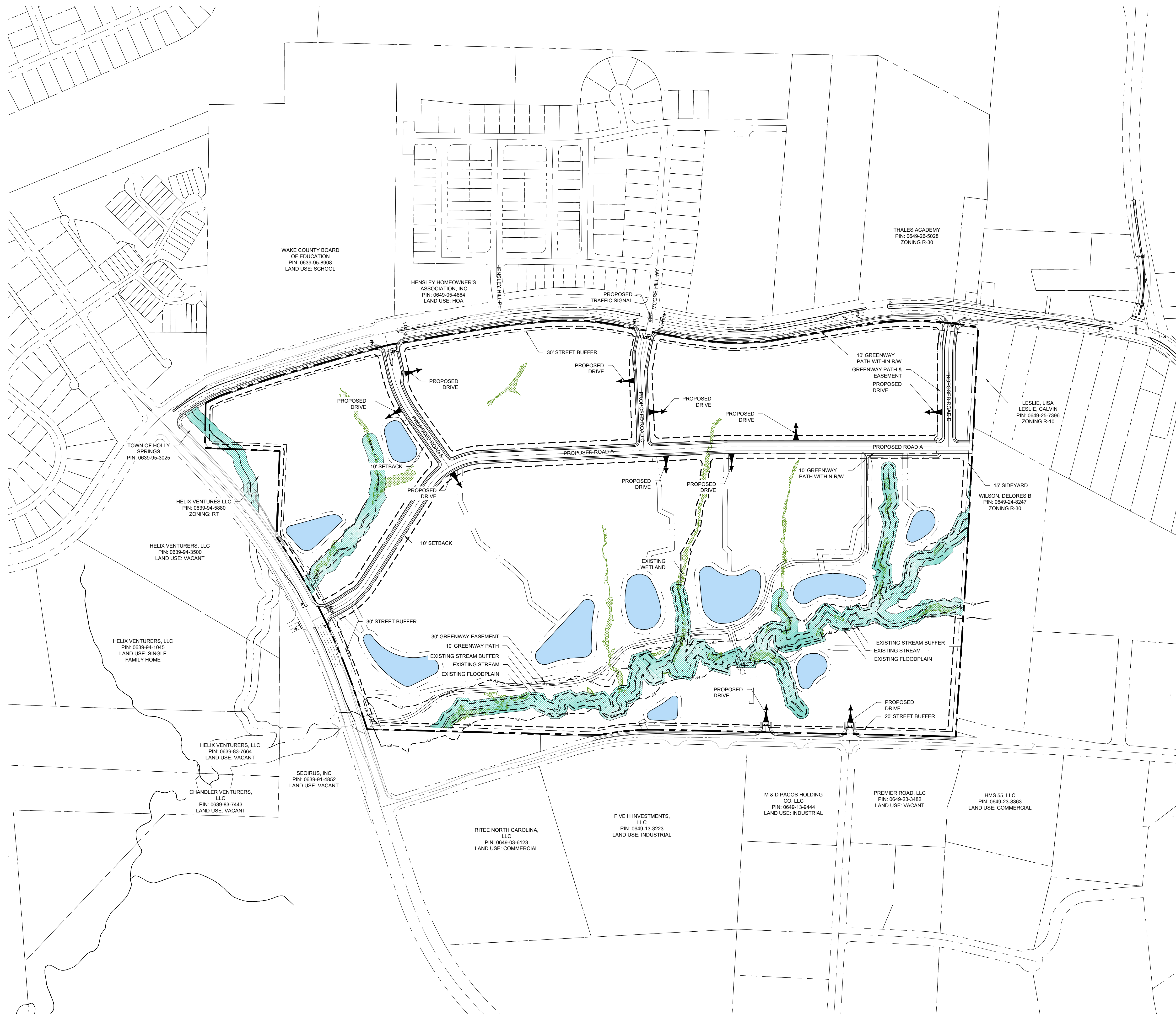


0 100' 200' 400'

SITE PLAN

SHEET NUMBER _____

L3-00



LEGEND

EXISTING 1' CONTOUR

EXISTING 5' CONTOUR

PROPOSED PUD BOUNDARY

WETLANDS

EXISTING STREAM

100-YEAR FLOOD PLAIN

30' CAPE FEAR BUFFER

SITE DATA:

SITE AREA: 119.31 ACRES

NOTES:

INTENT OF PLAN (PER PUD) IS TO BE A PHASED MASTER PLAN. SEE PHASING COMMITMENTS IN PUD, TIA, DEVELOPMENT AGREEMENT.

FINAL BUILDING, PARKING, AND DRIVE LOCATIONS TO BE DETERMINED WITH DEVELOPMENT PLANS.

FINAL GREENWAY ALIGNMENT TO BE DETERMINED WITH DEVELOPMENT PLAN. PHASING OF GREENWAY IMPROVEMENTS TO OCCUR PER DEVELOPMENT AGREEMENT AND PHASED WITH ADJACENT DEVELOPMENT.

FINAL ROAD IMPROVEMENTS TO BE DETERMINED WITH DEVELOPMENT PLANS AND WILL FOLLOW TIA. PHASING OF IMPROVEMENTS TO FOLLOW DEVELOPMENT AGREEMENT

OFF-STREET PARKING SHALL BE SUBJECT TO (UDO SECTION 7.04) AT TIME OF DEVELOPMENT PLAN.

OFF-STREET LOADING SHALL BE SUBJECT TO (UDO SECTION 7.05) AT TIME OF DEVELOPMENT PLAN.

YARDS AND BUILDING SETBACKS

- ALONG HOLLY SPRINGS NEW HILL ROAD: 30' STREET BUFFER
- ALONG GREEN OAKS PARKWAY: 30' STREET BUFFER
- ALONG THOMAS MILL ROAD: 20' STREET BUFFER
- EAST BOUNDARY: 15' BUFFER YARD

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM



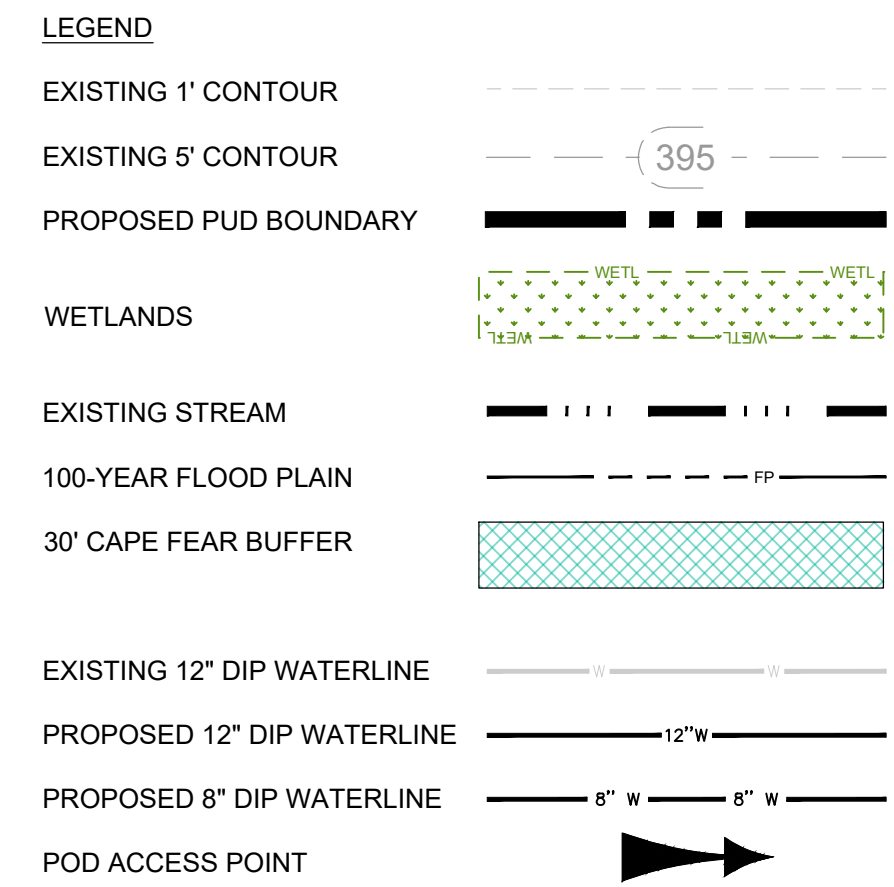
REVISION / ISSUANCE

SHEET TITLE _____

SHEET NUMBER _____

13.02

Page 584 of 609



SITE DATA:
SITE AREA: 119.31 ACRES

NOTES:
INTENT OF PLAN (PER PUD) IS TO BE A PHASED MASTER PLAN. SEE PHASING COMMITMENTS IN PUD, TIA, DEVELOPMENT AGREEMENT.

FINAL BUILDING, PARKING, AND DRIVE LOCATIONS TO BE DETERMINED WITH DEVELOPMENT PLANS.

FINAL GREENWAY ALIGNMENT TO BE DETERMINED WITH DEVELOPMENT PLAN. PHASING OF GREENWAY IMPROVEMENTS TO OCCUR PER DEVELOPMENT AGREEMENT AND PHASED WITH ADJACENT DEVELOPMENT.

FINAL ROAD IMPROVEMENTS TO BE DETERMINED WITH DEVELOPMENT PLANS AND WILL FOLLOW TIA. PHASING OF IMPROVEMENTS TO FOLLOW DEVELOPMENT AGREEMENT

INTERNAL WALKING TRAILS CAN BE THROUGHOUT THE SITE AND DO NOT HAVE TO FOLLOW GREENWAY SPECS.

YARDS AND BUILDING SETBACKS

- ALONG HOLLY SPRINGS NEW HILL ROAD: 30' STREET BUFFER
- ALONG GREEN OAKS PARKWAY: 30' STREET BUFFER
- ALONG THOMAS MILL ROAD: 20' STREET BUFFER
- EAST BOUNDARY: 15' BUFFER YARD

SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

**NOT FOR
CONSTRUCTION**

**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

[illegible]

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE

NORTH

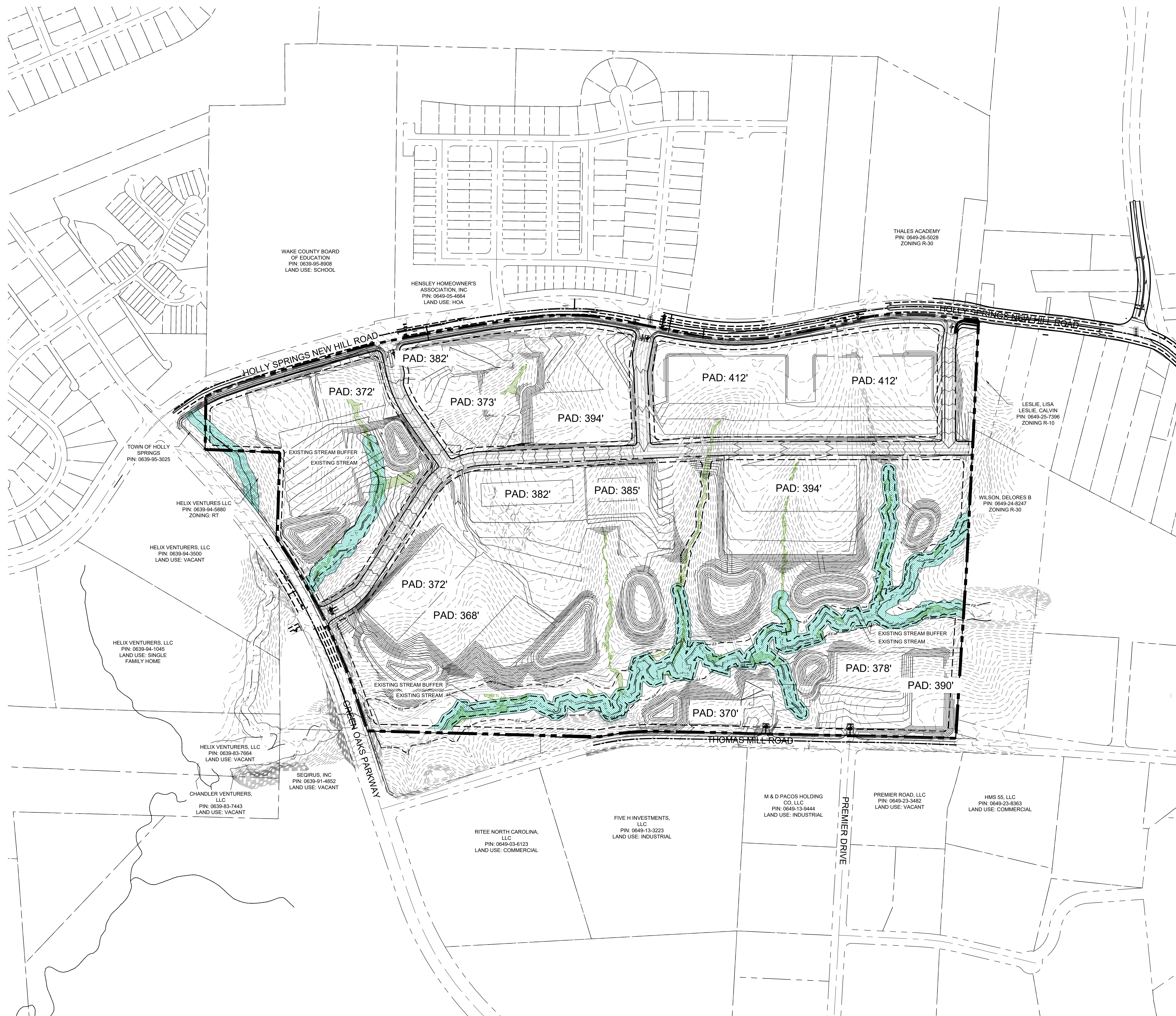
VERT: N/A
HORIZ: 1"=200'



GRADING PLAN

SHEET NUMBER _____

L4-00



LEGEND

EXISTING 2' CONTOUR

EXISTING 10' CONTOUR

PROPOSED 2' CONTOUR

PROPOSED 10' CONTOUR

PROPOSED PUD BOUNDARY

WETLANDS

EXISTING STREAM

100-YEAR FLOOD PLAIN

30' CAPE FEAR BUFFER

EXISTING 12" DIP WATERLINE

PROPOSED 12" DIP WATERLINE

PROPOSED 8" DIP WATERLINE

NOTES:

INTENT OF PLAN (PER PUD) IS TO BE A PHASED MASTER PLAN. SEE PHASING COMMITMENTS IN PUD, TIA, DEVELOPMENT AGREEMENT.

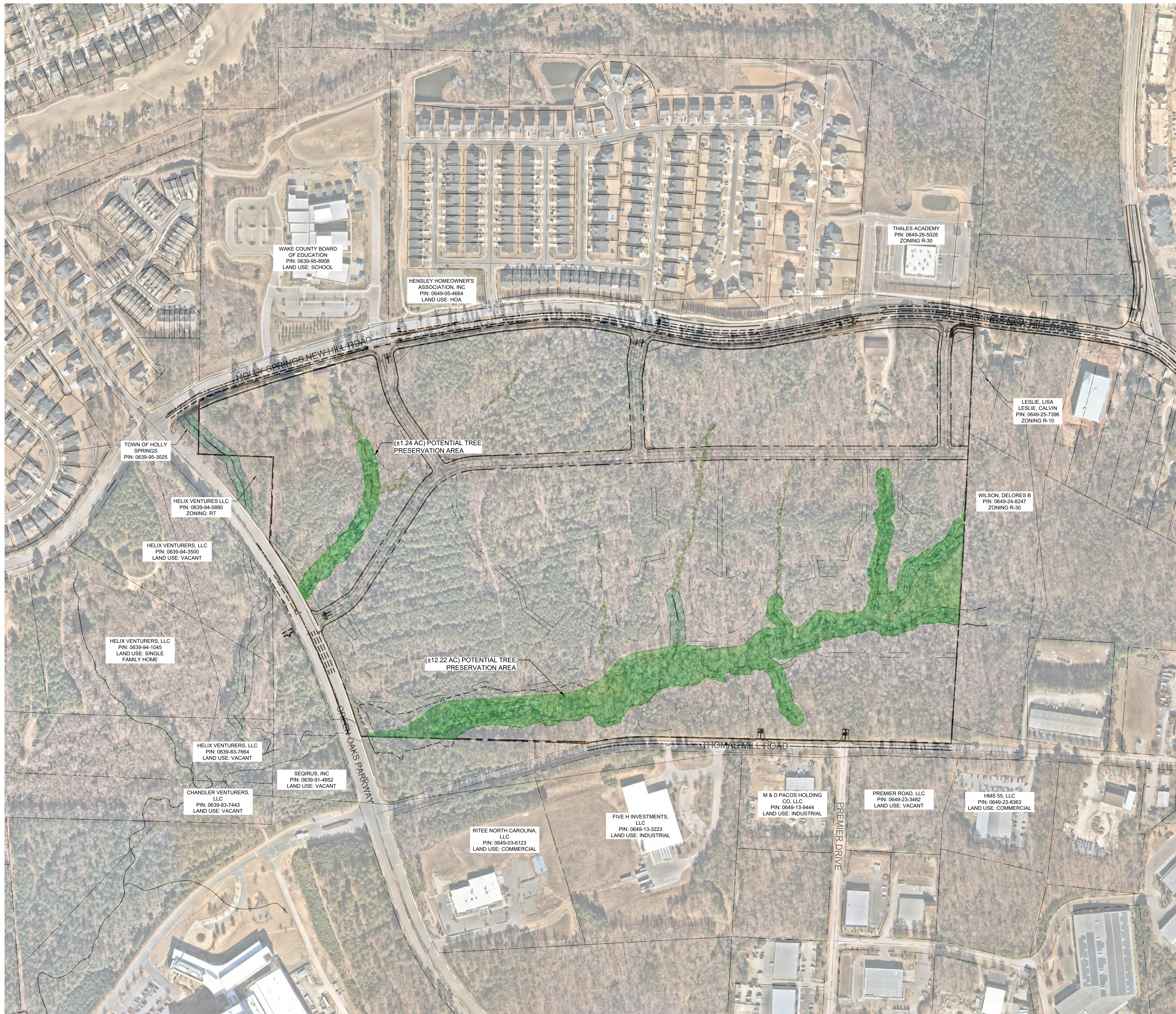
FINAL BUILDING, PARKING, AND DRIVE LOCATIONS TO BE DETERMINED WITH DEVELOPMENT PLANS.

FINAL GREENWAY ALIGNMENT TO BE DETERMINED WITH DEVELOPMENT PLAN. PHASING OF GREENWAY IMPROVEMENTS TO OCCUR PER DEVELOPMENT AGREEMENT AND PHASED WITH ADJACENT DEVELOPMENT.

FINAL ROAD IMPROVEMENTS TO BE DETERMINED WITH DEVELOPMENT PLANS AND WILL FOLLOW TIA. PHASING OF IMPROVEMENTS TO FOLLOW DEVELOPMENT AGREEMENT.

FINAL GRADING TO FOLLOW WITH SITE DEVELOPMENT PLANS. GRADING AND EARTHWORK TO BE COMPLETED IN PHASES PER DEVELOPMENT AGREEMENT.

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX



LEGEND

EXISTING 1' CONTOUR

EXISTING 5' CONTOUR

PROPOSED PUD BOUNDARY

WETLANDS

EXISTING STREAM

100-YEAR FLOOD PLAIN

30' CAPE FEAR BUFFER

EXISTING 12" DIP WATERLINE

PROPOSED 12" DIP WATERLINE

PROPOSED 8" DIP WATERLINE

POTENTIAL TREE PRESERVATION

HARDWOODS & PINES

GRASSED AREA

TREE PRESERVATION REQUIRED:
±11.91 AC

PROPOSED TREE PRESERVATION:
±11.91 AC

NOTES:

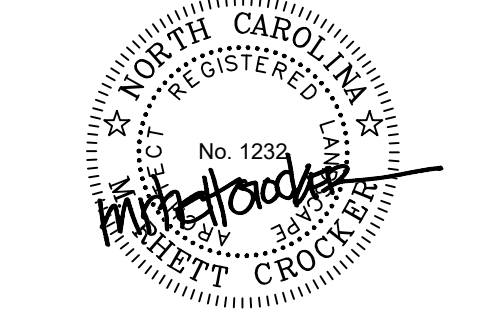
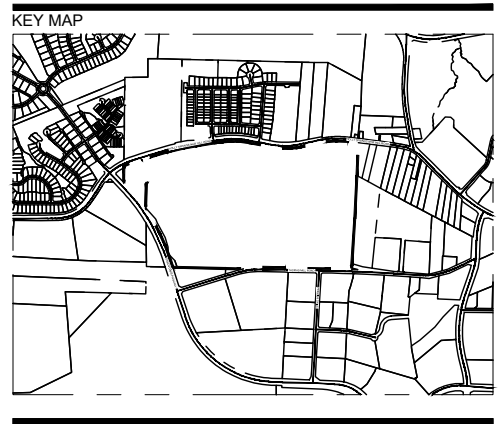
INTENT OF PLAN (PER PUD) IS TO BE A PHASED MASTER PLAN. SEE PHASING COMMITMENTS IN PUD, TIA, DEVELOPMENT AGREEMENT.

100% OF PRESERVED CANOPY WITHIN PROTECTED ENVIRONMENTAL AREAS

FINAL BUILDING, PARKING, AND DRIVE LOCATIONS TO BE DETERMINED WITH DEVELOPMENT PLANS.

FINAL GREENWAY ALIGNMENT TO BE DETERMINED WITH DEVELOPMENT PLAN. PHASING OF GREENWAY IMPROVEMENTS TO OCCUR PER DEVELOPMENT AGREEMENT AND PHASED WITH ADJACENT DEVELOPMENT.

FINAL ROAD IMPROVEMENTS TO BE DETERMINED WITH DEVELOPMENT PLANS AND WILL FOLLOW TIA. PHASING OF IMPROVEMENTS TO FOLLOW DEVELOPMENT AGREEMENT



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

NOT FOR
CONSTRUCTION

GREEN OAKS
TECH CENTER

CRESCENT COMMUNITIES

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE NORTH
VERT: N/A
HORZ: 1"=200'
0 100' 200' 400'

TREE INVENTORY PLAN

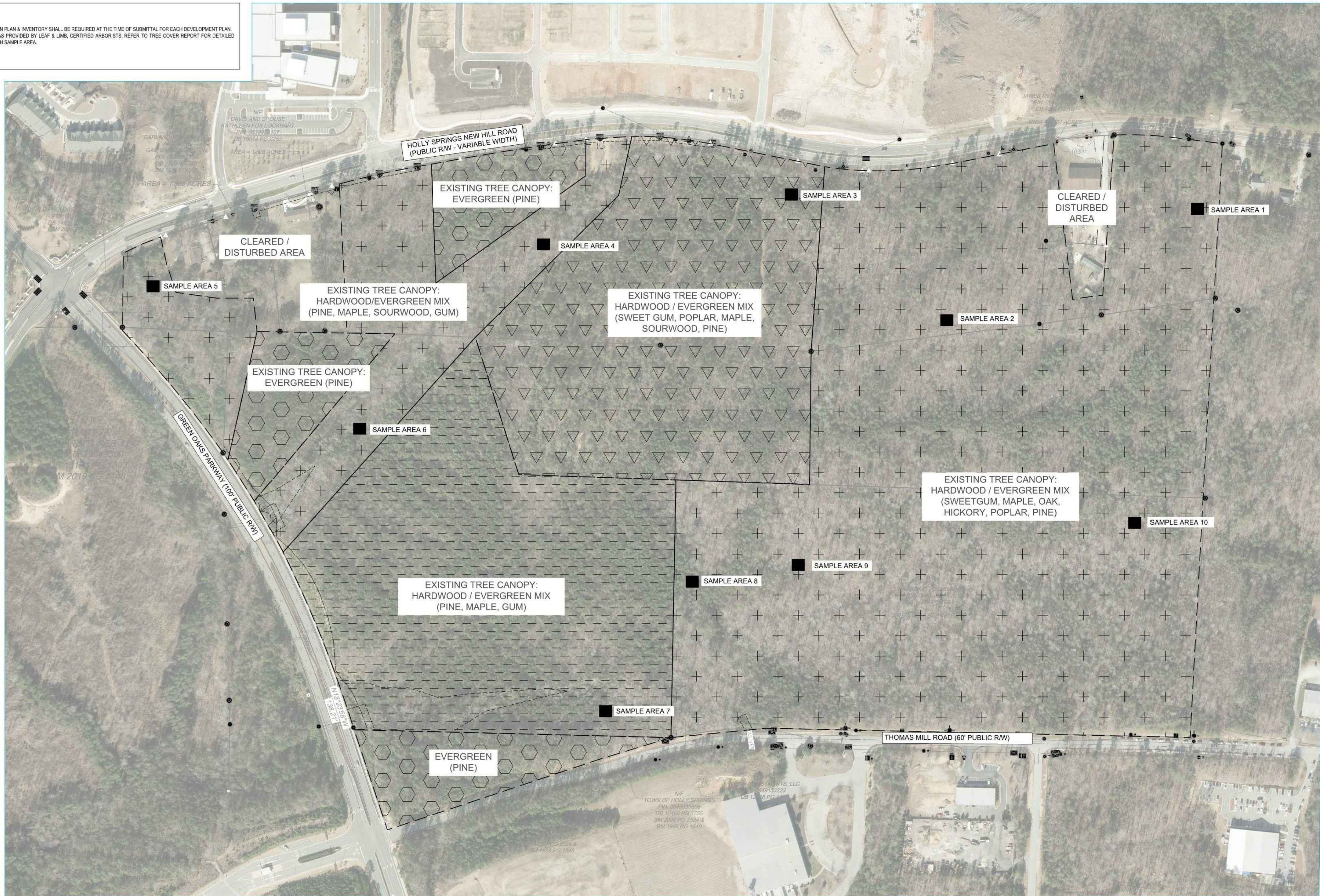
SHEET NUMBER

L5-01

395

TREE INVENTORY NOTES

1. A DETAILED TREE PRESERVATION PLAN & INVENTORY SHALL BE REQUIRED AT THE TIME OF SUBMITTAL FOR EACH DEVELOPMENT PLAN.
2. TREE INVENTORY SAMPLE AREAS PROVIDED BY LEAF & LIMB, CERTIFIED ARBORISTS, REFER TO TREE COVER REPORT FOR DETAILED VEGETATION INVENTORY IN EACH SAMPLE AREA.



SCALE 1"=150'
0 150' 300'



TIMMONS GROUP

GREEN OAKS TECH CENTER
WAKE COUNTY - NORTH CAROLINA
TREE INVENTORY PLAN

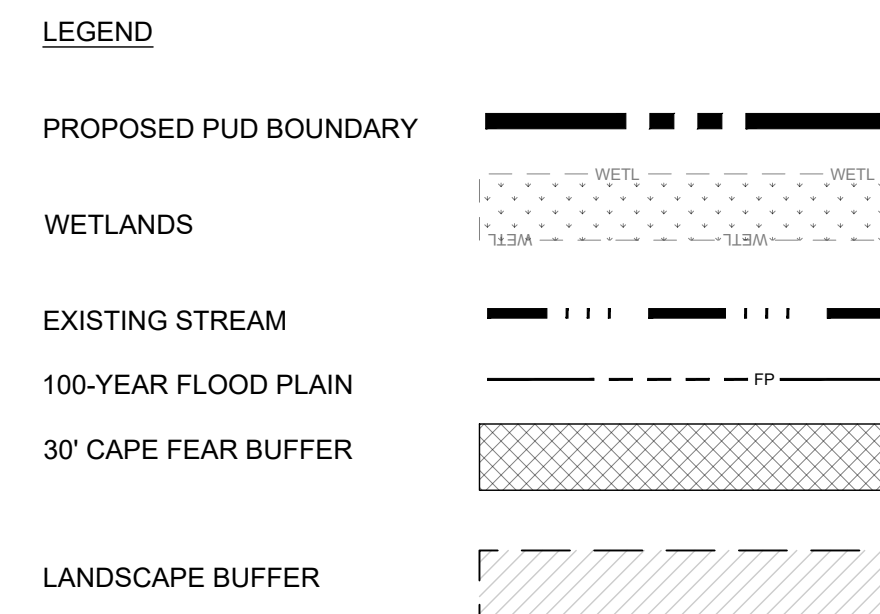
REVISION DESCRIPTION

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Timber Ridge, Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE 10/15/2021
DRAWN BY J BLASCO
DESIGNED BY B CAMU
CHECKED BY B HALL
SCALE AS SHOWN

Three plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



REQUIRED STREET TREES:

LARGE DECIDUOUS TREES (INTERIOR) 147
Street trees to be a variety of species, see below:
Willow Oak, Trident Maple, Live Oak,
Bitternut hickory, Nuttall Oak, Black Gum

NOTES:

NO SINGLE SPECIES OF LANDSCAPE MATERIAL, EXCEPT GRASS SHALL CONSTITUTE MORE THAN TWENTY FIVE (25) PERCENT OF THE PLANT MATERIAL OF ITS TYPE INSTALLED ON A SINGLE DEVELOPMENT SITE.

EXISTING BUFFER PLANTING WILL BE CONFIRMED WITH DEVELOPMENT PLAN. TREE SURVEY MUST BE PROVIDED AT TIME OF DEVELOPMENT PLAN TO CONFIRM THE REQ. PUV HAS BEEN ACHIEVED WITH EXISTING VEGETATION OR SUPPLEMENTED AND INCREMENTS WILL BE SUPPLEMENTED PER THE DETAIL.

THE MAINTENANCE OF ALL REQUIRED LANDSCAPING BY KEEPING LAWN MOWED, ALL PLANTS MAINTAINED AS DISEASE FREE, ALL PLANTING BEDS GROOMED AND KEPT WEED FREE (EXPECT, ALL PLANTING BEDS GROOMED AND KEPT WEED FREE [EXCEPT IN AREAS OF PRESERVED EXISTING NATURAL VEGETATION (I.E., THICKETS), AND KEPT FREE FROM TRASH, DEBRIS AND OTHER OBJECTIONABLE MATERIALS.

THE REPLACEMENT OF ANY REQUIRED PLANTING, WHICH IS REMOVED OR DIES AFTER THE DATE OF PLANTING. SUCH REPLACEMENT SHALL OCCUR DURING THE NEXT PLANTING SEASON

THE REPLACEMENT OF ANY TREE IN A TREE SAVE AREA, WHICH IS REMOVED OR DIES AFTER THE DATE OF APPROVAL OF A PRESERVATION LANDSCAPE PLAN. SUCH REPLACEMENT SHALL OCCUR DURING THE NEXT PLANTING SEASON.

YARDS AND BUILDING SETBACKS

- ALONG HOLLY SPRINGS NEW HILL ROAD: 30' STREET BUFFER
- ALONG GREEN OAKS PARKWAY: 30' STREET BUFFER
- ALONG THOMAS MILL ROAD: 20' STREET BUFFER
- EAST BOUNDARY: 15' BUFFER YARD

NOTES:

* 30' ALONG NEW HILL HOLLY SPRINGS ROAD AND GREEN OAKS PARKWAY. THE BUFFER IS DESIGNED TO INTERMITTENTLY SCREEN THE DEVELOPMENT FROM EACH OF THE SURROUNDING STREETS, WITH TREES REQUIRED FIFTY (50) FOOT ON CENTER AND LARGE SHRUBS FOUR (4) FEET ON CENTER.

** 20' ALONG THOMAS MILL ROAD. THE BUFFER IS DESIGNED TO INTERMITTENTLY SCREEN THE DEVELOPMENT FROM EACH OF THE SURROUNDING STREETS, WITH TREES REQUIRED FIFTY (50) FOOT ON CENTER AND LARGE SHRUBS FOUR (4) FEET ON CENTER.



DECIDUOUS TREES
Per Town of Holly Springs
Comprehensive Plan, alternate large and small trees specified below:
1) Holly Springs New Hill Road - Willow Oak/Sourwood
2) Green Oaks - Pin Oak/Okame Cherry
3) Thomas Mill Rd. (Not a part of Comprehensive Plan) - Nuttall Oak/Biloxi Crape Myrtle (single stem)

SHRUBS
Cluster groups of species specified below:
1) Chindo Viburnum, Red Chokeberry, Large Fothergilla, Mountain Laurel



<u>SOD</u>	522 sf
-	
<u>RE-ESTABLISH FOREST FLOOR</u>	1,478 sf
-	

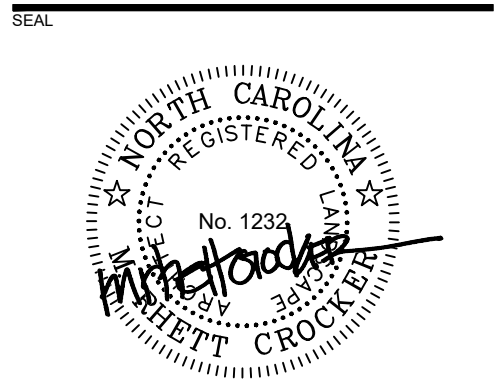
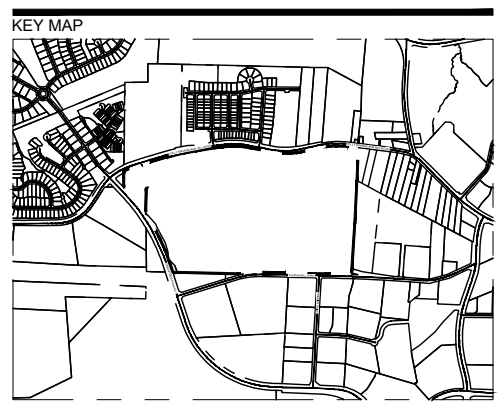
CONCEPT PLANT SCHEDULE 15' TYPE C-225 BUFFER

LARGE EVERGREEN TREE
Cluster groups of species specified below:
1) Deodar cedar, American holly, White Pin, Live Oak
-

 **SHRUBS**
Cluster groups of species specified below:
1) Chindo Viburnum, Red Chokeberry, Large Fothergilla, Mountain Laurel
•

HOLLY SPRINGS NEW HILL ROAD 1"=20'
GREEN OAKS PARKWAY
THOMAS MILL ROAD

EASTERN BOUNDARY 1"=20'



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

**NOT FOR
CONSTRUCTION**

**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

LANDDESIGN PROJ# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

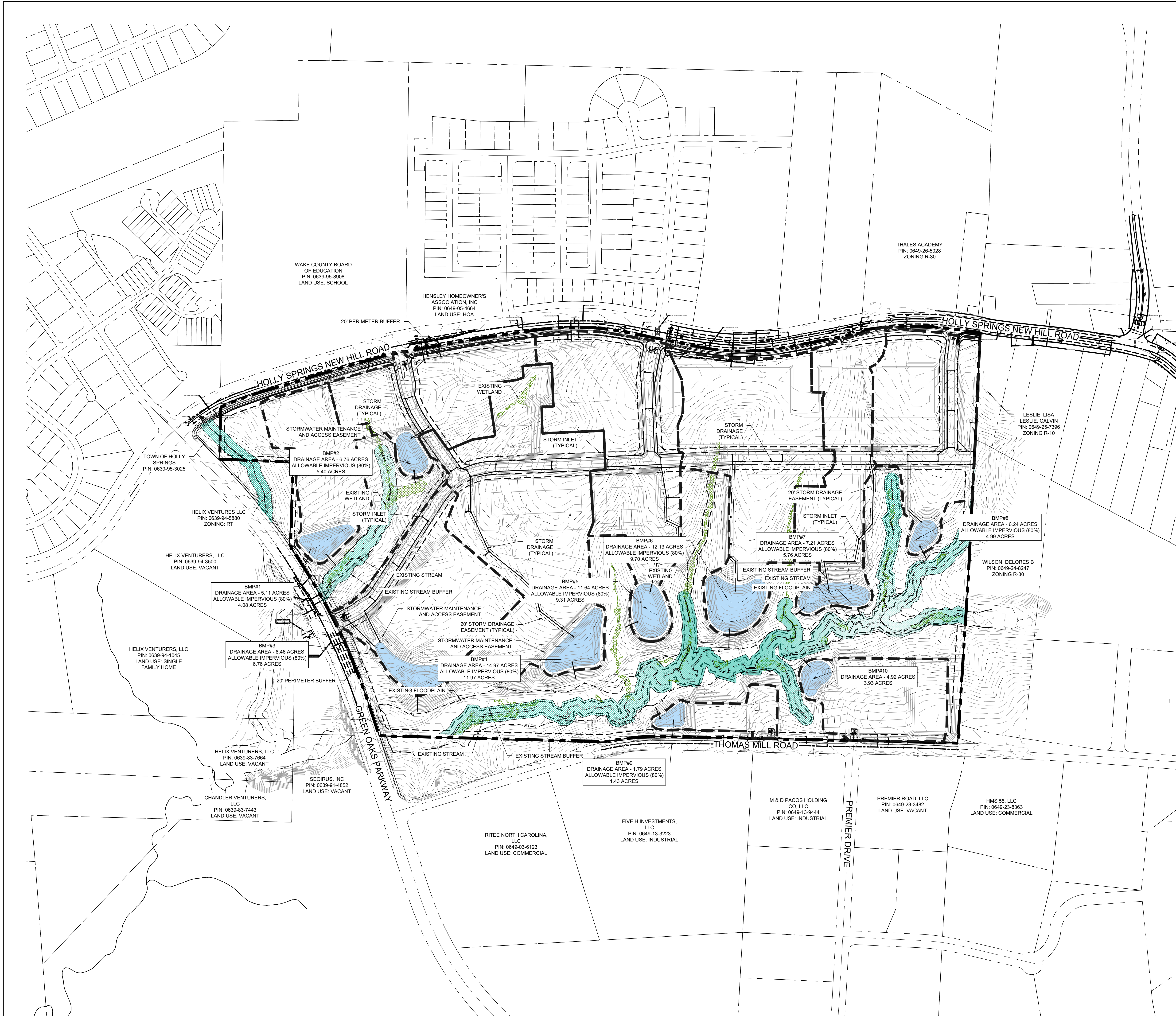
DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE
VERT: N/A
HORZ: 1"=200'
0 100' 200' 400'

STORMWATER PLAN

SHEET NUMBER

L7-00



**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

[illegible]

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE

NORTH

VERT: N/A
HORZ: 1"=200'

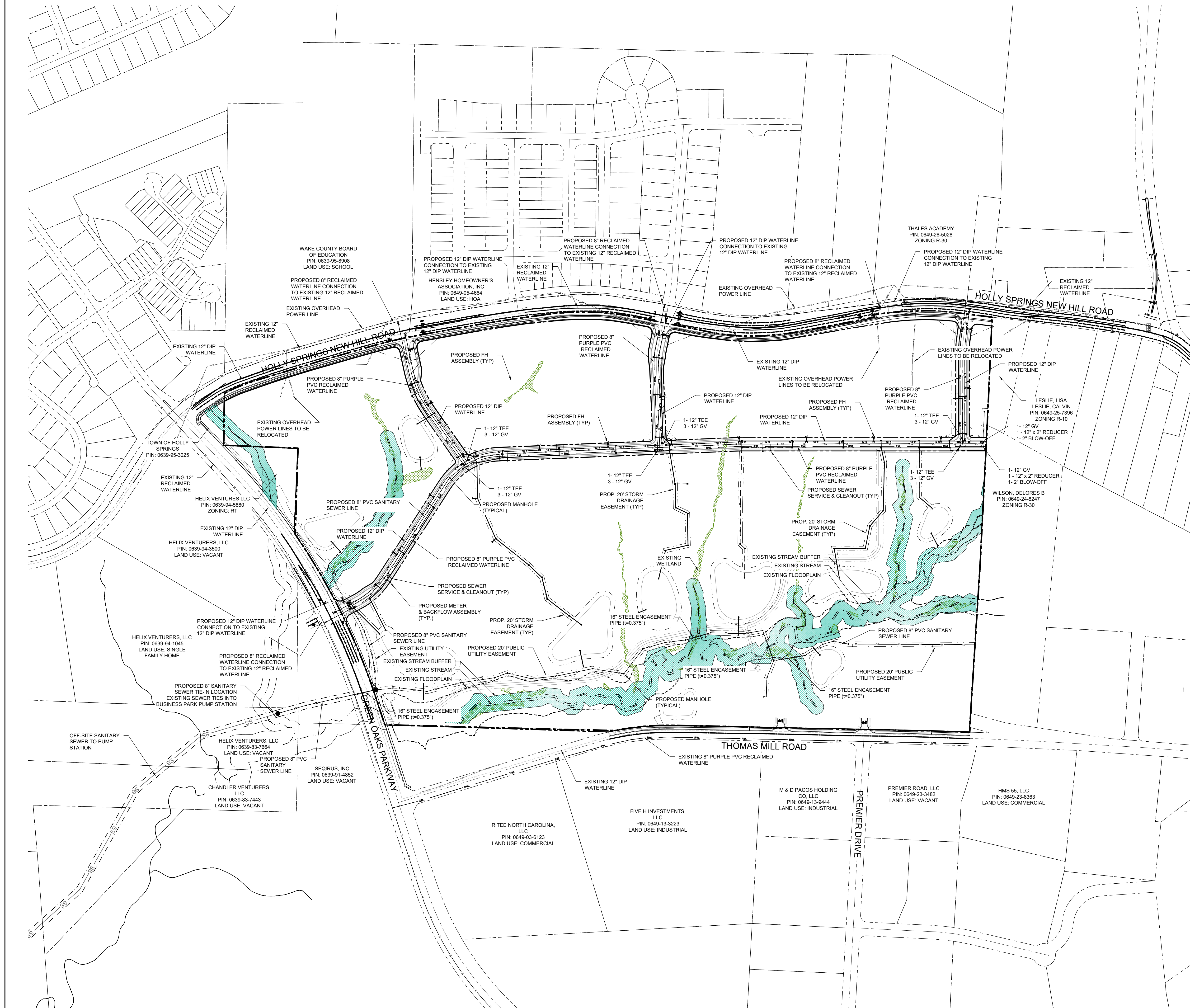
0 100' 200' 400'

SHEET TITLE

UTILITY PLAN

SHEET NUMBER _____

L8-00



PROJECT _____

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

VERT: N/A
HORZ: 1"=200'

UTILITY PLAN
ENLARGEMENT

18-01

Page 591 of 6



PROJECT _____

[illegible]

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

VERT: N/A

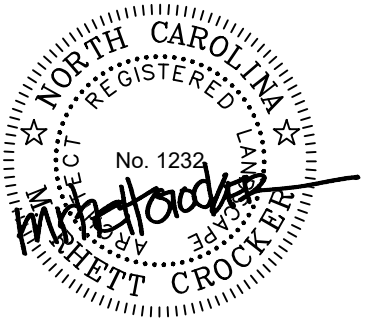
0 100' 200' 400'

SHEET TITLE _____

STUDENT LEAN ENLARGEMENT

SHEET NUMBER _____

L8-02



SEAL INCLUDED FOR PUD
REZONING APPROVAL ONLY.
DRAWINGS ARE PRELIMINARY AND
NOT INTENDED FOR
CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

**NOT FOR
CONSTRUCTION**

**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

[illegible]

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE NORTH

VERT: N/A
HORIZ: NTS

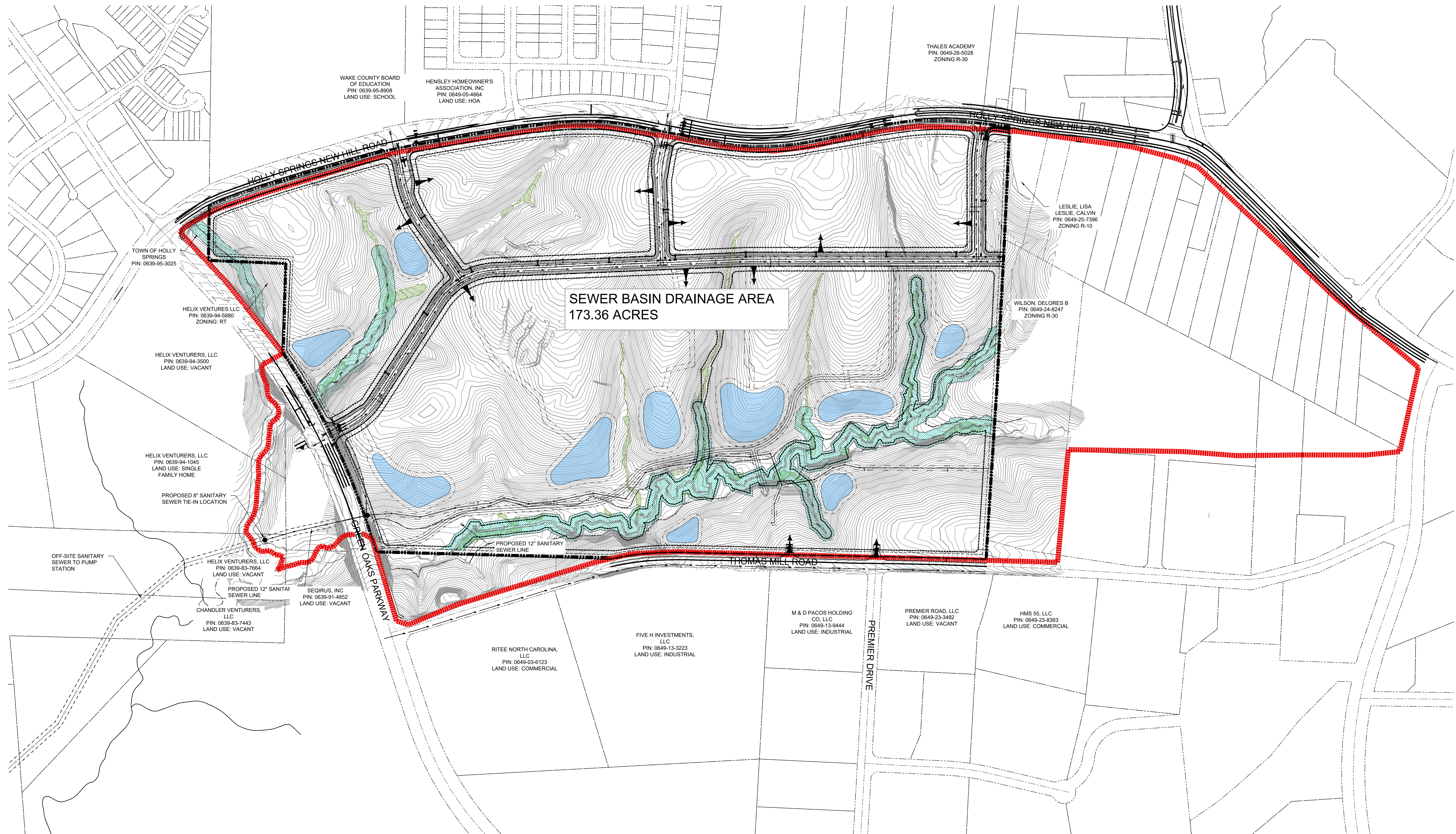
(NOT TO SCALE)

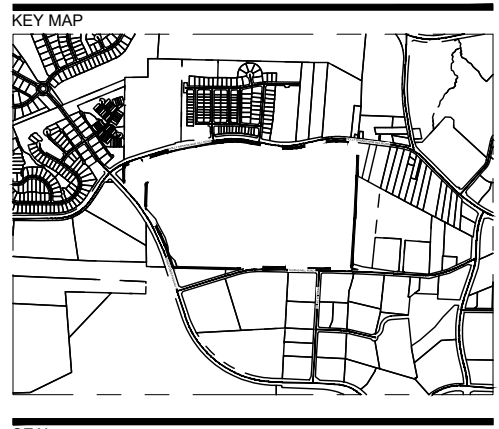
SHEET TITLE

SEWER BASIN EXHIBIT

SHEET NUMBER _____

L9-00





SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

**NOT FOR
CONSTRUCTION**

**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: XX
DRAWN BY: XX
CHECKED BY: XX

SCALE
VERT: N/A
HORZ: 1"=200'
0 100' 200' 400'

SHEET TITLE

DEV. PHASING PLAN

SHEET NUMBER

L10-00

- LEGEND**
- EXISTING 1" CONTOUR
EXISTING 5' CONTOUR
PROPOSED PUD BOUNDARY
WETLANDS
EXISTING STREAM
100-YEAR FLOOD PLAIN
30' CAPE FEAR BUFFER
EXISTING 12" DIP WATERLINE
PROPOSED 12" DIP WATERLINE
PROPOSED 8" DIP WATERLINE

- PHASE 1 ROADS
PHASE 2 ROADS
PHASE 3 ROADS
ROADS TO BE PHASED WITH ADJACENT
POD DEVELOPMENT.

NOTES:
INTENT OF PLAN (PER PUD) IS TO BE A PHASED MASTER
PLAN. SEE PHASING COMMITMENTS IN PUD, TIA,
DEVELOPMENT AGREEMENT.

FINAL BUILDING, PARKING, AND DRIVE LOCATIONS TO BE
DETERMINED WITH DEVELOPMENT PLANS.

FINAL GREENWAY ALIGNMENT TO BE DETERMINED WITH
DEVELOPMENT PLAN. PHASING OF GREENWAY
IMPROVEMENTS TO OCCUR PER DEVELOPMENT
AGREEMENT AND PHASED WITH ADJACENT
DEVELOPMENT.

FINAL ROAD IMPROVEMENTS TO BE DETERMINED WITH
DEVELOPMENT PLANS AND WILL FOLLOW TIA. PHASING
OF IMPROVEMENTS TO FOLLOW DEVELOPMENT
AGREEMENT

PHASING INFRASTRUCTURE AND AREAS AREA SHOWN
CONCEPTUALLY AND CAN CHANGE WITH FINAL
DEVELOPMENT PLANS PER PUD. ASSUMED ADJACENT
INFRASTRUCTURE TO BE IMPLEMENTED WITH PHASED
AREAS PER DEVELOPMENT AGREEMENT.

REFER TO TIA AND PHASING MEMO FOR ADDITIONAL
INFORMATION.

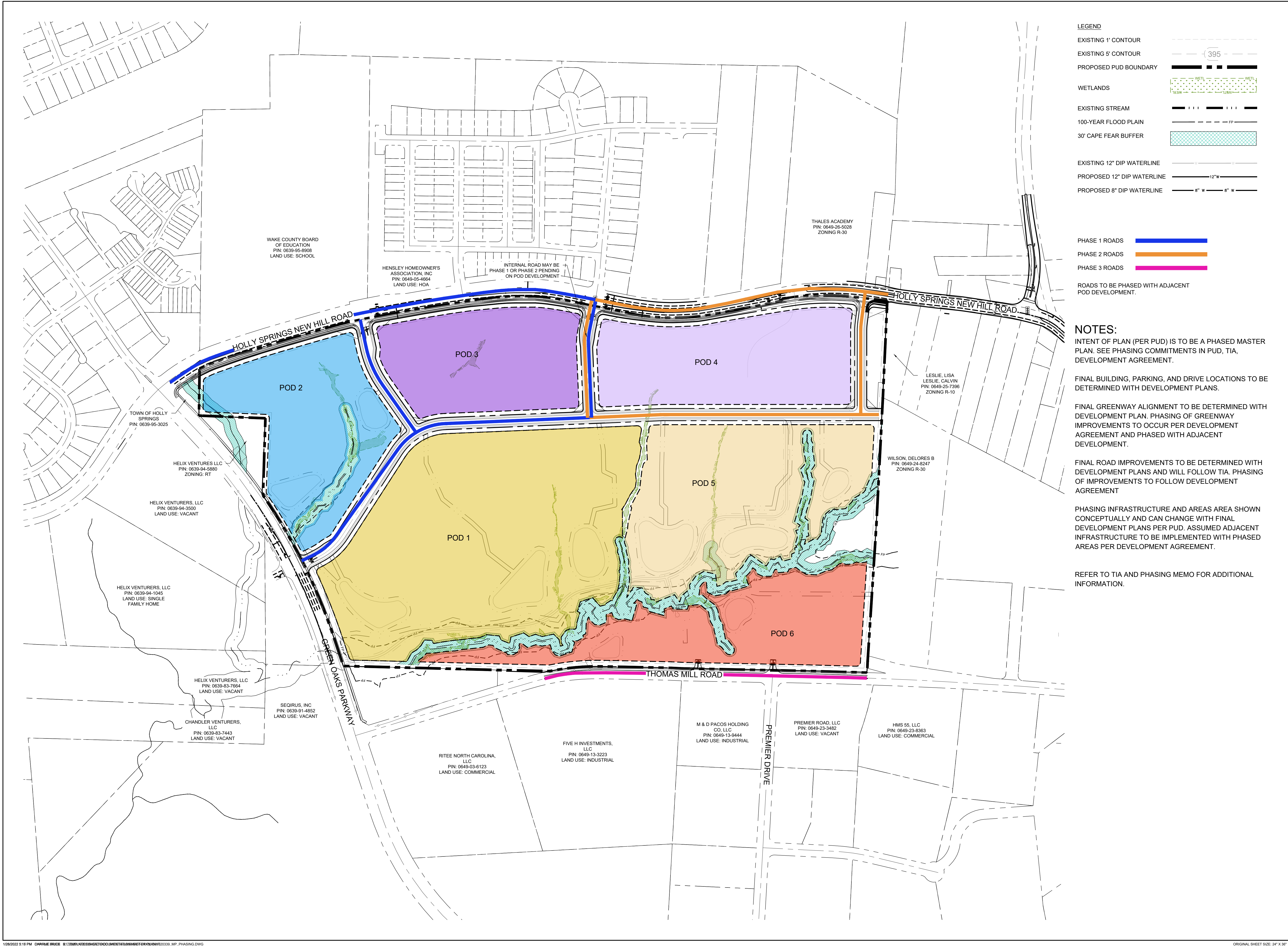
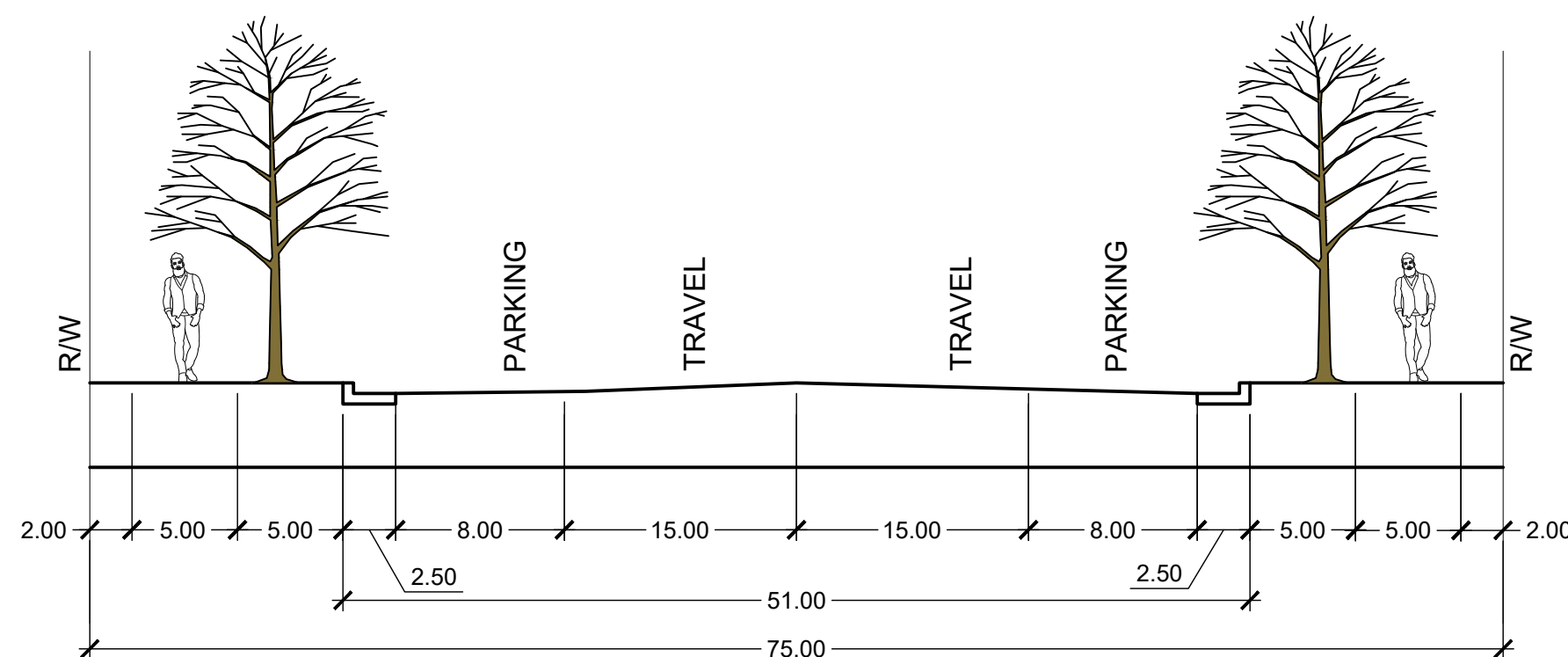


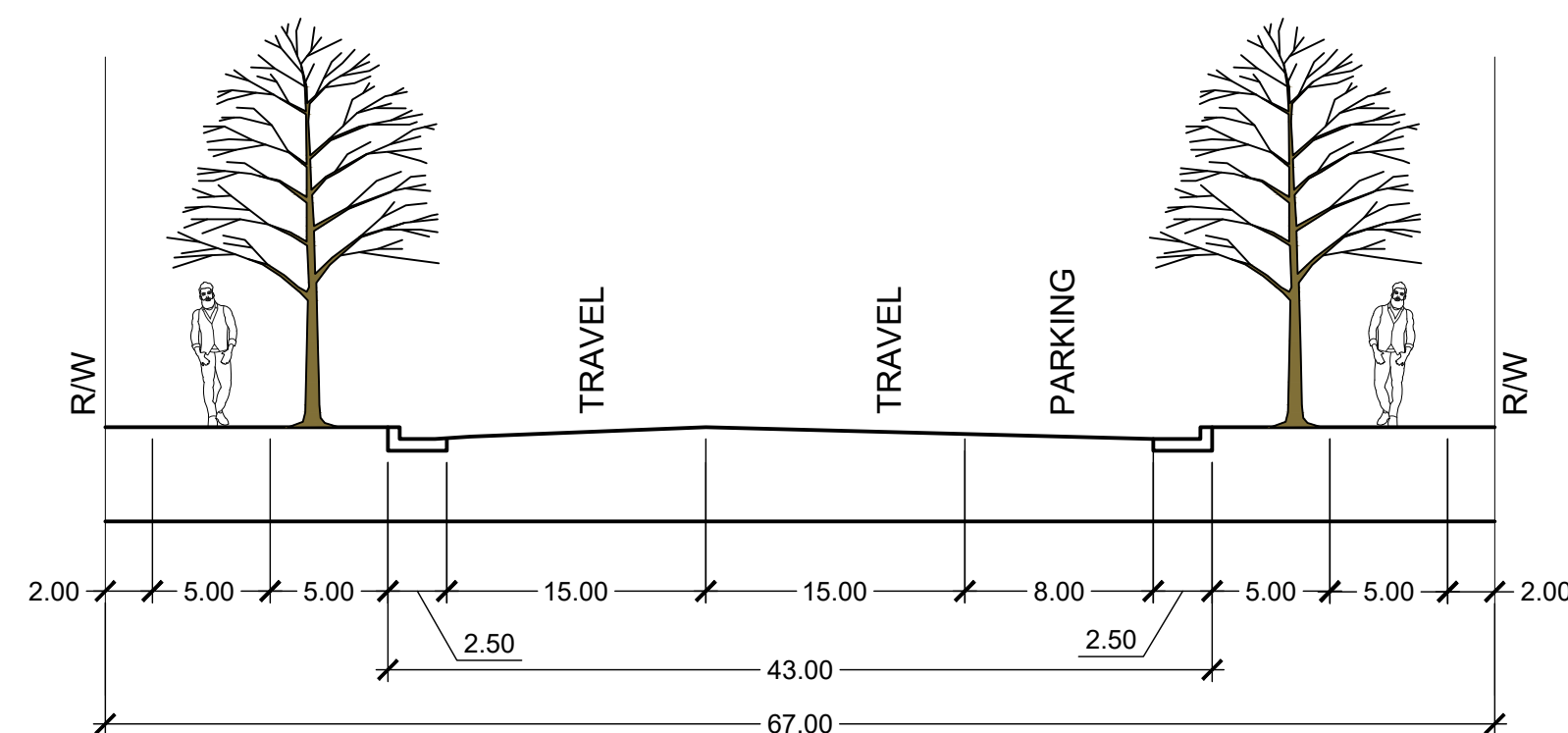


Figure 10.10 is a cross-sectional diagram of a two-lane highway. The diagram shows two travel lanes, each 12 ft wide, separated by a 2 ft median. The total width of the highway is 59 ft. The shoulders on both sides are 10 ft wide, consisting of a 2.5 ft paved shoulder and a 7.5 ft unpaved shoulder. The diagram also shows trees and a person on the shoulders for scale.

OPTION A
NO ON-STREET PARKING
59' RIGHT-OF-WAY
(BASED OFF DETAIL HS305A)



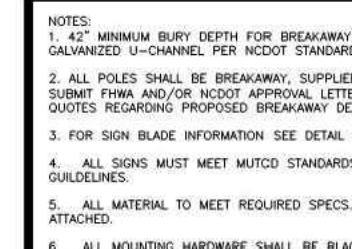
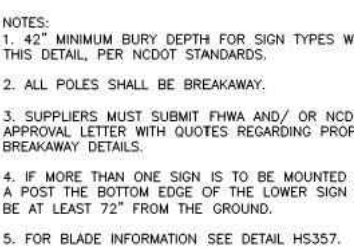
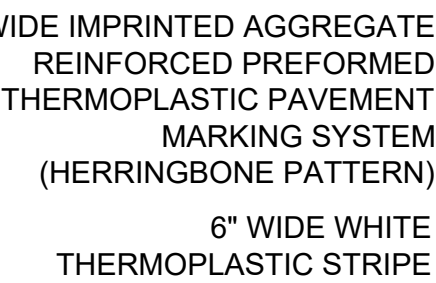
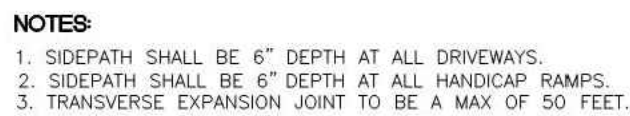
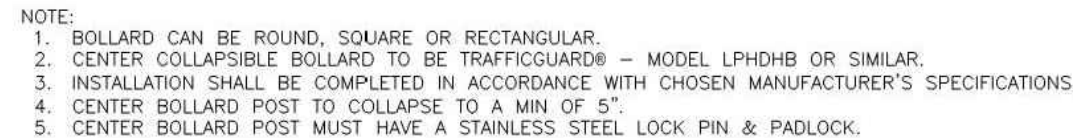
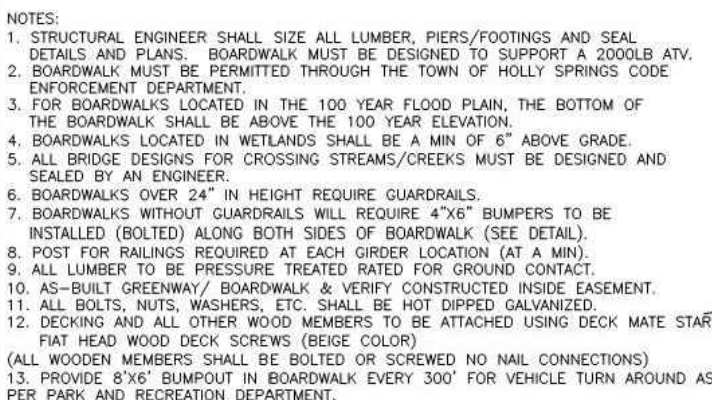
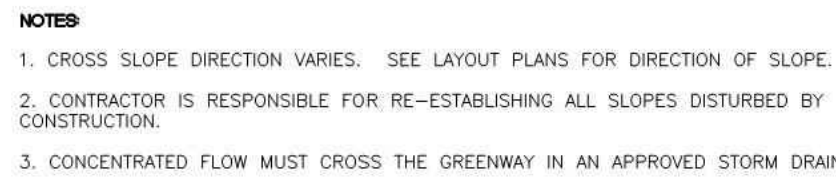
OPTION B:
IF ON-STREET PARKING BOTH SIDES IS DESIRED BY DEVELOPER
75' RIGHT-OF-WAY
51' BACK OF CURB TO BACK OF CURB
(BASED OFF DETAIL HS305B)



OPTION C:
IF ON-STREET PARKING ONE SIDE IS DESIRED BY DEVELOPER
67' RIGHT-OF-WAY
43' BACK OF CURB TO BACK OF CURB
(BASED OFF DETAIL HS305B)

NOTES:

- STREETS TO BE DETERMINED AS PRIVATE OR ADJACENT SITE DEVELOPMENT OCCURS.
- ALL ROADWAYS WILL BE REQUIRED TO MEET ALL SPECIAL DESIGN REQUIREMENTS AS OUTLINED IN THE ENGINEERING DESIGN AND CONSTRUCTION STANDARDS SECTION 3.02J.
- PAVEMENT DESIGN WILL REQUIRE NCDOT APPROVAL. THE MOST RESTRICTIVE CROSS-SECTION BETWEEN THE MINIMUM DESIGN, CALCULATED PAVEMENT DESIGN, TRIASSIC DESIGN, AND NCDOT WILL APPLY.



SEMI



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

PROJECT

CRESCENT COMMUNITIES

00-000-00-00

[illegible]

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE NORTH

VERT: N/A
HORZ:

SHEET TITLE

SITE DETAILS

SHEET NUMBER

L11-01

KEY MAP

SEAL



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

**NOT FOR
CONSTRUCTION**

PROJECT

**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

000000

0000-0000-0000-0000

LANDDESIGN PROJ.#

1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE NORTH

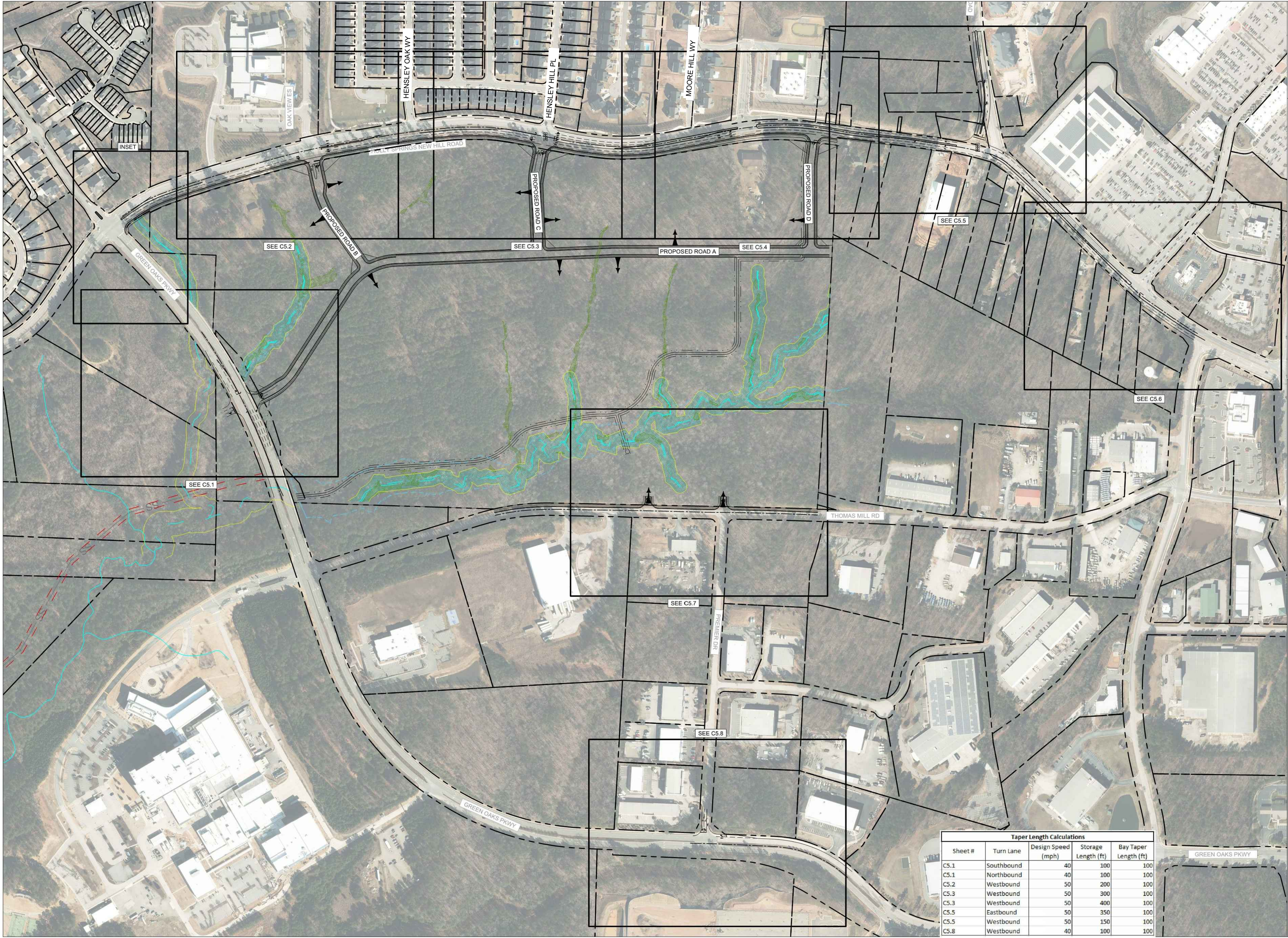
VERT: N/A
HORZ:

SHEET TITLE

SITE DETAILS

SHEET NUMBER

L11-02



NOT FOR CONSTRUCTION

THIS DRAWING PREPARED AT THE OFFICE OF TIMMONS GROUP, 5410 Trinity Road, Suite 102, Raleigh, NC 27607, TEL 919.866.4951, FAX 919.833.8124, www.timmons.com

REVISION DESCRIPTION

DATE

11/09/2021

T MORRISON

T MORRISON

T MORRISON

B HALL

SCALE AS SHOWN

YOUR VISION ACHIEVED THROUGH OURS.

DATE

11/09/2021

T MORRISON

T MORRISON

T MORRISON

B HALL

SCALE AS SHOWN

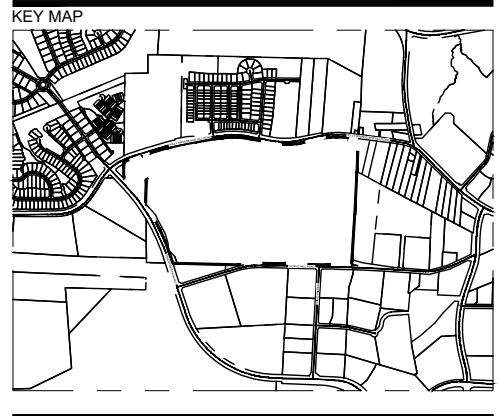
GREEN OAKS TECH CENTER

WAKE COUNTY - NORTH CAROLINA

OVERALL ROAD IMPROVEMENTS

JOB NO. 47690

SHEET NO. C5.0



SEAL INCLUDED FOR MASTER PLAN APPROVAL ONLY. DRAWINGS ARE PRELIMINARY AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSE.

NOT FOR CONSTRUCTION

GREEN OAKS TECH CENTER

CRESCENT COMMUNITIES

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE: NORTH
VERT: N/A
HORZ: AS NOTED

OVERALL ROADWAY IMPROVEMENTS

L12-00

SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

**NOT FOR
CONSTRUCTION**

**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE		
NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE NORTH

VERT: N/A
HORZ: AS NOTED

A circular symbol with a vertical line and two diagonal lines forming an arrow pointing upwards, indicating North.

SHEET TITLE

ROADWAY IMPROVEMENTS
ENLARGEMENT

SHEET NUMBER

L12-01





NOT FOR
CONSTRUCTION

THIS DRAWING PREPARED AT THE
BALLEIGH OFFICE
5141 E. Main Street, Suite 200, Raleigh, NC 27607
TEL 919.866.0921 FAX 919.833.8128 www.timmons.com

REVISION DESCRIPTION

DATE

11/09/2021

DRAWN BY

T MORRISON

DESIGNED BY

T MORRISON

CHECKED BY

B HALL

SCALE

AS SHOWN

TIMMONS GROUP

GREEN OAKS TECH CENTER
WAKE COUNTY - NORTH CAROLINA

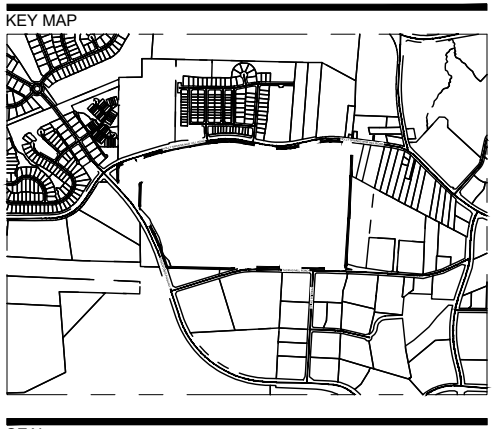
ROAD IMPROVEMENTS

JOB NO.

47690

SHEET NO.

C5.2



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

NOT FOR
CONSTRUCTION

GREEN OAKS
TECH CENTER

CRESCENT COMMUNITIES

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

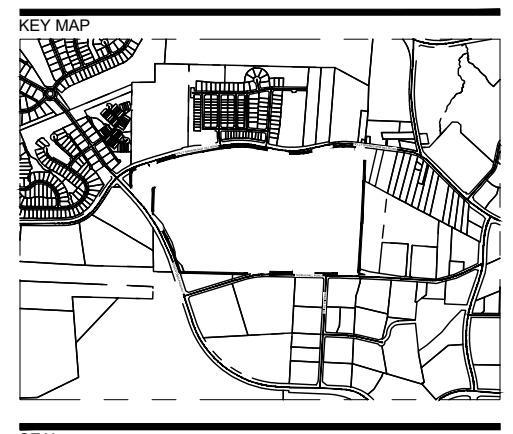
NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE: NORTH
VERT: N/A
HORZ: AS NOTED

SHEET TITLE
ROADWAY IMPROVEMENTS
ENLARGEMENT

SHEET NUMBER
L12-02



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

**NOT FOR
CONSTRUCTION**

**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

00000000

1000 1000 1000 1000

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE NORTH

VERT: N/A
HORZ: AS NOTED

A circular symbol with a black border and a white interior. Inside the circle is a black arrow pointing straight up, representing North.

SHEET TITLE

ROADWAY IMPROVEMENTS
ENLARGEMENT

SHEET NUMBER

L12-03



NOT FOR
CONSTRUCTION

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Suite 102 | Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE				
	DATE			
	11/09/2021			

DRAWN BY
T MORRISON

DESIGNED BY
T MORRISON

CHECKED BY
B HALL

SCALE
AS SHOWN

--	--

TIMMONS GROUP

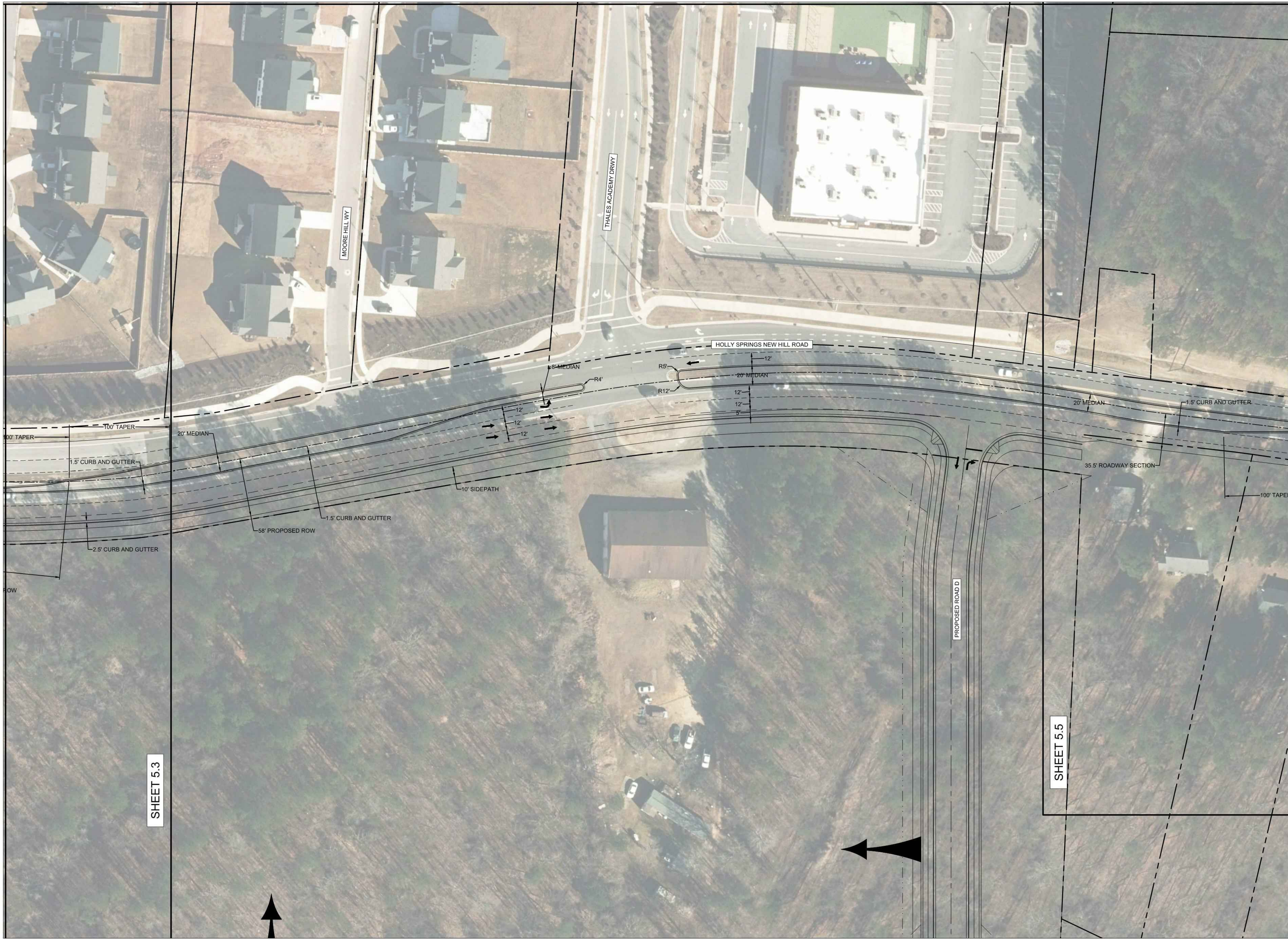
GREEN OAKS TECH CENTER
WAKE COUNTY - NORTH CAROLINA

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

JOB NO.

4769

SHEET NO
05.0



SHEET 5.3

SHEET 5.5

TIMMONS GROUP

NOT FOR
CONSTRUCTION

THIS DRAWING PREPARED AT THE
BALDWIN OFFICE
5410 Trinity Road, Suite 102 | Raleigh, NC 27607
TEL 919.886.4951 FAX 919.883.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

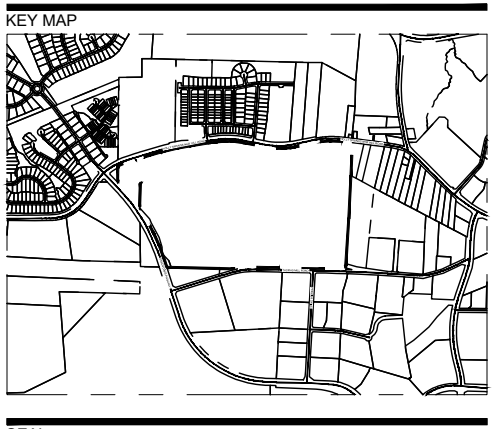
DATE	DATE
11/09/2021	
DRAWN BY	T MORRISON
DESIGNED BY	T MORRISON
CHECKED BY	B HALL
SCALE	AS SHOWN

GREEN OAKS TECH CENTER
WAKE COUNTY - NORTH CAROLINA

ROAD IMPROVEMENTS

JOB NO.
47690
SHEET NO.
C5.4

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, including, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

NOT FOR
CONSTRUCTION

GREEN OAKS
TECH CENTER

CRESCENT COMMUNITIES

LANDDESIGN PROJ# 1020339

REVISION / ISSUANCE

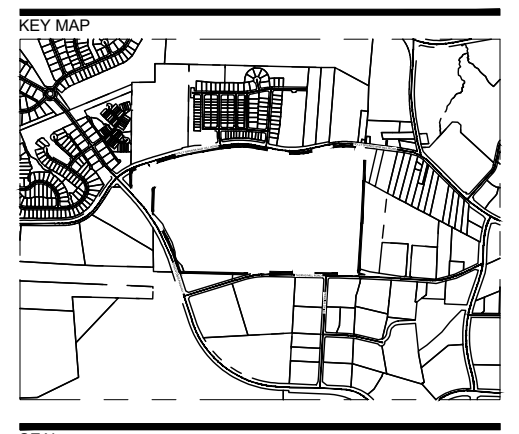
NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE: NORTH
VERT: N/A
HORZ: AS NOTED

SHEET TITLE
ROADWAY IMPROVEMENTS
ENLARGEMENT

SHEET NUMBER
L12-04



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

**NOT FOR
CONSTRUCTION**

**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

100 100 100 100

[illegible]

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE NORTH

VERT: N/A
HORZ: AS NOTED

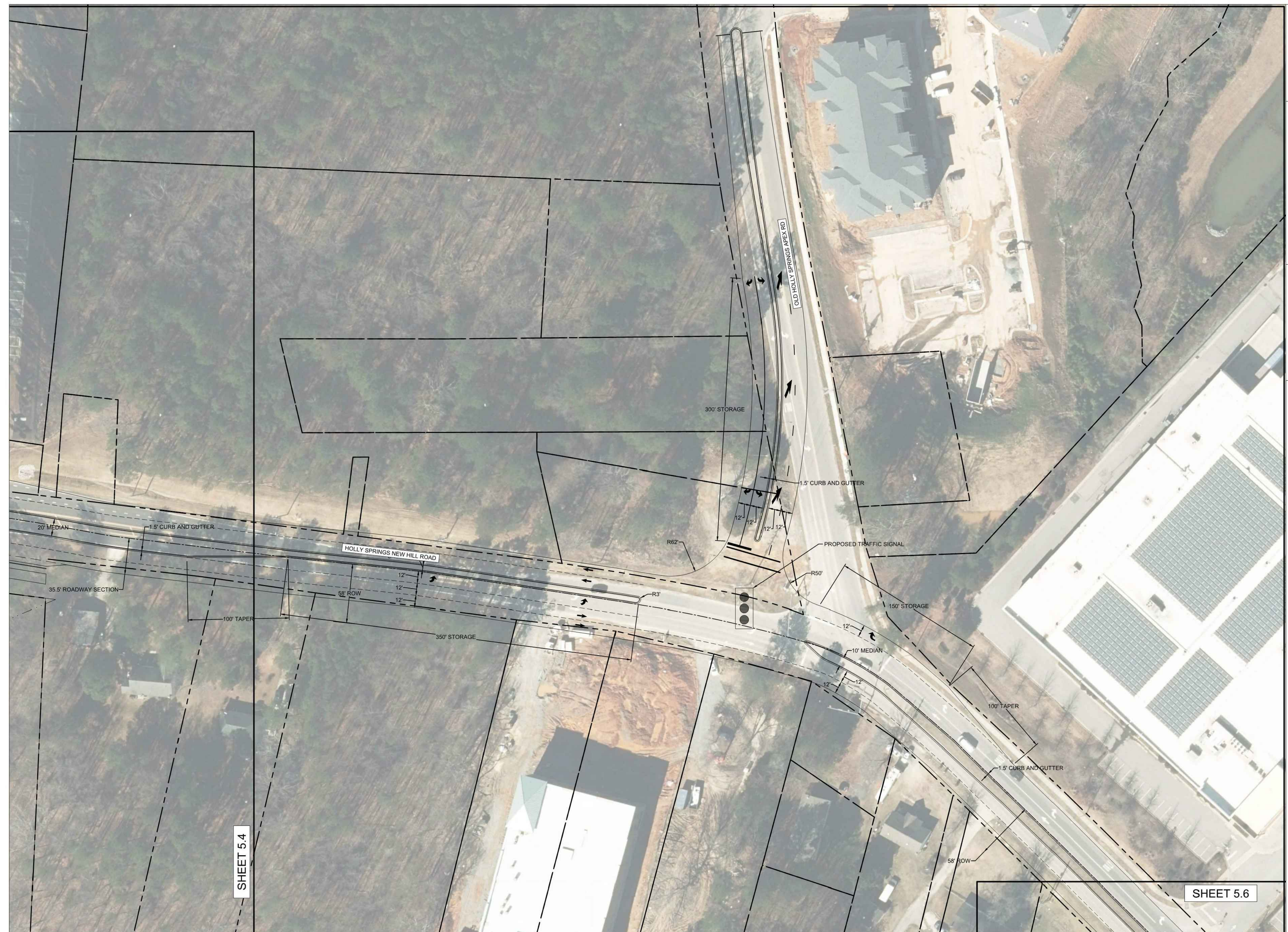
A circular symbol with a vertical line and two diagonal lines branching out from the top, representing a north arrow pointing upwards.

SHEET TITLE

ROADWAY IMPROVEMENTS
ENLARGEMENT

SHEET NUMBER

L12-05



NOT FOR
CONSTRUCTION

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Suite 102 | Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE				
	DATE			
	11/09/202			

DRAWN BY

T MORRIS

DESIGNED BY

T MORRIS

B. HALL

B HALL
SCALE

AS SHOWN

TIMMONS GROUP 

GREEN OAKS TECH CENTER
WAKE COUNTY - NORTH CAROLINA

WAKE COUNTY - NORTH CAROLINA

ROAD IMPROVEMENTS

JOB NO.
47690

SHEET NO.
C5.5

SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

**NOT FOR
CONSTRUCTION**

**GREEN OAKS
TECH CENTER**

RESCENT COMMUNITIE

1000 1000 1000 1000

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

[illegible]

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE NORTH

VERT: N/A
HORZ: AS NOTED

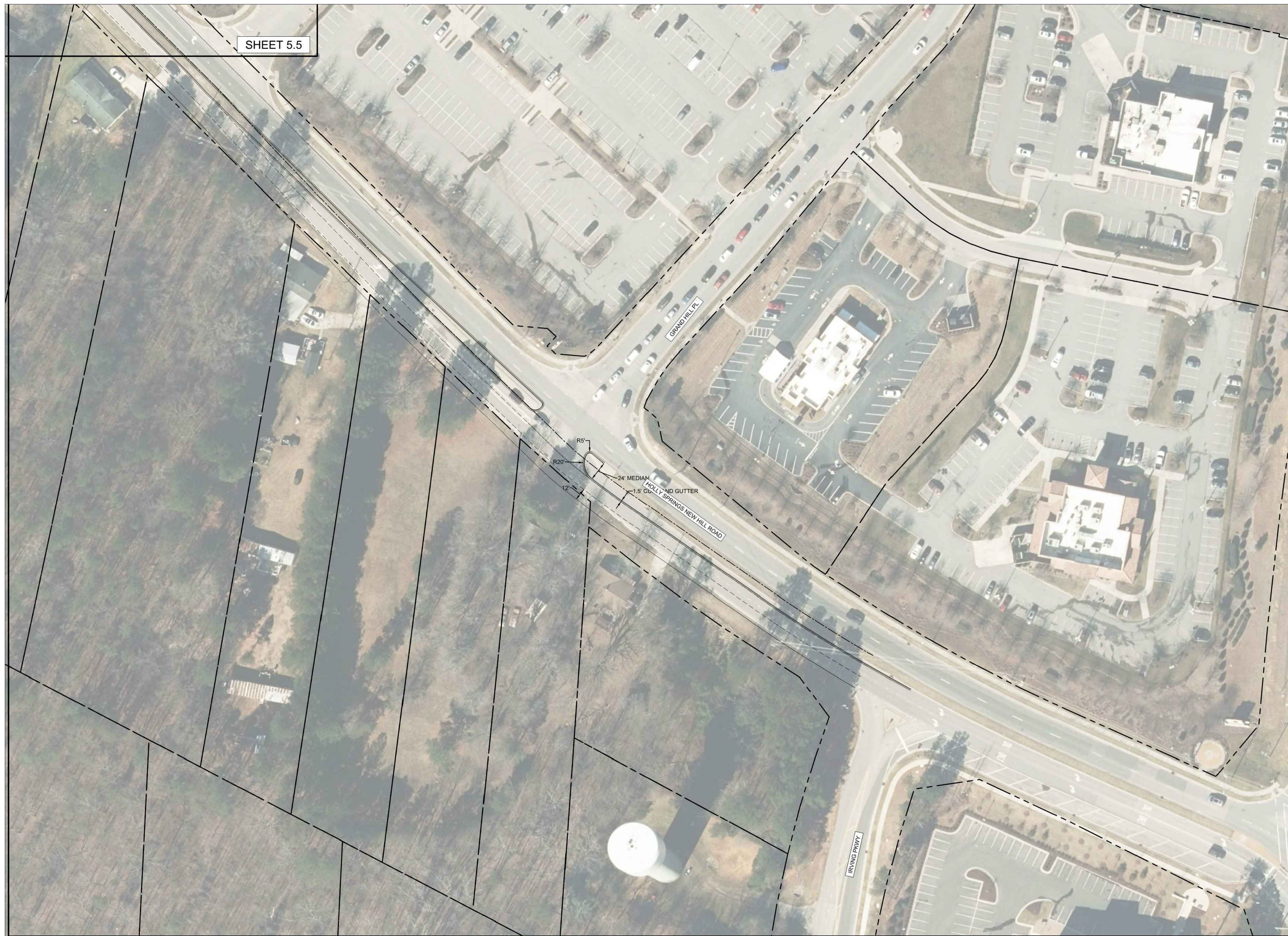
A circular symbol with a vertical line and a horizontal line intersecting at the center, forming a crosshair. The vertical line is slightly longer than the horizontal line, and the circle is centered on the intersection.

SHEET TITLE

ROADWAY IMPROVEMENTS
ENLARGEMENT

SHEET NUMBER

L12-06



TIMMONS GROUP 

NOT FOR
CONSTRUCTION

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Suite 102 | Raleigh, NC 27607
919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

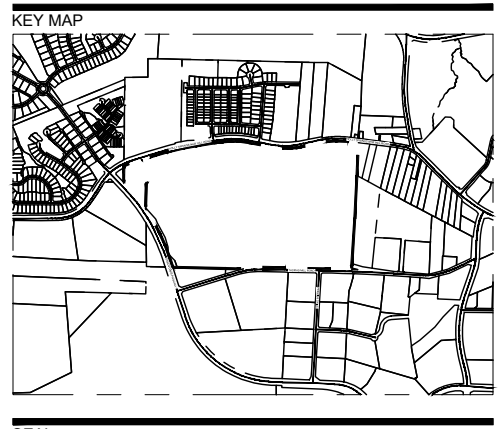
GREEN OAKS TECH CENTER

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

OAKS TE
WAKE COUNTY - NORTH
ROAD IMPROVEMENTS

JOB NO.
4769

SHEET NO.
C5.6



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

NOT FOR
CONSTRUCTION

PROJECT

GREEN OAKS
TECH CENTER

CRESCENT COMMUNITIES

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE: NORTH
VERT: N/A
HORZ: AS NOTED

SHEET TITLE

ROADWAY IMPROVEMENTS
ENLARGEMENT

SHEET NUMBER

L12-07



TIMMONS GROUP

NOT FOR
CONSTRUCTION

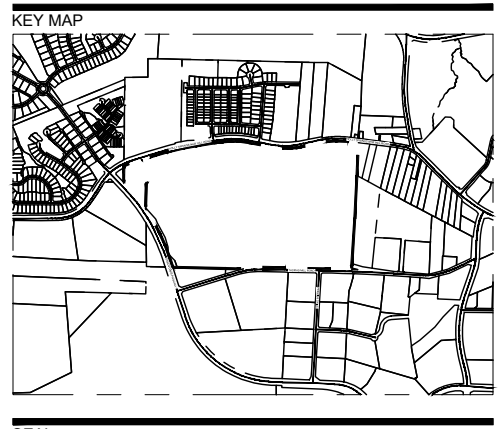
THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
6515 Spring Road, Suite 100, Raleigh, NC 27607
TEL: 919.466.4621 FAX: 919.433.8132 WWW.TIMMONSGROUP.COM

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION	DATE
	11/09/2021

GREEN OAKS TECH CENTER
WAKE COUNTY - NORTH CAROLINA

ROAD IMPROVEMENTS
These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and may not be used for any purpose without the written consent of TIMMONS GROUP.



SEAL INCLUDED FOR MASTER PLAN
APPROVAL ONLY. DRAWINGS ARE
PRELIMINARY AND NOT INTENDED
FOR CONSTRUCTION, BIDDING, OR
PERMIT PURPOSE.

NOT FOR
CONSTRUCTION

PROJECT
**GREEN OAKS
TECH CENTER**

CRESCENT COMMUNITIES

LANDDESIGN PROJ.# 1020339

REVISION / ISSUANCE

NO.	DESCRIPTION	DATE
1	MASTER PLAN SUBMITTAL	09.17.2021
2	2nd MASTER PLAN SUBMITTAL	10.29.2021
3	3rd MASTER PLAN SUBMITTAL	12.10.2021
4	4th MASTER PLAN SUBMITTAL	01.07.2022
5	5th MASTER PLAN SUBMITTAL	01.27.2022

DESIGNED BY: LRM
DRAWN BY: LRM
CHECKED BY: LRM

SCALE: NORTH
VERT: N/A
HORZ: AS NOTED

SHEET TITLE
**ROADWAY IMPROVEMENTS
ENLARGEMENT**

SHEET NUMBER
L12-08



TIMMONS GROUP

NOT FOR
CONSTRUCTION

YOUR VISION ACHIEVED THROUGH OURS.

THIS DRAWING PREPARED AT THE
SALEIGH OFFICE
5410 Trinity Road, Suite 102, Raleigh, NC 27607
TEL: 919.866.4921 FAX: 919.866.0124 www.timmons.com

GREEN OAKS TECH CENTER
WAKE COUNTY - NORTH CAROLINA

ROAD IMPROVEMENTS

JOB NO.
47690
SHEET NO.
C5.8

REVISION DESCRIPTION

DATE
11/09/2021
DRAWN BY
T. MORRISON
DESIGNED BY
T. MORRISON
CHECKED BY
B. HALL
SCALE
AS SHOWN



T H E T O W N O F

Holly Springs

Green Oaks Tech Center Detailed Master Plan 21-MAS-05 Conditions of Approval

Motion and Conditions of Approval:

Motion to approve / deny / defer Detailed Master Plan 21-MAS-05 for Green Oaks Tech Center Master Plan as submitted Land Design, Project Number 1020339, dated Revised 01/28/2022, with the following conditions:

1. All previous conditions of approval for Green Oaks Tech Center PUD apply to this plan except for any condition that describes a fee or a fee-in-lieu to be paid shall now comply with the current amounts due pursuant to the Town's current annual budget or any unexpired development agreement.
2. This project will be required to meet Town's NPDES Phase II Post Construction Stormwater ordinance.
3. There is an existing downstream flood study in this area. It must be demonstrated that this project does not result in a rise to the downstream 100 yr. water surface elevation.
4. This Master Plan must adhere to articles in the Executed Infrastructure Reimbursement Agreement associated with the Green Oaks Tech Center PUD.
5. *ALL recommendations from the TIA, and as a result of Town and NCDOT review associated with this project, must be incorporated into the plans and final design completed as part of the construction drawing review process with the associated phases.*
6. The Build-out analysis in the Traffic Impact Analysis (TIA) associated with this development, included a mix of background improvements and recommended development mitigations. If the assumed background projects do not occur, it should be the developer's sole responsibility to construct all of the background improvements included in the TIA unless additional analysis can be provided to demonstrate the background mitigations are not warranted by the subject development.
7. If build out exceeds the anticipated time frame in the approved TIA, an update of the TIA will be required prior to or with the Development Plan for the associated phase. Recommended improvements will be required to be completed prior to plat approval of that phase.
8. Prior to or with the 1st Construction Drawing Submittal, the following items must be addressed
 - a. Thoroughfares, collectors and boulevards will require a calculated pavement design with 1st construction drawing submittal. This may result in a pavement cross section bigger than the specified minimum.
 - b. Provide documentation in the form of a recorded plat of any required offsite sewer easements prior to first construction drawing submittal.
 - c. If changes have been made to the gravity sewer network between Town Council Approval of this Master Plan and first Construction Drawing Submittal, a Final Gravity Sewer Line Sizing Report will be required with first construction drawing submittal for all lines that are stubbed to adjacent upstream properties. Include calculations to document line sizes, adequacy of proposed sanitary sewer lines to serve all future upstream development.
 - d. All items listed on the Stormwater Submittal Checklist, Form #16003, must be included with the first construction drawing submittal.

Office of the Mayor

P.O. Box 8 • 128 S. Main Street • Holly Springs, NC 27540 • www.hollyspringsnc.us

Email: dick.sears@hollyspringsnc.us

9. Prior to Construction Drawing Approval, the following items must be addressed:
 - a. Street Tree locations shall be shown with approved lighting fixture locations shall be positioned as to not interfere with any lighting fixtures or any site distance triangles.
 - b. All new and existing overhead power lines and services must be installed underground with this development. If the relocation of existing overhead power lines underground is deemed not feasible by the Town and/or the Utility company, a waiver of UDO Section 7.08 must be submitted with this project and a fee-in-lieu will be required prior to Construction Drawing approval.
 - c. Invoiced fees from Special Study third party review must be paid prior to first Construction Drawing Submittal, and no later than prior to Construction Drawing Approval.
 - d. Offsite Sewer Infrastructure: Since this project is dependent on completion of off site sewer facilities to serve the project, they must be completed by others and accepted by the Town *prior to the 1st construction drawing approval* related to the Master Plan, unless otherwise approved by the Executive Director of Utilities and Infrastructure. The Town is not responsible for completion of off-site sewer facilities, and will not guarantee completion of such facilities by any other party.
 - e. The Hydraulic Reclaimed Water Model Report must be finalized prior to Construction Drawing Approval.
 - f. Per the Executed Developer Agreement, the following is required:
 - a. Design and construct improvements, or pay fee-in-lieu proportionate to project impact for construction of improvements, at the intersection of Old Holly Springs Apex Rd. and Bennett Knoll Parkway in the amount of \$21,000. A fee-in-lieu payment is required to be paid with Phase 3. Construction Drawing Approval. Refer to the Executed Infrastructure Reimbursement Agreement for payment details.
 - b. Fee-in-lieu proportionate to project impact for construction of improvements along NC-55 in the amount of \$486,800. Refer to Executed Infrastructure Reimbursement Agreement for details of timing and amounts for this fee-in-lieu.
 - c. Old Holly Springs Apex Road/New Hill Road intersection:
 - i. Provide final cost estimate of the Total Realignment Costs with 1st Development Site Plan Application.
 - ii. The Developer is responsible for payment of Fee-in-lieu equivalent to 15% of the Realignment Costs with Construction Drawing Approval of the 1st phase of this development. Refer to Executed Infrastructure Reimbursement Agreement for details of timing and amounts.
 - g. Off-site right-of-way dedication will be required in the form of a recorded plat prior to receiving construction drawing approval
 - h. Approval of Stormwater Management Plan is required prior to issuance of a land disturbance permit or construction drawing approval.
 - i. Payment of the Stormwater Fee-in-Lieu will be required prior to construction drawing approval.
 - j. Stormwater sureties are required on this project. A performance surety in the form of a bond, letter of credit or cash is required in the amount of 125% estimated construction cost of the stormwater BMP prior to the preconstruction meeting and a maintenance surety in the form of a cash escrow account in the amount of 35% the actual construction cost of the SCM is required at the end of the performance monitoring period for the project.
 - k. All environmental permits must be obtained prior to construction drawing approval and/or issuance of a land disturbance permit for the entire project.
10. Prior to the submittal of any UDO Permit for Sign Installation for permanent signage, a Master Sign Plan must be submitted for review and approval if desired.
11. A new traffic signal is warranted at the intersection of Proposed Road C and Hensley Place. This development is responsible for traffic signal design and installation; including mast arm pole construction and fiber connection/extension, in accordance with Town and NCDOT standards.
12. This development is responsible to determine optimal location, design and installation of Rectangular Rapid Flashing Beacon (RRFB) pedestrian signalization, or other approved alternative, in coordination with the Town and NCDOT
13. A Deed of Easement is required to be executed for public vehicular & public pedestrian access between the property owners at the time of plat.

Office of the Mayor

P.O. Box 8 • 128 S. Main Street • Holly Springs, NC 27540 • www.hollyspringsnc.us

Email: dick.sears@hollyspringsnc.us

14. With each subsequent Development Petition (i.e. Development Plan, Subdivision Plan), the following is required:
- a. A TIA verification letter is required to be submitted to confirm the specific development is within the parameters of the TIA approved with this PUD. If the development exceeds what was previously approved, a TIA revision will be required.
 - b. A Downstream Sewer verification letter is required to be submitted to confirm the specific development is within the parameters of the study approved with this PUD. If the development exceeds what was previously approved, a Downstream sewer Evaluation revision will be required.
 - c. A Hydraulic Water Model and Fire Flow Analysis Report (FFA) is required with each development.
 - d. A Hydraulic Reclaimed Water Model Report is required for the reclaimed water main extensions and must be approved prior to Construction Drawing Submittal.
 - e. Provide completed Industrial Waste survey short form. Note that information on this form may result in additional permitting or information being required.
 - f. Provide the Grease Trap Form as required for all businesses that will be handling fats, oils, or grease (i.e. restaurants).
 - g. For any vehicular street stub that will cross a stream, provide environmental impact information including preliminary vertical alignment for a distance of 100' beyond the property line to demonstrate constructability.
 - h. Developer is responsible to continue to monitor the following intersections for additional mitigation measures with each Development Petition.
 - i. Driveway #1 on Holly Springs New Hill Rd, opposite Oakview Elementary School
 - ii. Driveway #3 on Holly Springs New Hill Rd, opposite Thales Academy – if a future traffic signal is not feasible or warranted at this location, other mitigation measures should be evaluated.
 - iii. Driveway #5 on Green Oaks Parkway, opposite Crescent Commons (Oakview Innovation) – additional improvements being added after final TIA review:
 - 1. two (2) egress lanes are required at the site drive
 - 2. A northbound, right turn lane
 - 3. A southbound left
 - iv. Green Oaks Parkway / Seqirus Driveway / Thomas Mill Road
 - v. Green Oaks Parkway / Premier Drive

Office of the Mayor

P.O. Box 8 • 128 S. Main Street • Holly Springs, NC 27540 • www.hollyspringsnc.us

Email: dick.sears@hollyspringsnc.us