Memorandum

TO: Mayor and Town Board of Commissioners

FROM: Julie Spriggs, GISP, CFM, CZO, Planner II

DATE: June 30, 2021

RE: Item C.3 SP 21-01 Cobblestone Crossing

Public hearing (quasi-judicial) on Case: SP 21-01, Cobblestone Village site plan review for a mixed-use development on a total of 10.96 acres, located at the intersection of Young Street and Main Street, zoned Town Center (TC).

Background

A request for site plan approval (quasi-judicial) for a mixed-use development with eight buildings. The buildings are comprised of:

- Building 1 – Residential with 40 units
- Building 2 – Mixed-Use with Retail 16,461 SF with 30 residential units
- Building 3 – Mixed-use with Retail 11,405 SF and 18 residential units
- Building 4 – Community Center 18,200 SF
- Building 5 – Mixed-use with Retail 3,816 SF and 4 residential units
- Building 6 – Mixed-use with Retail 18,416 SF and 36 residential units
- Building 7 – Residential with 40 units
- Building 8 – Residential with 12 units

The Town and Cobblestone Crossing, LLC signed a development agreement on September 15, 2020. The agreement states that Cobblestone will partner with the Town to build a Town Center Project, including residential, commercial, government, and public uses. The development plan states the site plan will be consistent with the schematic design presented to the Town on February 2, 2021.

2017 Rolesville Comprehensive Plan

The Future Land Use Map, adopted with the 2017 Comprehensive Plan, classifies these parcels for town center use described as locations that often represent a traditional downtown for locally serving areas of economic, entertainment, and community activities. It combines non-residential uses with residential uses in buildings located on small blocks with street designs to encourage pedestrian activity using form-based designs. The

buildings stand two to five stories in height with an unlimited density of residential units above storefronts. The compact, walkable environment and mix of residential and non-residential uses in a town center often support multiple modes of transportation.

Traffic Impact Analysis (TIA)

Ramey Kemp Associates prepared a Traffic Impact Analysis for the proposed site. The report results were the proposed development will need to include improvements based upon the future lane configuration improvements by STIP U-6241. STIP U-6241 is expected to realign Burlington Mills Road and install a traffic signal at the relocated intersection on Main Street. STIP U-6241 is also expected to provide improvements to the pedestrian and bike facilities along Main Street and add a concrete median along Main Street west of Rogers Road.

Site Drive 1 and Site Drive 2 will require specific improvements for ingress, egress, and left-turn lanes with storage and appropriate decal and tapers. NCDOT has also reviewed the TIA by Ramey Kemp Associates and has added recommended improvements to both site drives for internal stacking on site.

Shared Parking Plan and Special Event Overflow Parking

The developer has provided a shared parking plan and special event overflow parking plan. A shared parking reduction of 15% has been applied to the site, with proposed uses, peak hour demands, and off-street parking as part of the calculations provided. The maximum reduction of 15% is 480 spaces. The developer is proposing 481 spaces, plus additional special event overflow parking. The proposed shared parking plan is attached for reference.

Special Event overflow parking will need to be an agreement between the Town and the developer. A separate agreement can be handled as an administrative process at the staff level to ensure overflow parking areas meet the standards of the land development ordinance. The proposed Special Event Overflow parking is attached for reference.

Building Height Design Alternative

Building 1 and Building 7 are proposed as four stories. A maximum by right height of 35 feet is allowed under the town center standards. Buildings up to 60 feet, or roughly five stories, are permitted with a design alternative approved by the Board of Commissioners if the building will have a fire suppression system.

Technical Review Committee and Planning Staff Recommendations

The Technical Review Committee has early submittals of the site plan. Before finalizing the site plan for construction, all approvals and required permits from all review agencies will be submitted to the Planning Department for review and record retention, along with signature blocks for approval on the final set of plans.

Town Board Motion and Required Findings of Fact

Staff will provide guidance on a motion after the evidentiary hearing and based upon the testimony provided in the case. The following are the required findings of fact:

A. That the proposed development and/or use will not materially endanger the public health or safety;
B. That the proposed development and/or use will not substantially injure the value of adjoining property;
C. That the proposed development and/or use will be in harmony with the scale, bulk, coverage, density, and character of the neighborhood in which it is located;
D. That the proposed development and/or use will generally conform with the Comprehensive Plan and other official plans adopted by the Town;
E. That the proposed development and/or use is appropriately located with respect to transportation facilities, water and sewer supply, fire and police protection, and similar facilities;
F. That the proposed development and/or use will not cause undue traffic congestion or create a traffic hazard;
G. That the proposed development and use comply with all applicable requirements of this ordinance.

Attachments

SP 21-01 Location-Zoning Map
SP 21-01 Development Agreement
SP 21-01 Site Plan Application
SP 21-01 Proposed Site Plan
SP 21-01 Proposed Color Palette
SP 21-01 Traffic Impact Analysis – Ramey Kemp Associates
SP 21-01 Traffic Impact Analysis – NCDOT
SP 21-01 Proposed Parking Plan
SP 21-01 Proposed Overflow Parking Plan


Legend
SP 21-01 - Cobblestone Village
N
W
E
S
Granite Peak Dr
Golden Acres St
Scarboro St
Nortwick Rd
Granite Falls Blvd
N Main St
W Young St
S Main St
Rogers Rd
Brown Cir
Perry St
Church St
School St
E Young St

Amended and Restated
Economic Development Agreement

THIS AMENDED AND RESTATED ECONOMIC DEVELOPMENT AGREEMENT ("Agreement") is made effective as of February 10, 2021 by and between the Town of Rolesville, a North Carolina municipal corporation (the "**Town**"), and Cobblestone Crossing of Rolesville LLC, a North Carolina limited liability company ("**Cobblestone**"). This Agreement supplants any prior agreements or understandings between the parties in regard an economic development project (hereinafter defined).

RECITALS

On September 15, 2020 the Town approved an Economic Development Agreement (the "2020 Agreement") concerning an economic development project whereby:

- The Town will sell to Cobblestone the properties located near the intersection of Main and Young Streets in downtown Rolesville, North Carolina (collectively the "Property"), as illustrated on the "Vicinity Map" attached as Exhibit A.

- Cobblestone will partner with the Town to build a Town Center Project (the "Project") on the Property. The Project will include space for residential, commercial, government and public uses.

- Cobblestone will entitle, design, and build the Project all as further described in this Agreement.

Cobblestone has an agreement to acquire the Property from the Town pursuant to a Purchase and Sale Agreement dated as of an even date herewith (the "Purchase Agreement"). As a part of the Project, the Town will occupy a "Municipal Facility" within the Property as more particularly set forth in this Agreement.

The parties now desire to terminate and replace the 2020 Agreement with this Agreement as more particularly set forth herein.

NOW, THEREFORE, the parties agree as follows:

1. The development plan for the Project will be consistent with the schematic design presented to the Town on February 2.

a. Schematic design. Cobblestone provided a revised schematic design of the Project to the Town in December 2020 attached as Exhibit B. This revised design reflects changes made that the parties agree will further the development of the project. As provided for in the schematic design, the Project will include the following features, in all cases reasonably acceptable to the Town:

- A specified site within the Property for the Town's veterans' memorial.
- At least 49,830 square feet of commercial space distributed among at least five buildings.
- No more than 180 dwelling units (180 apartments) distributed among not more than 7 buildings (including both buildings used solely for residential purposes and those with mixed use). None of the buildings with a residential component may rise more than 3 additional stories above a ground story.
- A specified site within the Property acceptable to the Town for the "Municipal Facility," as further described in Section 2 below.
- A specified site within the Property acceptable to the Town for the public event space, as further described in Section 3 below.
- A cornerstone town space that will have a clock tower and other signage referring to the Town by name. The Town and Cobblestone will work together for the final design of these features.
- Identification of all street lead-ins to the Property from existing streets.

- The design will not include diagonal on-street parking on Main Street.

- Dedicated parking area for electric vehicle charging and bicycle parking.

- Preservation of the Town's existing trail in the northwest corner of the Property, either by leaving the existing trail outside the footprint of new buildings or showing the re-routing of the trail. Cobblestone shall pay the cost of any re-routing and development of the new trail to the standards of the existing trail. If Cobblestone chooses the re-routing option, Cobblestone must dedicate the redeveloped trail space to the Town at no cost. The Town will then be responsible for maintenance of the trail space.

- Its plans for the accommodating the Privette Insurance building into its development, either by leaving that building in place or by presenting its plan for the removal of the building.

- Its plans to develop the "Broughton Property".

- Its timeline for the key steps in the development.

- An updated Project Pro Forma, that will be reviewed by an independent financial consultant of the Town's choosing.

2. Cobblestone will also provide the Town with the following additional information by the time it submits the first phase design to the Town *(thirty days after this Agreement is effective)*.

a. Additional Information. Cobblestone must provide the following additional information to the Town no later than when it submits the first phase design to the Town *(thirty days after this Agreement is effective)*.

- Parking plans for weekday, weekend, and event parking that is consistent with Town parking standards.

b. Effect of the deadline. Cobblestone has no further rights under this

Agreement if this additional information is not presented to the Town by the time it provides the first phase design to the Town for review *(thirty days after this Agreement is effective).*

3. Additional requirements for the Municipal Facility

The Project will contain a specified site within the Property acceptable to the Town for the "Municipal Facility." The Municipal Facility will comprise approximately 8,000 to 12,000 square feet. The Town will develop the final space programming and design for the facility. The Town will consider the following options for ownership of Municipal Facility:

a. Cobblestone will own the Municipal Facility and lease it to the Town. Cobblestone will provide for the Municipal Facility to be available for Town occupancy within three years of the date of this Agreement. The Municipal Facility will be designed to meet the Town's specifications. Town will develop the final space programming and design for the facility, and will develop the plans for a facility of approximately 8,000-12,000 square feet that will have offices for the Town's parks and recreation department, along with additional office, classroom and programming space.

The Town will lease the completed Municipal Facility for period of at least 10 years and not to exceed 20 years, as the parties may agree. After 10 years, either the Town or Cobblestone may terminate the lease by giving a 1 year notice of intent to terminate. The lease payments will be as the Town and Cobblestone may determine, but will be at least sufficient to amortize the complete building cost over the lease term (including architect, engineering and other "soft" costs and reasonable actual or imputed interest costs, but not including land costs).

The parties acknowledge that under current law, this lease by the Town may require the approval of the North Carolina Local Government Commission (the "LGC"). Although the Town cannot guarantee any result of the LGC approval process, the Town expects that the Town will be able to obtain the required approval. The parties acknowledge that under current LGC procedures, the Town will be unable to receive LGC approval until the parties have determined fixed lease payments and Cobblestone has a guaranteed maximum price contract in hand for construction of

the Municipal Facility. The Town will pursue the LGC approval process with due diligence at the appropriate time.

In addition, the parties acknowledge that under current law, given the Town's participation in designing the facility and making amortizing lease payments, the construction of the Municipal Facility may require the same approach to design and project bidding as if the Town were building the building directly. Also, under current law, (a) lease payments cannot begin until the building is available for the Town's occupancy, and (b) lease payments cannot continue if the building is unavailable for the Town's use (such as after a casualty loss), in either case unless the Town's lease payment obligations are generally subject to the annual appropriation of funds.

b. The Town will own the Municipal Facility. Cobblestone will deed to the Town the site specified for the Municipal Facility in the February 2 schematic design. The Town will construct, design, and develop the final space programming for an 8,000-12,000 square foot facility. The final space programming and design for the facility will include plans to serve some or all of the following components:

First, offices for the Town's parks and recreation department, along with additional office, classroom and programming space.

Second, a gymnasium and commercial kitchen facilities suitable to accommodate group events commensurate with the size of the gymnasium

4. Additional requirements for the Event Space

a. Cobblestone will provide within the Property a space of approximately 1 acre suitable for outside public gathering and events (the "Event Space"), including at least 18,976 square feet of dedicated green event space as shown in the February 2 schematic design. The event space can be a combination of grassy areas and hardscape areas suitable for use as parking when not being used for events. The Town and Cobblestone will work together to determine the final design of the Event Space, and will begin this work promptly after this Agreement is executed and delivered.

b. Cobblestone, at its own expense, will maintain the Event Space in a safe and well-maintained condition, to include safe lighting, appropriate signage, safe

walking surfaces, maintained grass and other vegetation, and proper drainage. Cobblestone shall maintain the Event Space to the same condition as the Town applies to Town park property. The parties will meet at least annually in the second week of January to discuss maintenance for the Event Space.

c. In addition, at its own expense, Cobblestone will maintain appropriate liability insurance against risks related to the Event Space and will designate the Town as an additional insured with respect to those risks.

d. The Town will have the exclusive right to use the Event Space for 21 calendar days each calendar year, including at least 15 days that constitute holidays or weekend days. The Town will be responsible for any setup or breakdown costs related to its use of the event space. The parties will meet annually on or about each September 1 to agree upon Town use dates for the following calendar year.

5. Cobblestone will provide first phase design to the Town by (*thirty days after this Agreement is effective*).

a. Not later than March 12, 2021 *(thirty days after this Agreement is effective)*, Cobblestone will provide drawings, plans and technical information sufficient to constitute a site plan application to the Town for its consideration of Cobblestone's first planned phase of Project development.

b. The first phase must include (i) at least 24,915 square feet of planned commercial space *[one-half of the total]*, (ii) the Municipal Facility (iii) the Event Space, and (iv) the Privette Building disposition. There is no limit on the amount of residential space or units that may be included in the first phase.

c. Cobblestone shall not apply for a permit for grading or other site work until Cobblestone has confirmed to the Town that Cobblestone has received appropriate construction drawings and entitlements to begin construction on at least one building on the Property. Any amount of grading or other site work must be reasonable in scope and nature in light of entitlements received to the time of the work.

6. Other Cobblestone requirements

a. Materially consistent. Each stage of Project development must be consistent in all material respects with the schematic design prepared in accordance with Section 1. The Town Manager may approve changes to the schematic design that are not material or that may be necessary to comply with Town land use regulations or other necessary legal or regulatory approvals. The Town Manager will report any approved changes to the Town Board as soon as practicable.

b. Function of intersections. Upon each application for an entitlement, Cobblestone must supply a traffic impact analysis or other information acceptable to the Town projecting that any intersection of Young or Main Streets with the Property will have no adverse effect on the function level of those intersections (such as maintaining a Level B or Level C function, as may be the case, or improving the function level).

c. Requirements for additional phases. Cobblestone shall apply for entitlements of subsequent development phases within 90 days of obtaining a certificate of occupancy for the final building in the previous phase. Cobblestone may not divide the Project development into more than three phases. When applying for an entitlement Cobblestone shall provide the Town with Cobblestone's estimated development timeline for the phase. Cobblestone will pursue development according to that timeline with due diligence.

d. Prohibited uses. Cobblestone may not enter into any lease of commercial space within the Property where the intended use will be any of the uses described in Exhibit C.

e. Use of completed facilities. Any completed facilities must be open to all Town residents on the same basis as for people residing within the property, including with respect to requirements for memberships and fees. For example, any recreational or health club facilities within the Property may charge a membership or usage fee, but may not charge fees to persons residing within the Property that are different from those charged to people residing elsewhere in Rolesville.

f. Cooperation. Cobblestone will cooperate with the Town in its development of the Property and the redevelopment of the Town's historic center. By way of illustration, but not by way of limitation, Cobblestone agrees as follows:

i. Cobblestone will provide, within ten days of receipt, copies of reports and other documents related to the Property and the Project., including but not limited to reports concerning the financial feasibility, market feasibility, site assembly, phasing, and environmental remediation.

ii. Cobblestone will advise the Town on a pro-active basis and in a timely manner whenever any timeline previously provided to the Town becomes materially different from Cobblestone's updated expectations. Cobblestone at the same time will provide the Town with a revised timeline.

iii. Cobblestone will provide the Town with copies of existing floor plans and pro forma analyses on request. This paragraph does not require Cobblestone to create new versions of floor plans or pro formas, but instead only to provide copies of existing documents.

iv. Cobblestone will involve the Town Manager, or the Town Manager's designee, in Cobblestone's process with other governmental entities, including participation in calls or conferences and sharing documents.

g. Monthly reports; appearances before the Town Board. Cobblestone will provide, each month beginning in March, 2021 *[first full month following the Agreement's effective date]*, a written narrative report summarizing development activity for the previous month.

At any time and from time to time, at the Town's request, Cobblestone will provide an appropriate representative to appear before the Town Board to provide a narrative update on the Project and to provide full and complete answers to questions from Board members. The Town does not expect that these requests will occur more frequently than every three months.

h. Delivery of Work Product. If Cobblestone does not to proceed with the Project, Cobblestone shall make available at no cost to the Town and for its unrestricted use all available work product related directly to the Property and the

Project in possession and control of Cobblestone, including market analyses, soil and engineering reports, geotechnical reports, environmental reports, studies and testing, construction budgets and other documentation produced specifically related to the Property and the Project.

7. Town's obligations.

a. Property sale. The Town will sell the Property to Cobblestone pursuant to the Purchase Agreement.

b. Utilities, sidewalks and other improvements. The Town shall act with due diligence to apply amounts received under its Locally Administered Projects Grant from Main Street LAPP (the "Grant") for public improvements between Burlington Mills Road to Young Street, including streetscape improvements, crosswalks, curb and gutter improvements, new sidewalks and bicycle transportation enhancements, as described in the Town's Grant application. The Town will maintain compliance with the Grant terms and will provide the matching funds for these improvements as required by the Grant terms. This commitment provides for the use of approximately $3,700,000 in funding that will benefit the Project, including approximately $735,000 in direct Town funding. The Town's participate in these improvements is contingent upon the Town actually receiving the grant funding.

c. Undergrounding of utilities. The Town will participate with Cobblestone in a project to underground utilities throughout the total road frontage of the Project. Cobblestone will provide a plan to the Town for review and approval of undergrounding the utilities near the Property. Town will contribute a maximum of $250,000 (not to exceed 50% of the total cost of undergrounding) to the approved undergrounding project of the Duke Energy utilities located at the intersection of Main and Young Streets.

c. Cooperation; Town as land use regulator. The Town will cooperate with Cobblestone in carrying out the purposes and intents of this Agreement.

The Town shall provide to Cobblestone any of the following which the Town may have in its possession and which are related to the Property: blight reports, surveys, engineering and geotechnical reports, and previous concept plans.

Cobblestone acknowledges, however, that the Town acts in separate capacities as a party to a business agreement such as this Agreement, and as a land use regulator. **The Town makes no representation, and can give no assurances, that any land use or related approvals necessary for the Project will be forthcoming at any time.** The Town promises, however, to act in a prompt and professional manner in the review and consideration of all matters. The review process may result in Project design, construction and development requirements above the requirements stated in this Agreement, and may result in requests for community benefits beyond those provided for in this Agreement. If the development review process results in increasing Cobblestone's obligations under this Agreement, then Cobblestone must comply with the results of the development review process. Cobblestone will not be entitled to any setoff or reduction of commitments under this Agreement, or entitled to any additional compensation or other consideration from the Town.

d. Credits against Town fees. Upon Cobblestone's receipt of a building permit for the first building of each development stage, the Town will provide Cobblestone the following credits (but only up to the amount of the fee otherwise payable):

Against the Town's parks and recreation fees: any amounts (up to $160,000) previously paid by Cobblestone towards the site, design, programming, building, parking, or equipping of the Municipal Facility.

e. Commercial development incentives. For each completed building on the Property with a commercial component (not including the Municipal Facility), the Town will pay Cobblestone a commercial development incentive, expected to be approximately $90,000, as described in this subsection.

i. The Town will pay the incentive on each of the first three February 1's after a building receives its certificate of occupancy and has been assessed for property taxes on the completed building that were due on or before the previous October 1. The amount of the payment on each date will be equal to 50% of the property taxes actually paid with respect to that building in the previous six months.

ii. The total amount of commercial development incentives will be subject to a cap. This cap is equal to 100% of the payments that the Town

estimates would be due if Cobblestone completes its development in accordance with the schematic design provided under Section 1, using the Town's current tax rate and the current Wake County table of values.

iii. If at any time Cobblestone owes any taxes or governmental fees or charges with respect to the Project, whether those amounts are owed to the Town or to some other governmental entity, the Town may withhold any incentive payment until the resolution of the delinquency. These fees and charges may include regulatory or administrative fees or fines. At its option, the Town may apply any payment due under this subsection to satisfy taxes, fees or other charges owed to the Town. The Town need not pay any incentive payment provided for under this subsection if an Event of Default is continuing on Cobblestone's part.

f. Total development incentives. Total development incentives from the Town (including the Town's contribution to the undergrounding of utilities, any credits against fees owed to the Town, and performance based commercial development incentives) will not exceed approximately $500,000.

8. Defaults and Remedies; Dispute Resolution

a. Defaults. A party is in default under this Agreement if it fails to observe and perform any covenant, condition or agreement on its part to be observed or performed for a period of 30 days after notice specifying the failure and requesting that it be remedied has been given by the other party. Any such failure is an "Event of Default" under this Agreement.

b. Remedies. Whenever any Event of Default is continuing, the non-defaulting party may take either or both of the following remedial steps:

i. At its option, cure the default by paying money or taking any other appropriate action, in which case the defaulting party must reimburse the defaulting party for all costs and expenses reasonably incurred in curing the default.

ii. Take whatever action at law or in equity may appear necessary or desirable to collect the amounts then due and thereafter to become due, or to enforce performance and observance of any obligation, agreement or covenant of a party under this Agreement.

c. No remedy exclusive; other provisions. No remedy conferred or reserved in this Agreement is intended to be exclusive, but instead is intended to be cumulative. No delay or omission to exercise any right or power accruing upon any default constitutes a waiver of that right or power. A waiver of any default is limited to the default so waived and does not waive any other default. If a party incurs legal or other costs and expenses to collect any payments due under this Agreement, or to enforce the performance or observance of any obligation or covenant under this Agreement, then to the extent permitted by law each party promises to reimburse a non-defaulting party for all reasonable legal and other fees and costs incurred in the collection or enforcement.

d. Dispute resolution. In the event of a dispute between the parties concerning the terms or performance of this Agreement, the parties will take the following steps prior to commencing any proceeding before a court or administrative body:

i. Exchange of positions. Any party noting a dispute under this Agreement will notify the other party of the nature of the dispute and the first party's proposed resolution. Within ten days after the effective date of the notice, the other party must respond in writing as to its view of the dispute and its position on the proposed resolution.

ii. Meet and confer. If the parties are unable to reach an agreement on the dispute and upon notice from any party, the parties will promptly hold a meeting attended by representatives with appropriate authority to resolve the dispute. At this meeting the parties will attempt in good faith to negotiate a resolution of the dispute.

iii. Mediation. If the dispute remains unsettled by negotiation, the parties will engage the services of a professional mediator agreed upon by the parties. The parties will then attempt in good faith to resolve the dispute through mediation. The Town and Cobblestone will each pay one-half of the

mediator's fees and expenses and each party will pay all its own legal fees and other expenses related to the mediation. Each party must be represented at the mediation by a representative with appropriate authority to resolve the matters in dispute. Only after mediation may a part initiate legal or administrative proceedings.

9. Miscellaneous

a. Authority for this Agreement. The Project, and entering into this agreement, is an economic development project for the Town. The Town expects that the Project will enhance the Town's taxable property, employment, and business prospects. The Town is authorized to enter into this Agreement by statute, including Section 158-7.1 of the North Carolina General Statutes. **This Agreement does not constitute a "Development Agreement" within the meaning of Part 3d, Chapter 160A of the North Carolina General Statutes.**

b. Notices. Any communication provided for in this Agreement must be in writing (not including facsimile transmission or electronic mail). Any communication under this Agreement will be deemed given on the delivery date shown on a certified mail receipt, or a delivery receipt (or similar evidence) from a national commercial package delivery service, if addressed as follows:

If intended for the Town, to Town of Rolesville, c/o Town Manager, Town Hall, 502 Southtown Circle., Rolesville, NC 27570

If intended for Cobblestone, to Cobblestone Crossing LLC, 8480 Honeycutt Road, Suite 200, Raleigh, NC 27615

Any addressee may designate additional or different addresses for communications by notice given under this Section to the other.

c. Each party will bear its own costs. Each party will bear its own costs of the fees and expenses of its counsel and consultants, and of the studies or surveys required under this Agreement or that it otherwise commissions or obtains for its use under this Agreement.

d. Limitation on liability of officers and agents. No officer, agent or employee of the Town will be subject to any personal liability or accountability because of the execution of this Agreement or any other documents related to the transactions contemplated by this Agreement. Those officers, agents or employees will be deemed to execute such documents in their official capacities only, and not in their individual capacities. This provision does not relieve any officer, agent or employee from the performance of any official duty provided by law.

e. No assignment. Neither party may assign any of its rights or obligations under this Agreement without the express consent of the other.

f. Amendments. This Agreement may only be modified in writing signed by all parties.

g. Governing law. The parties intend that North Carolina law will govern this Agreement and all matters of its interpretation. To the extent permitted by law, the parties agree that any action brought with respect to this Agreement must be brought in the North Carolina General Court of Justice in Wake County, North Carolina.

h. Severability. If any provision of this Agreement is determined to be unenforceable, that will not affect any other provision of this Agreement.

i. Binding effect. Subject to the specific provisions of this Agreement, this Agreement will be binding upon and inure to the benefit of and be enforceable by the parties and their respective successors and assigns.

j. Entire agreement. This Agreement, together with the Purchase Agreement, constitutes the entire agreement between the Town and Cobblestone with respect to its general subject matter.

k. No third-party beneficiaries. There are no parties intended as third-party beneficiaries of this Agreement.

l. Counterparts. This Agreement may be executed in several counterparts, including separate counterparts. Each will be an original, but all of them together constitute the same instrument.

[The remainder of this page has been left blank intentionally.]

IN WITNESS WHEREOF, the Town and Cobblestone have caused this Agreement to be executed and delivered as of the day and year first above written by duly authorized officers.

(SEAL)
ATTEST:

Robin Peyton
Town Clerk

TOWN OF ROLESVILLE
NORTH CAROLINA

By: _____
Kelly Arnold
Town Manager

COBBLESTONE CROSSING OF ROLESVILLE LLC

By: _____

Printed name: Kenneth C. Boardman

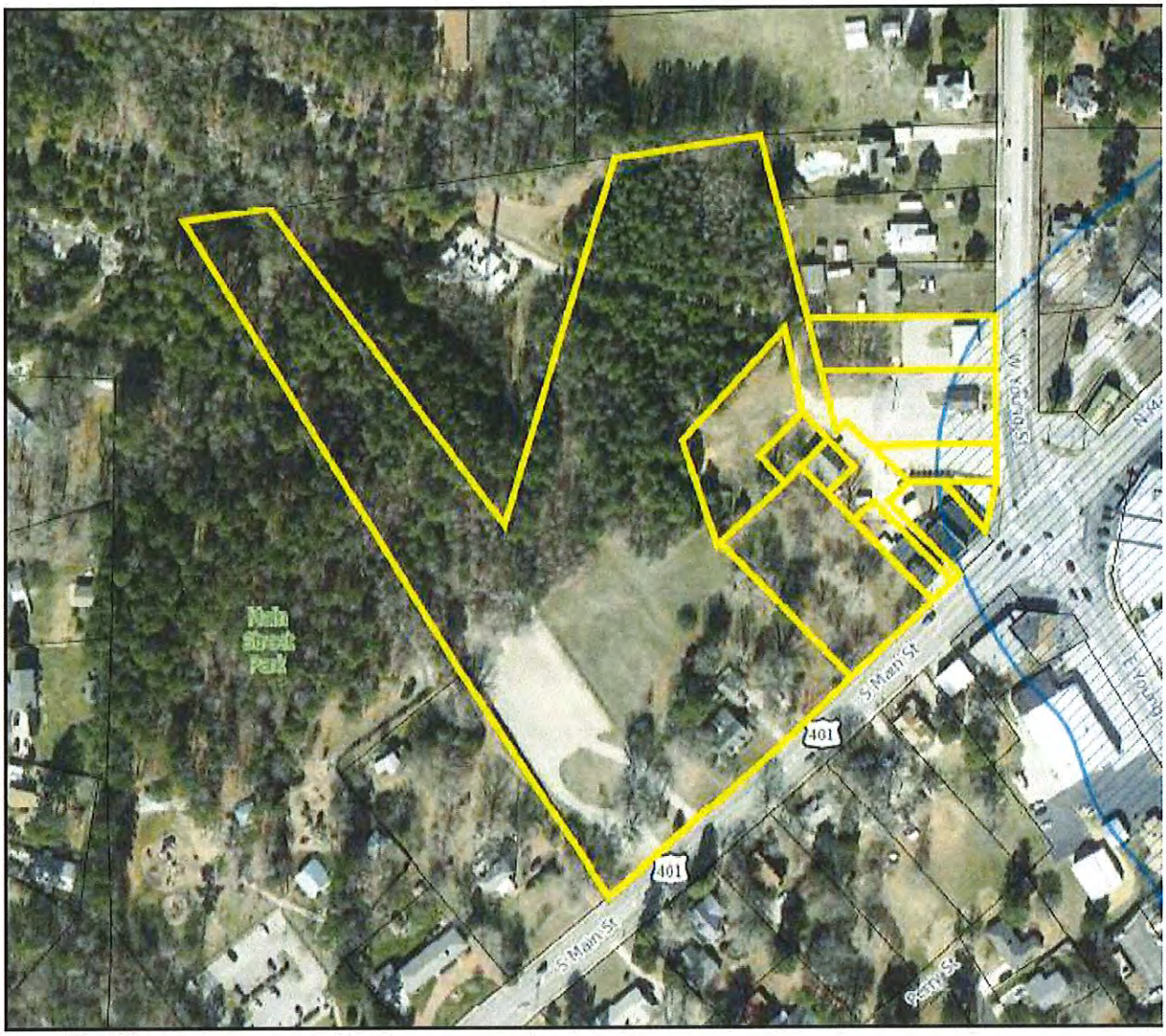
Title: Managing Member

Exhibits:

A – Vicinity Map
B – Schematic Design July 21, 2020
C – Prohibited commercial uses

[Economic Development Agreement dated as of February 10, 2021]

Exhibit A – Vicinity Map



Vicinity Map - Exhibit A

N

0 105 210 420 ft

1 inch = 200 feet

Exhibit B – Schematic Design February 2, 2021

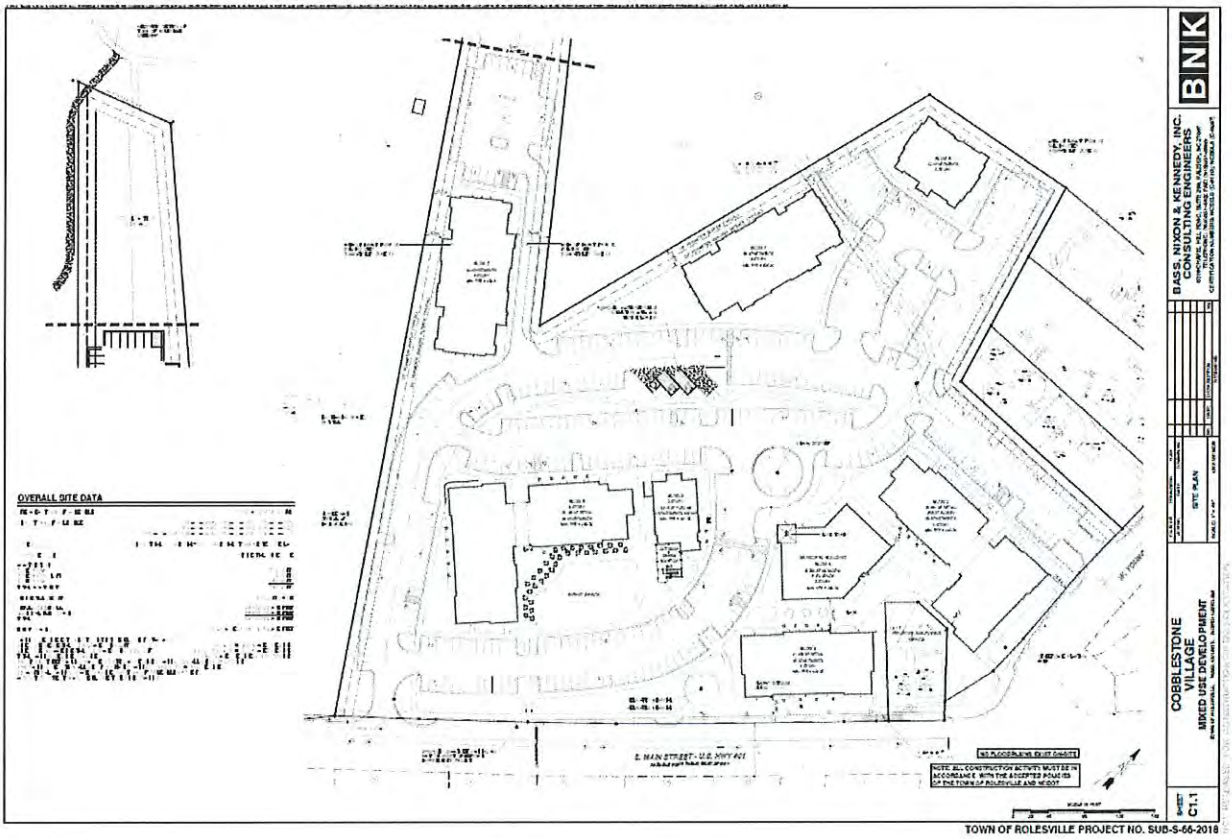


Exhibit C – Prohibited Uses

- laundry or dry-cleaning establishment, provided, the foregoing restriction shall not include an establishment for dry cleaning drop-off and pick-up only, with no cleaning services being performed at the subject property;
- off-track betting establishment;
- a pool or billiard hall (unless operated as part of a large-scale family recreation or entertainment facility);
- adult bookstore or any form of adult entertainment;
- bingo parlor;
- a video game parlor or amusement arcade;
- a business which would emit or produce noxious fumes or gases (excluding nail salons and restaurants) or loud noises;
- an assembly or manufacturing operation;
- an establishment selling or exhibiting pornographic materials;
- nightclub, discotheque or dance hall;
- a mortuary or funeral home;
- a church or other place of worship;
- any establishment which stocks, displays, sells, rents, or offers for sale or rent any merchandise or material commonly used or intended for the use with or in consumption of any narcotic, dangerous drug, or other controlled substance (other than alcohol or tobacco), including, without limitation, any hashish pipe, water pipe, bong, pipe screens, rolling papers, rolling devices, coke spoons or roach clips;

- an operation whose principal use is a massage parlor and/or exotic dancing, provided this shall not prohibit massages in connection with a beauty salon, health club or athletic facility; or

- a pawn shop.

Case No. _____

Date 2/25/21

Development Plan Review Application

Project/Development Name Cobblestone Village

Application Type
- ☐ Sketch Plan
- ☐ Preliminary Plat
- ☒ Construction Drawings
- ☐ Final Plat

Contact Information

Property Owner: Town of Rolesville

Address: P.O. Box 250 City/State/Zip: Rolesville, NC 27571-0250

Phone: 919-556-3506 Email: mical.mcfarland@rolesville.nc.gov

Developer: KDM Development Corporation

Contact Name: Kenyon Burnham

Address: 1080 Pittsford Victor Rd #202 City/State/Zip: Pittsford, NY 14534

Phone: 585-381-0570 Email: kburnha2@u.rochester.edu

Design Engineering Company: Bass, Nixon and Kennedy, Inc. Consulting Engineers

Contact Name: Marty D. Bizzell, PE, CPESC

Address: 6310 Chapel Hill Road, Ste. 250 City/State/Zip: Raleigh, NC 27607

Phone: 919-851-4422 Email: marty.bizzell@bnkinc.com

Property Information

Wake County PIN(s): 1769-01-0454, 1769-01-4357,1769-01-3355, 1769-01-3468, 1769-01-2542, 1769-01-3520, 1769-01-4654, 1769-01-5454, 1769-01-5408,1769-01-4576

Address: 100, 101, 109, W. Young St. 0, 106, 108, 114 S. Main St.

Total Property Acreage: 10.96 Total Phases: 1

Total Lots: 1 - Proposed Average Lot Size: N/A

Smallest Lot Size: N/A Largest Lot Size: N/A

I, as owner, developer, engineer, and/or agent, understand that I am responsible for all review fees due at the time of plan submittal. I understand that the Planning Department will not review my plans until I remit payment. I have read the Development Review Procedures, and I understand the review processes and requirements.

Signature Marty D. Bizzell Date 2/25/21

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT TOWN OF ROLESVILLE STANDARDS AND SPECIFICATIONS

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT

TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

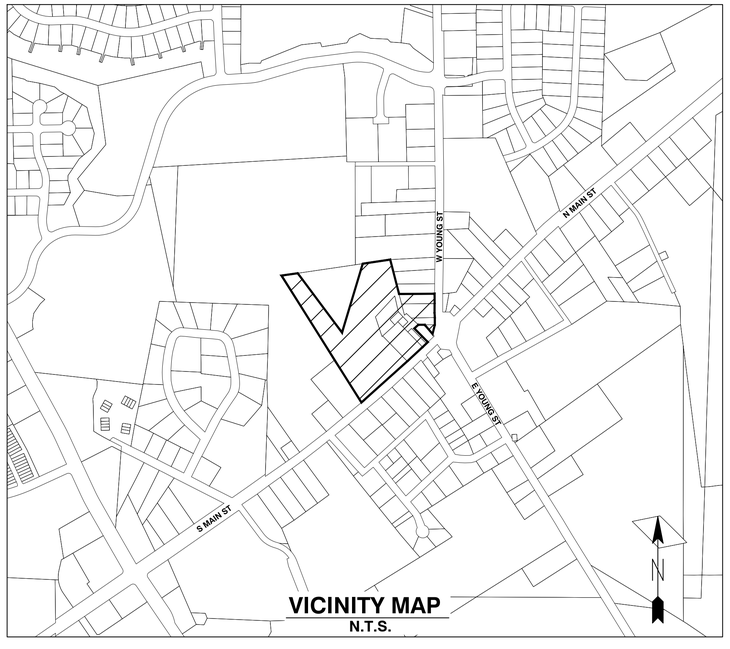
CONSTRUCTION DRAWINGS
TOWN OF ROLESVILLE PROJECT NO.
SITE PLAN APPLICATION NO. CUP-SB-21-01

SYMBOLS AND ABBREVIATIONS

ABC	AGGREGATE BASE COURSE
ALUM	ALUMINUM
AST2	ALUMINIZED STEEL – TYPE 2
B–B	BACK TO BACK
BOA	BLOW–OFF ASSEMBLY
C&G	CURB AND GUTTER
CFS	CUBIC FEET PER SECOND
CI	CURB INLET
CL	CENTER LINE
CMP	CORRUGATED METAL PIPE
CO	CLEAN OUT
COM	COMMUNICATION
CONC	CONCRETE
DCV	DOUBLE CHECK VALVE
DDCV	DOUBLE DETECTOR CHECK VALVE
DI	DROP INLET
DIP	DUCTILE IRON PIPE
EASE	EASEMENT
ELEC	ELECTRIC
EX	EXISTING
FES	FLARED END SECTION
FH	FIRE HYDRANT
FM	FORCE MAIN
FT	FEET
FT/SEC	FEET PER SEC
GALV	GALVANIZED
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
L	LENGTH
LF	LINEAR FEET
MH	MANHOLE
PAVE	PAVEMENT
PE	FINISHED PAD ELEVATION
PP	POWER POLE
PVC	POLYVINYL CHLORIDE
R	RADIUS
R/W	RIGHT–OF–WAY
RED	REDUCER
RCP	REINFORCED CONCRETE PIPE
RPZ	REDUCED PRESSURE ZONE
SS	SANITARY SEWER
STA	STATION
TDD	TEMPORARY DIVERSION DITCH
TELE	TELEPHONE
TSB	TEMPORARY SEDIMENT BASIN
UG	UNDERGROUND
WCR	WHEELCHAIR RAMP
W/L	WATER LINE
WM	WATER METER
YI	YARD INLET

	EXISTING CURB INLET
	EXISTING GRATE INLET/YARD INLET
	EXISTING FLARED END SECTION
	EXISTING FIRE HYDRANT
	EXISTING BLOW–OFF ASSEMBLY
	EXISTING GATE VALVE
	EXISTING REDUCER
	EXISTING WATER METER
S	EXISTING SAN. SEWER MANHOLE
	EXISTING CLEAN OUT
	EXISTING POWER POLE
	EXISTING TELEPHONE PEDESTAL
	EXISTING AREA LIGHT
	EXISTING SIGN
	NEW CURB INLET
	NEW GRATE INLET/YARD INLET
	NEW FLARED END SECTION
	NEW FIRE HYDRANT
	NEW BLOW–OFF ASSEMBLY
	NEW GATE VALVE
	NEW REDUCER
	NEW WATER METER
	NEW TEE
	NEW PLUG
	NEW MANHOLE
	NEW CLEAN OUT
	NEW SIGN
	IRON PIPE
	BENCHMARK
	TEMP SILT FENCE
TPF TPF	TEMP TREE PROTECTION FENCE
TPF	TEMP COMBINATION SILT/TREE PROTECTION FENCE
	TEMP DIVERSION DITCH
	DISTURBED LIMITS
	STREAM
G G	EXISTING GAS LINE
COM COM	EXISTING COMMUNICATIONS LINE
T T	EXISTING UNDERGROUND TELEPHONE
E E	EXISTING UNDERGROUND ELECTRIC
OHE OHE	EXISTING OVERHEAD ELECTRIC
W W	EXISTING WATER LINE
FM FM	EXISTING SANITARY SEWER FORCE MAIN
SS SS	EXISTING SANITARY SEWER
	EXISTING STORM DRAINAGE
	NEW WATER LINE
	NEW SANITARY SEWER
FM FM	NEW SANITARY SEWER FORCE MAIN
G G	NEW GAS MAIN
	HANDICAPPED ACCESSIBLE ROUTE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT



VICINITY MAP
N.T.S.

SHEET INDEX

OWNER:

TOWN OF ROLESVILLE
P.O. BOX 250
ROLESVILLE, NC 27571-0250

DEVELOPER:

KDM DEVELOPMENT CORPORATION
1080 PITTSFORD VICTOR RD, STE 202
PITTSFORD NY 14534-3805

CONTACT: KENYON BURHNAM
PHONE: 585-465-0099
EMAIL: KBURNHA2@U.ROCHESTER.EDU

CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH APPLICABLE MUNICIPALITY STANDARDS, SPECIFICATIONS, AND DETAILS. WORK IN THIS PROJECT SHALL ALSO CONFORM TO THESE PLANS, THE LATEST EDITIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) ROAD AND BRIDGE SPECIFICATIONS, THE ROAD AND BRIDGE STANDARDS, THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL HANDBOOK, THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL REGULATIONS, THE FINAL GEOTECHNICAL REPORT, AND GENERAL DESIGN STANDARDS. IN THE EVENT OF CONFLICT BETWEEN ANY OF THESE STANDARDS, SPECIFICATIONS, OR PLANS, THE MOST STRINGENT SHALL GOVERN.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR TRENCH SAFETY DURING ALL PHASES OF CONSTRUCTION.
3. THE LOCATION AND SIZE OF EXISTING UTILITIES AS SHOWN IS APPROXIMATE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR HORIZONTALLY AND VERTICALLY LOCATING AND PROTECTING ALL PUBLIC OR PRIVATE UTILITIES WHICH LIE IN OR ADJACENT TO THE CONSTRUCTION SITE. AT LEAST 48 HOURS PRIOR TO ANY DEMOLITION, GRADING, OR CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE NORTH CAROLINA ONE–CALL UTILITIES LOCATION SERVICE (ULOCO) AT 1–800–632–4949 FOR PROPER IDENTIFICATION OF EXISTING UTILITIES WITHIN THE SITE.
4. THE CONTRACTOR SHALL SALVAGE AND PROTECT ALL EXISTING POWER POLES, SIGNS, MANHOLES, TELEPHONE RISERS, WATER VALVES, ETC. DURING ALL CONSTRUCTION PHASES. THE CONTRACTOR SHALL REPAIR, AT HIS OWN EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.
5. TRAFFIC CONTROL ON PUBLIC STREETS SHALL BE IN CONFORMANCE WITH THE TRAFFIC CONTROL PLAN, THE 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES,' AND AS FURTHER DIRECTED BY CITY AND STATE INSPECTORS.
6. ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND SPECIFICATIONS AND SITE CONDITIONS OR ANY INCONSISTENCIES OR AMBIGUITIES IN DRAWINGS OR SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER, IN WRITING, WHO SHALL PROMPTLY ADDRESS SUCH INCONSISTENCIES OR AMBIGUITIES. WORK DONE BY THE CONTRACTOR AFTER HIS DISCOVERY OF SUCH DISCREPANCIES, INCONSISTENCIES, OR AMBIGUITIES SHALL BE DONE AT THE CONTRACTOR'S RISK.
7. A PRE–CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL ARRANGE THE MEETING WITH THE CITY ENGINEERING DIVISION.
8. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL REQUIRED PERMITS AND APPROVALS PRIOR TO COMMENCING CONSTRUCTION.
9. ALL AREAS SHALL BE GRADED FOR POSITIVE DRAINAGE, AND AS SHOWN ON THESE PLANS. THE CONTRACTOR SHALL MAINTAIN ADEQUATE SITE DRAINAGE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL USE SILT FENCES (OR OTHER METHODS APPROVED BY THE ENGINEER AND APPLICABLE MUNICIPALITY) AS REQUIRED TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM FLOWING ONTO ADJACENT PROPERTIES. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, OR LOCAL EROSION, CONSERVATION, AND SILTATION ORDINANCES. CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF PERMANENT DRAINAGE FACILITIES AND THE ESTABLISHMENT OF A STAND OF GRASS OR OTHER GROWTH TO PREVENT EROSION.
10. THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE AND PLACE, COMPACT, AND MOISTURE CONDITION ALL FILL PER THE PROJECT GEOTECHNICAL ENGINEER'S SPECIFICATIONS. THE FILL MATERIAL TO BE USED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.
11. MATERIALS USED TO CONSTRUCT EMBANKMENTS FOR ANY PURPOSE, BACKFILL AROUND DRAINAGE STRUCTURES, OR IN UTILITY TRENCHES FOR ANY OTHER DEPRESSION REQUIRING FILL OR BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST AS SET OUT IN ASTM STANDARD D698. STONE BACKFILL SHALL BE COMPACTED TO 95% MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST AS SET OUT IN ASTM STANDARD D1557. THE CONTRACTOR SHALL, PRIOR TO ANY OPERATIONS INVOLVING FILLING OR BACKFILLING, SUBMIT THE RESULTS OF THE PROCTOR TEST TOGETHER WITH A CERTIFICATION THAT THE SOIL TESTED IS REPRESENTATIVE OF THE MATERIALS TO BE USED ON THE PROJECT. TESTS SHALL BE CONDUCTED BY A CERTIFIED MATERIALS TESTING LABORATORY AND THE CERTIFICATIONS MADE BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE LABORATORY.
12. PROPOSED CONTOURS AND GUTTER GRADIENTS ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND ROADWAY PROFILES/SUPERELEVATIONS ARE TO BE USED IN CASE OF DISCREPANCY.
13. THE CONTRACTOR SHALL REVIEW, VERIFY AND COORDINATE ALL DIMENSIONS SHOWN ON PLANS, INCLUDING THE HORIZONTAL AND VERTICAL LOCATION OF CURB INLETS AND GRATE INLETS AND ALL UTILITIES CROSSING THE STORM SEWER PRIOR TO STARTING PROJECT.
14. ALL CURB JOINTS SHALL EXTEND THROUGH THE CURB. MINIMUM LENGTH OF OFFSET JOINTS AT RADIUS POINTS IS 1.5 FEET. ALL JOINTS SHALL BE SEALED WITH JOINT SEALANT.
15. ALL HANDICAP RAMPING, STRIPING, AND PAVEMENT MARKINGS SHALL CONFORM TO ADA REQUIREMENTS AND THE 'NORTH CAROLINA STATE BUILDING CODE, VOL. 1–C ACCESSIBILITY CODE.
16. OWNER SHALL PROVIDE FENCING AND OTHER SAFETY MEASURES NECESSARY IN AND AROUND ANY PROPOSED STORMWATER MANAGEMENT MEASURES (PONDS, WETLANDS, ETC.) OBTAINING PROPER PERMITS SHALL BE THE RESPONSIBILITY OF THE OWNER.
17. RETAINING WALLS EXCEEDING 30 INCHES IN HEIGHT SHALL INCLUDE FALL PROTECTION IN THE FORM OF A HANDRAIL OR FENCING ON THE HIGH SIDE OF THE RETAINING WALL.
18. PROPER COMPACTION OF ALL FILL SOILS PLACED ON SITE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COMPACTION SHALL BE ADEQUATE TO SUPPORT THE PROPOSED USE OF AREAS IN WHICH FILL SOILS ARE PLACED. THE CONTRACTOR SHALL HIRE A GEOTECHNICAL ENGINEER TO TEST AND VERIFY THAT COMPACTION IS ADEQUATE FOR THE PROPOSED USE OF IN THE AREA OF FILL PLACEMENT.
19. ALL ASPECTS OF THIS PROJECT SHALL BE IN FULL COMPLIANCE WITH CURRENT ADA STANDARDS. IF THE CONTRACTOR NOTES ANY ASPECTS OF THE PROJECT WHICH ARE NOT IN COMPLIANCE, THE ENGINEER SHALL BE NOTIFIED PRIOR TO ANY FURTHER WORK BEING PERFORMED. ANY WORK PERFORMED AFTER THE CONTRACTOR NOTES SUCH A NON COMPLIANCE IS SUBJECT TO REMOVAL AND REPAIR AT THE CONTRACTOR'S EXPENSE.
20. THE CONTRACTOR OR OWNER SHALL EMPLOY A GEOTECHNICAL ENGINEER TO TEST ALL EMBANKMENTS AND FILL PLACEMENT FOR PROPER COMPACTION. PROPER COMPACTION SHALL BE PER THE GEOTECHNICAL ENGINEER'S RECOMMENDATIONS OR THESE PLANS, WHICHEVER IS MORE STRINGENT. EMBANKMENTS FOR PONDS SHALL BE PLACED IN 6 INCH LOOSE LAYERS AND SHALL BE COMPACTED TO A DENSITY OF NO LESS THAN 95% OF THE STANDARD PROCTOR MAXIMUM DENSITY AT A MOISTURE CONTENT OF + OR – TWO PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D698. THE CONTRACTOR SHALL TAKE PHOTOGRAPHS OF THE OUTLET STRUCTURE AT ALL PHASES OF INSTALLATION AND SHALL RETAIN WITH GEOTECHNICAL TESTING DATA. THE CONTRACTOR SHALL ALSO RETAIN ALL SHIPPING RECORDS AND SPECIFICATIONS FOR THE OUTLET STRUCTURE MATERIALS AND STRUCTURES. ALL OF THE ABOVE DATA MAY BE REQUIRED AS PART OF THE MUNICIPALITY AS–BUILT PROCESS AND SHALL BE MADE AVAILABLE TO THE ENGINEER UPON REQUEST. THE CONTRACTOR AND OWNER SHALL HAVE DOCUMENTATION OF THESE TESTS AVAILABLE UPON REQUEST.
21. RETAINING WALLS SHOWN HEREIN SHALL BE DESIGNED BY A QUALIFIED PROFESSIONAL ENGINEER WITH EXPERIENCE DESIGNING RETAINING WALLS. AT LEAST 14 DAYS PRIOR TO BEGINNING CONSTRUCTION OF RETAINING WALLS, THE CONTRACTOR SHALL CONTACT THE OWNER'S GEOTECHNICAL ENGINEER TO SCHEDULE AND COORDINATE ALL APPROPRIATE INSPECTIONS, TESTING, AND VERIFICATION NECESSARY DURING RETAINING WALL CONSTRUCTION. THE GEOTECHNICAL ENGINEER SHALL PROVIDE CONTINUOUS INSPECTION, TESTING AND VERIFICATION FOR THE DURATION OF RETAINING WALL CONSTRUCTION. PROPER SCHEDULING, EXECUTION, AND RECORD KEEPING FOR ALL REQUIRED INSPECTIONS, TESTING, AND VERIFICATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SUCH RECORDS SHALL BE RETAINED AND SHALL BE PROVIDED TO THE OWNER AND BASS, NIXON & KENNEDY, INC. ALL MONITORING, TESTING, AND VERIFICATION SHALL CONFORM TO THE MOST RECENT VERSION OF THE NC BUILDING CODE CHAPTER 18, SECTION 1806 OR THE WALL DESIGN ENGINEER'S SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.

ALL CONSTRUCTION MUST CONFORM TO THE UNDERGROUND UTILITY PROTECTION ACT
BEFORE YOU DIG! CONTACT ONE–CALL CENTER 1–800–632–4949

QUANTITY SUMMARY

PHASE NUMBER(S)	1
NUMBER OF LOT(S)	1
LOT NUMBER(S) BY PHASE	N/A
NUMBER OF UNITS	180
LIVABLE BUILDINGS	6
OPEN SPACE (AC)	2.32
NUMBER OF OPEN SPACE LOTS	N/A
PUBLIC WATER (LF)	875
PRIVATE SEWER (LF)	550
PUBLIC STREET (LF)	0
PUBLIC SIDEWALK (LF)	0

ENGINEER:

BNK

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250
RALEIGH, NORTH CAROLINA 27607
TELEPHONE: (919) 851-4422
FAX: (919) 851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110)
NCBOLA (C-0267)
CONTACT: MARTY D. BIZZELL, PE, CPESC
EMAIL: Marty.Bizzell@BNKinc.com

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARTY D. BIZZELL
06/23/21

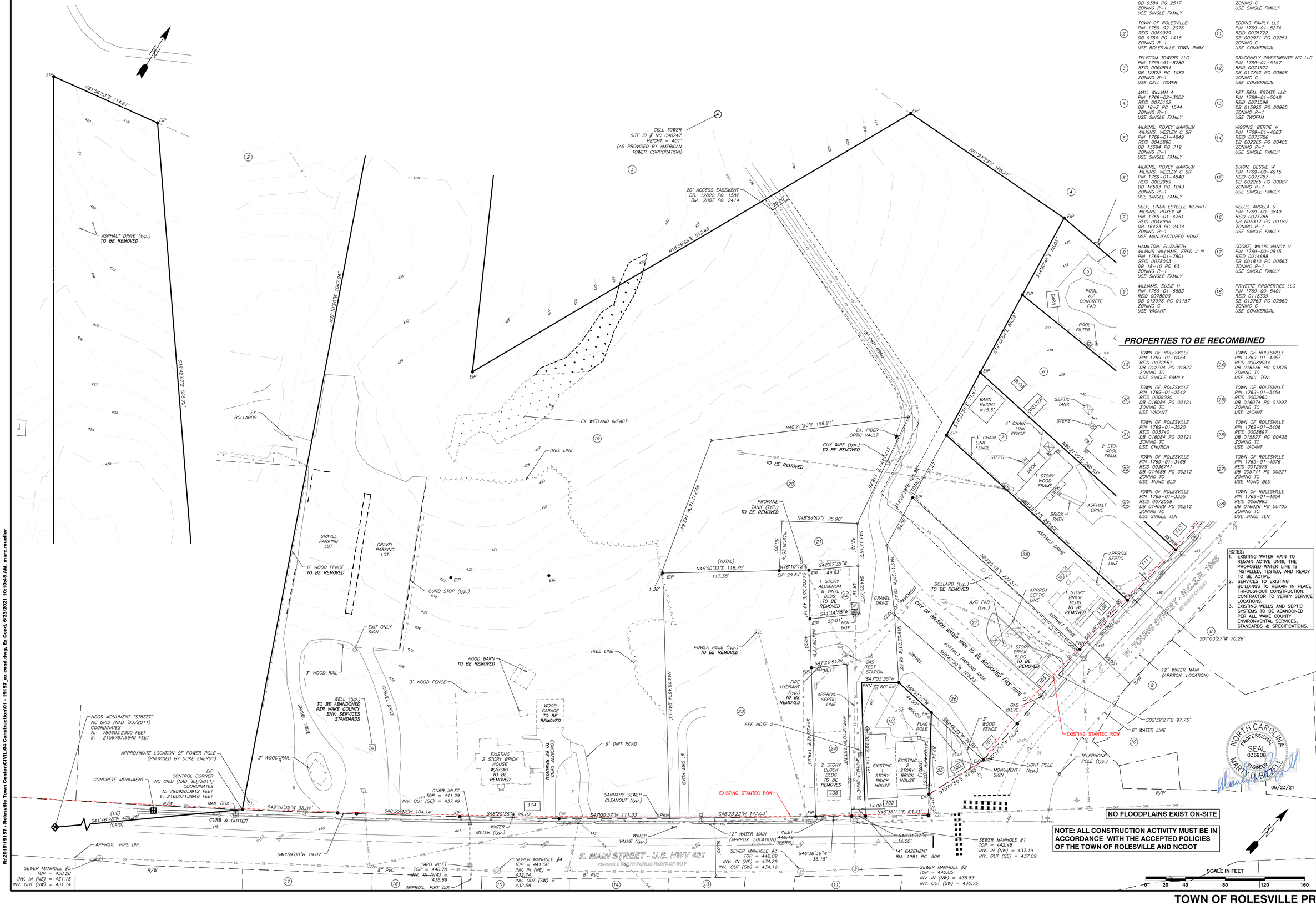
EROSION CONTROL, STORMWATER AND FLOODPLAIN MANAGEMENT
APPROVED
EROSION CONTROL ☐ S-_____
STORMWATER MGMT. ☐ S-_____
FLOOD STUDY ☐ S-_____
DATE_____

WAKE COUNTY NORTH CAROLINA
ENVIRONMENTAL CONSULTANT SIGNATURE

TOWN OF ROLESVILLE PROJECT NO.
BASS, NIXON & KENNEDY, INC.

03-19157 COBBLESTONE VILLAGE CONSTRUCTION SUBMITTAL

R:\2019\19157 - Rolesville Town Center\CIVIL\04 Construction\00 - 19157_Cover.dwg, COVER, 6/23/2021 10:10:12 AM, marc.mueller



1. POWERS, MARK R
POWERS, MARY K
PIN 1759-91-8091
REID 0055852
DB 9384 PG 2517
ZONING R-1
USE SINGLE FAMILY

2. TOWN OF ROLESVILLE
PIN 1759-92-2076
REID 0069979
DB 9754 PG 1416
ZONING R-1
USE ROLESVILLE TOWN PARK

3. TELECOM TOWERS LLC
PIN 1759-91-8780
REID 0060854
DB 12822 PG 1582
ZONING R-1
USE CELL TOWER

4. MAY, WILLIAM A
PIN 1769-02-3002
REID 0075102
DB 16-E PG 1544
ZONING R-1
USE SINGLE FAMILY

5. WILKINS, ROXEY MANGUM
WILKINS, WESLEY C SR
PIN 1769-01-4849
REID 0045890
DB 13684 PG 719
ZONING R-1
USE SINGLE FAMILY

6. WILKINS, ROXEY MANGUM
WILKINS, WESLEY C SR
PIN 1769-01-4840
REID 0002959
DB 16593 PG 1043
ZONING R-1
USE SINGLE FAMILY

7. SELF, LINDA ESTELLE MERRITT
WILKINS, ROXEY M
PIN 1769-01-4751
REID 0046996
DB 16423 PG 2434
ZONING R-1
USE MANUFACTURED HOME

8. HAMILTON, ELIZABETH
WILIAMS WILLIAMS, FRED J III
PIN 1769-01-7801
REID 0078003
DB 18-10 PG 63
ZONING R-1
USE SINGLE FAMILY

9. WILLIAMS, SUSIE H
PIN 1769-01-6663
REID 0078000
DB 012976 PG 01157
ZONING C
USE VACANT

10. TOWN OF ROLESVILLE
PIN 1769-01-7654
REID 0077362
DB 014567 PG 0741
ZONING C
USE SINGLE FAMILY

11. EDDINS FAMILY LLC
PIN 1769-01-5274
REID 0035722
DB 009971 PG 02251
ZONING C
USE COMMERCIAL

12. DRAGONFLY INVESTMENTS NC LLC
PIN 1769-01-5157
REID 0073627
DB 017752 PG 00806
ZONING C
USE COMMERCIAL

13. KET REAL ESTATE LLC
PIN 1769-01-5048
REID 0073596
DB 015925 PG 00965
ZONING R-1
USE TWOFAM

14. WIGGINS, BERTIE W
PIN 1769-01-4083
REID 0073786
DB 002265 PG 00405
ZONING R-1
USE SINGLE FAMILY

15. DIXON, BESSIE W
PIN 1769-00-4915
REID 0073787
DB 002265 PG 00087
ZONING R-1
USE SINGLE FAMILY

16. WELLS, ANGELA S
PIN 1769-00-3849
REID 0073785
DB 005317 PG 00189
ZONING R-1
USE SINGLE FAMILY

17. COOKE, WILLIS NANCY V
PIN 1769-00-2815
REID 0014688
DB 001810 PG 00563
ZONING R-1
USE SINGLE FAMILY

18. PRIVETTE PROPERTIES LLC
PIN 1769-00-5401
REID 0118309
DB 012763 PG 02560
ZONING C
USE COMMERCIAL

PROPERTIES TO BE RECOMBINED

19. TOWN OF ROLESVILLE
PIN 1769-01-0454
REID 0072561
DB 012794 PG 01827
ZONING TC
USE SINGLE FAMILY

20. TOWN OF ROLESVILLE
PIN 1769-01-2542
REID 0009020
DB 016084 PG 02121
ZONING TC
USE VACANT

21. TOWN OF ROLESVILLE
PIN 1769-01-3520
REID 003740
DB 016084 PG 02121
ZONING TC
USE CHURCH

22. TOWN OF ROLESVILLE
PIN 1769-01-3468
REID 0036741
DB 014688 PG 00212
ZONING TC
USE MUNC BLD

23. TOWN OF ROLESVILLE
PIN 1769-01-3355
REID 0072559
DB 014688 PG 00212
ZONING TC
USE SINGLE TEN

24. TOWN OF ROLESVILLE
PIN 1769-01-4357
REID 00089034
DB 016566 PG 01875
ZONING TC
USE SNGL TEN

25. TOWN OF ROLESVILLE
PIN 1769-01-5454
REID 0002960
DB 016074 PG 01997
ZONING TC
USE VACANT

26. TOWN OF ROLESVILLE
PIN 1769-01-5408
REID 0008897
DB 015827 PG 00426
ZONING TC
USE VACANT

27. TOWN OF ROLESVILLE
PIN 1769-01-4576
REID 0012576
DB 005741 PG 00921
ZONING TC
USE MUNC BLD

28. TOWN OF ROLESVILLE
PIN 1769-01-4654
REID 0060993
DB 016026 PG 00705
ZONING TC
USE SINGL TEN

NOTES:
1. EXISTING WATER MAIN TO REMAIN ACTIVE UNTIL THE PROPOSED WATER LINE IS INSTALLED, TESTED, AND READY TO BE ACTIVE.
2. SERVICES TO EXISTING BUILDINGS TO REMAIN IN PLACE THROUGHOUT CONSTRUCTION. CONTRACTOR TO VERIFY SERVICE LOCATIONS.
3. EXISTING WELLS AND SEPTIC SYSTEMS TO BE ABANDONED PER ALL WAKE COUNTY ENVIRONMENTAL SERVICES, STANDARDS & SPECIFICATIONS.

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT

SCALE IN FEET
0 20 40 80 120 160

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARTY D. BIZZELL
Marty D. Bizzell
06/23/21

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

BNK

NO.	DATE	DESCRIPTION	BY

REVISIONS

03-19157	PROGRESS	MRM
JOB NO.	DATE	DRAWN BY

EXISTING CONDITIONS & DEMOLITION PLAN
SCALE: 1" = 40' CHK BY: MDB

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET
C0.1

TOWN OF ROLESVILLE PROJECT NO.

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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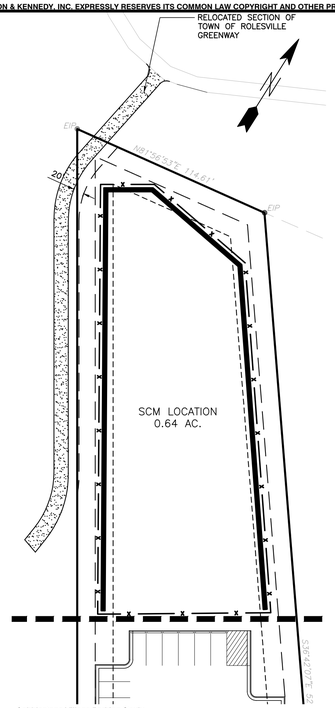


Cobblestone Village Parking Study
June 21, 2021

Total Square Footage and Unit Tabulation

	Restaurant SF					
	standard	reduced*	pm only*	Community Center SF	Retail/Flex SF	Residential Units
Building 1						40
Building 2					16,461	30
Building 3					11,405	18
Building 4				18,200		
Building 5					3,816	4
Building 6					18,148	36
Building 7						40
Building 8						12
Total:	-	-	-	18,200	49,828	180

NON-OPTIMIZED Single-Use Parking Requirements

Parking Coefficient:	0.02	0.01	0.03	31,000 SF	31,000 SF	2	per unit	
Parking Count:	0	0	0	55.00	150.00	360		Total:
							Single-Use Required:	565

OPTIMIZED Peak Hour Percentage Factors

TIME	% of peak	demand*	pm only	% of peak	demand	% of peak	demand	% of peak	demand	Total Hourly Sums
6:00 AM	0%	0	0	3%	2	0%	0	100%	360.0	362
7:00 AM	8%	0	0	20%	11	8%	12	67%	313.2	337
8:00 AM	18%	0	0	63%	35	18%	27	79%	284.4	347
9:00 AM	42%	0	0	93%	52	42%	63	73%	262.8	378
10:00 AM	68%	0	0	100%	55	68%	102	68%	244.8	402
11:00 AM	80%	0	0	100%	55	80%	120	59%	212.4	388
12:00 PM	90%	0	0	90%	50	90%	135	60%	216.0	401
1:00 PM	90%	0	0	90%	50	90%	135	59%	212.4	398
2:00 PM	85%	0	0	97%	54	85%	128	60%	216.0	398
3:00 PM	80%	0	0	93%	52	80%	120	61%	219.6	392
4:00 PM	85%	0	0	77%	43	85%	128	66%	237.6	409
5:00 PM	79%	0	0	47%	26	79%	119	77%	277.2	423
6:00 PM	82%	0	0	23%	13	82%	123	85%	306.0	442
7:00 PM	89%	0	0	7%	4	89%	134	94%	338.4	477
8:00 PM	87%	0	0	7%	4	87%	131	96%	345.6	481
9:00 PM	61%	0	0	3%	2	61%	92	98%	352.8	447
10:00 PM	32%	0	0	3%	2	32%	48	99%	356.4	407
11:00 PM	13%	0	0	0%	0	13%	20	100%	360.0	380
12:00 AM	0%	0	0	0%	0	0%	0	100%	360.0	360

Peak Demand Required: 481

Parking Provided:	
On-Site	457
On-Street	24
Total Parking Provided	481

Assumptions:

Parking requirements based on current Town of Rolesville Town Center District parking requirements.
Accessible Spaces: 11 Required / 25 Provided
40 Bicycle Spaces are provided.

OVERALL SITE DATA

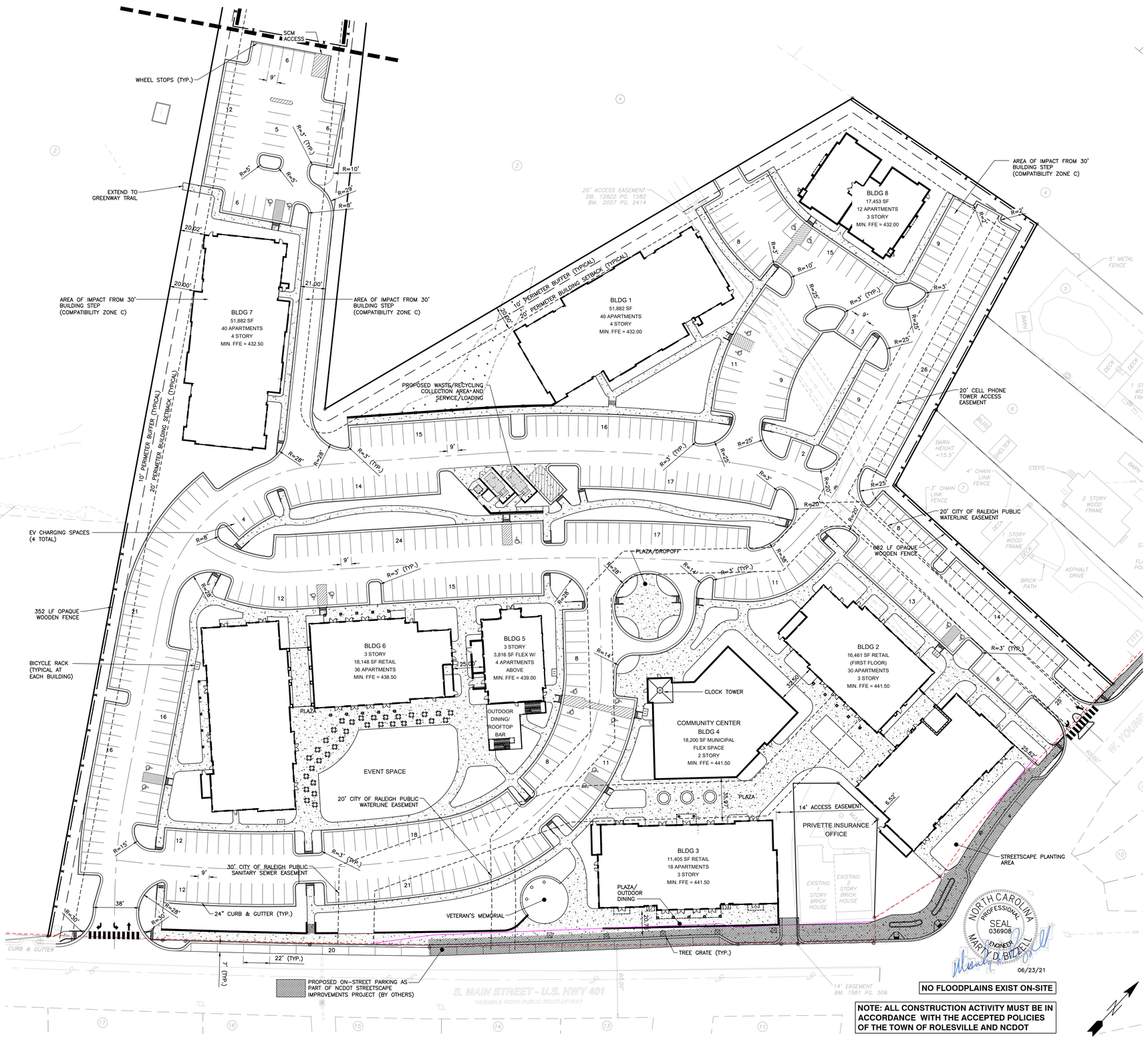
SITE AREA	10.96 AC (477,418 SF±)
P.I.N.	1769-01-0454, 1769-01-4357, 1769-01-3355 1769-01-3468, 1769-01-2542, 1769-01-3520 1769-01-4654,1769-01-5454, 1769-01-5408, 1769-01-4576
ZONING DISTRICT:	TOWN CENTER (TC) RESIDENTIAL, MIXED USE
OPEN SPACE AREA:	3.48 AC
IMPERVIOUS AREA:	7.48 AC
IMPERVIOUS AREA (%):	68%
APARTMENT MIX	
1 BEDROOM	112 UNITS
1 BEDROOM/ LOFT	4 UNITS
2 BEDROOM	64 UNITS
TOTAL APARTMENTS	180 UNITS
RESIDENTIAL DENSITY:	16.4 UNITS/ACRE
RETAIL/COMMERCIAL:	49,830 SQUARE FEET
MUNICIPAL FLEX SPACE:	18,200 SQUARE FEET
TOTAL:	68,030 SQUARE FEET
EVENT SPACE:	0.44 ACRES/ 18,976 SQUARE FEET

PARKING REQUIREMENTS PER TC DISTRICT DEVELOPMENT STANDARDS

MIXED USE RESDENTIAL: 2.0 SPACES PER UNIT	180 x 2 = 360 SPACES REQUIRED
MIXED USE NON-RESIDENTIAL: 3 SPACES PER 1000 GSF	68,030/1000 x 3 = 205 SPACES REQUIRED
TOTAL PARKING REQUIRED/PROVIDED:	565 SPACES REQUIRED/ 483 PROVIDED

5% OF ON STREET PARKING MAY BE COUNTED AS REQUIRED PARKING (28 ALLOWED/ 26 PROVIDED)
15% PARKING REDUCTION ALLOWED FOR SHARED PARKING: 565 x .85 = 481 REQUIRED

BUILDING 1:	51,882 SF APARTMENTS
BUILDING 2:	16,641 SF RETAIL
BUILDING 3:	11,405 SF RETAIL
BUILDING 4:	18,200 SF MUNICIPAL
BUILDING 5:	3,816 FLEX W/ APARTMENTS
BUILDING 6:	18,148 SF RETAIL
BUILDING 7:	51,882 SF APARTMENTS
BUILDING 8:	17,453 SF APARTMENTS



NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARTY D. BIZZELL
06/23/21

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT

SCALE IN FEET
0 20 40 80 120 160

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

JOB NO. 03-19157 | DATE | PROGRESS | DRAWN BY: MRM | CHK BY: MDB

SITE PLAN

SCALE: 1" = 40'

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C1.1

TOWN OF ROLESVILLE PROJECT NO.

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Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct See digital signature

Private
Sewer Collection / Extension System

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4711 (P)

Authorization to Construct See digital signature

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

STANDARD UTILITY NOTES (as applicable):

1. All materials & construction methods shall be in accordance with City of Raleigh design standards, details & specifications (reference: CORPUD Handbook, current edition)
2. Utility separation requirements:
   a) A distance of 100' shall be maintained between sanitary sewer & any private or public water supply source such as an impounded reservoir used as a source of drinking water. If adequate lateral separation cannot be achieved, ferrous sanitary sewer pipe shall be specified & installed to waterline specifications. However, the minimum separation shall not be less than 25' from a private well or 50' from a public well
   b) When installing water &/or sewer mains, the horizontal separation between utilities shall be 10'. If this separation cannot be maintained due to existing conditions, the variation allowed is the water main in a separate trench with the elevation of the water main at least 18" above the top of the sewer & must be approved by the Public Utilities Director. All distances are measured from outside diameter to outside diameter
   c) Where it is impossible to obtain proper separation, or anytime a sanitary sewer passes over a watermain, DIP materials or steel encasement extended 10' on each side of crossing must be specified & installed to waterline specifications
   d) 5.0' minimum horizontal separation is required between all sanitary sewer & storm sewer facilities, unless DIP material is specified for sanitary sewer
   e) Maintain 18" min. vertical separation at all watermain & RCP storm drain crossings; maintain 24" min. vertical separation at all sanitary sewer & RCP storm drain crossings. Where adequate separations cannot be achieved, specify DIP materials & a concrete cradle having 6" min. clearance (per CORPUD details W-41 & S-49)
   f) All other underground utilities shall cross water & sewer facilities with 18" min. vertical separation required
3. Any necessary field revisions are subject to review & approval of an amended plan &/or profile by the City of Raleigh Public Utilities Department prior to construction
4. Contractor shall maintain continuous water & sewer service to existing residences & businesses throughout construction of project. Any necessary service interruptions shall be preceded by a 24 hour advance notice to the City of Raleigh Public Utilities Department
5. 3.0' minimum cover is required on all water mains & sewer forcemains. 4.0' minimum cover is required on all reuse mains
6. It is the developer's responsibility to abandon or remove existing water & sewer services not being used in redevelopment of a site unless otherwise directed by the City of Raleigh Public Utilities Department. This includes abandoning tap at main & removal of service from ROW or easement per CORPUD Handbook procedure
7. Install ¾" copper* water services with meters located at ROW or within a 2'x2' Waterline Easement immediately adjacent. *NOTE: it is the applicant's responsibility to properly size the water service for each connection to provide adequate flow & pressure*
8. Install 4" PVC* sewer services @ 1.0% minimum grade with cleanouts located at ROW or easement line & spaced every 75 linear feet maximum
9. Pressure reducing valves are required on all water services exceeding 80 psi; backwater valves are required on all sanitary sewer services having building drains lower than 1.0' above the next upstream manhole
10. All environmental permits applicable to the project must be obtained from NCDWQ, USACE &/or FEMA for any riparian buffer, wetland &/or floodplain impacts (respectively) prior to construction
11. NCDOT / Railroad Encroachment Agreements are required for any utility work (including main extensions & service taps) within state or railroad ROW prior to construction
12. Grease Interceptor / Oil Water Separator sizing calculations & installation specifications shall be approved by the CORPUD FOG Program Coordinator prior to issuance of a Building Permit. Contact Tim Beasley at (919) 996-2334 or timothy.beasley@raleighnc.gov for more information
13. Cross-connection control protection devices are required based on degree of health hazard involved as listed in Appendix-B of the Rules Governing Public Water Systems in North Carolina. These guidelines are the minimum requirements. The devices shall meet American Society of Sanitary Engineering (ASSE) standards or be on the University of Southern California approval list. The devices shall be installed and tested (both initial and periodic testing thereafter) in accordance with the manufacturer's recommendations or the local cross-connection control program, whichever is more stringent. Contact Joanie Hartley at (919) 996-5923 or joanie.hartley@raleighnc.gov for more information

NOTES:
1. FOR BUILDING SEWER PLUMBING THE FURTHEST MAIN UNDER SLAB UPSET 1.5' BELOW FFE.
2. BACKFLOW PREVENTERS TO BE LOCATED INSIDE OF BUILDINGS.

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT

SCALE IN FEET
0 20 40 80 120 160

TOWN OF ROLESVILLE PROJECT NO.

BNK
BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

03-19157 JOB NO. | PROGRESS DATE | MRM DRAWN BY | CHK BY: MDB

UTILITY PLAN

SCALE: 1" = 40'

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C2.1

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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Structure	d_o (ft)	Velocity (fps)	Length (ft)	Width (ft)	Depth (in)	Type	d_{50}
FES 1	2.00	7.4	12	6	22	Class 'B'	6" - 13"
FES 3	3.00	6.5	18	9	22	Class 'B'	6" - 13"

* Per NYDoT Dissipator Schedule Fig.1

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT

SCALE IN FEET 0 20 40 80 120 160

BNK

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CONSULTING ENGINEERS
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TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

03-19157 JOB NO. | PROGRESS DATE | MRM DRAWN BY

GRADING PLAN

SCALE: 1" = 40' | CHK BY: MDB

COBBLESTONE VILLAGE

MIXED USE DEVELOPMENT

TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C3.1

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARY D. BIZZELL 06/23/21

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

TOWN OF ROLESVILLE PROJECT NO.

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STORMDRAINAGE PIPE TABLE

U.S. STRUCTURE	D.S. STRUCTURE	U.S. INVERT	D.S. INVERT	LENGTH	DIAMETER	MATERIAL	SLOPE
2	1	420.00	419.80	18.80	24	HDPE	1.06%
4	3	421.26	421.00	43.91	36	HDPE	0.60%
5	4	422.04	421.36	113.45	36	HDPE	0.60%
6	5	423.35	422.14	201.82	36	HDPE	0.60%
7	6	423.62	423.45	28.04	36	HDPE	0.60%
8	7	425.82	424.94	88.24	24	HDPE	1.00%
9	8	426.82	425.92	90.21	24	HDPE	1.00%
10	9	427.59	426.92	67.14	24	HDPE	1.00%
11	10	428.63	427.69	93.66	18	HDPE	1.00%
12	11	429.65	428.73	91.93	18	HDPE	1.00%
13	12	430.39	429.75	63.96	15	HDPE	1.00%

STORMDRAINAGE PIPE TABLE

U.S. STRUCTURE	D.S. STRUCTURE	U.S. INVERT	D.S. INVERT	LENGTH	DIAMETER	MATERIAL	SLOPE
14	13	430.75	430.49	25.95	15	HDPE	1.00%
15	5	424.10	423.05	105.41	15	HDPE	1.00%
16	7	424.61	423.72	147.77	24	HDPE	0.60%
17	16	425.41	424.71	116.44	24	HDPE	0.60%
18	17	428.85	427.77	107.92	15	HDPE	1.00%
19	18	431.57	430.69	88.39	15	HDPE	1.00%
20	19	432.50	431.67	83.01	15	HDPE	1.00%
21	6	424.24	423.45	78.65	24	HDPE	1.00%
22	21	424.60	424.34	26.08	15	HDPE	1.00%
23	22	426.78	424.70	207.76	15	HDPE	1.00%
24	10	432.22	430.86	90.55	15	HDPE	1.50%

STORMDRAINAGE PIPE TABLE

U.S. STRUCTURE	D.S. STRUCTURE	U.S. INVERT	D.S. INVERT	LENGTH	DIAMETER	MATERIAL	SLOPE
25	24	434.35	432.32	135.44	15	HDPE	1.50%
26	25	438.26	437.54	119.60	15	HDPE	0.60%
27	26	438.42	438.26	25.90	15	HDPE	0.60%
28	27	438.96	438.42	89.48	15	HDPE	0.60%
29	22	425.05	424.70	34.83	15	HDPE	1.00%
30	17	426.34	425.51	137.91	18	HDPE	0.60%
31	18	429.82	428.95	87.08	15	HDPE	1.00%
32	9	429.50	428.60	90.23	15	HDPE	1.00%
33	24	432.43	432.32	11.23	15	HDPE	1.00%
34	17	428.09	427.77	32.09	12	HDPE	1.00%

STORMDRAINAGE STRUCTURE TABLE

STRUCTURE NAME	INSERTION RIM ELEVATION (FLOWLINE)	STRUCTURE TYPE
1	422.45 INV. IN= 419.80 (2)	24" FES
2	425.18 INV. OUT= 420.00 (1)	RISER
3	424.83 INV. IN= 421.00 (4)	36" FES
4	428.06 INV. IN= 421.36 (5) INV. OUT= 421.26 (3)	NCDOT CURB INLET
5	429.99 INV. IN= 422.14 (6) INV. IN= 423.05 (15) INV. OUT= 422.04 (4)	NCDOT CURB INLET
6	430.99 INV. IN= 423.45 (7) INV. IN= 423.45 (21) INV. OUT= 423.35 (5)	NCDOT CURB INLET
7	431.10 INV. IN= 424.94 (8) INV. IN= 423.72 (16) INV. OUT= 423.62 (6)	NCDOT CURB INLET
8	433.95 INV. IN= 425.92 (9) INV. OUT= 425.82 (7)	NCDOT CURB INLET
9	433.95 INV. IN= 426.92 (10) INV. IN= 428.60 (32) INV. OUT= 426.82 (8)	NCDOT CURB INLET

STORMDRAINAGE STRUCTURE TABLE

STRUCTURE NAME	INSERTION RIM ELEVATION (FLOWLINE)	STRUCTURE TYPE
10	436.44 INV. IN= 427.69 (11) INV. IN= 430.86 (24) INV. OUT= 427.59 (9)	HDPE YARD INLET
11	437.44 INV. IN= 428.73 (12) INV. OUT= 428.63 (10)	HDPE YARD INLET
12	435.50 INV. IN= 429.75 (13) INV. OUT= 429.65 (11)	HDPE YARD INLET
13	436.00 INV. IN= 430.49 (14) INV. OUT= 430.39 (12)	NCDOT CURB INLET
14	436.00 INV. OUT= 430.75 (13)	NCDOT CURB INLET
15	428.50 INV. OUT= 424.10 (5)	HDPE YARD INLET
16	432.34 INV. IN= 424.71 (17) INV. OUT= 424.61 (7)	NCDOT CURB INLET
17	434.06 INV. IN= 427.77 (18) INV. IN= 425.51 (30) INV. IN= 427.77 (34) INV. OUT= 425.41 (16)	NCDOT CURB INLET
18	436.03 INV. IN= 430.69 (19) INV. IN= 428.95 (31) INV. OUT= 428.85 (17)	NCDOT CURB INLET

STORMDRAINAGE STRUCTURE TABLE

STRUCTURE NAME	INSERTION RIM ELEVATION (FLOWLINE)	STRUCTURE TYPE
19	437.51 INV. IN= 431.67 (20) INV. OUT= 431.57 (18)	NCDOT CURB INLET
20	438.65 INV. OUT= 432.50 (19)	NCDOT CURB INLET
21	431.60 INV. IN= 424.34 (22) INV. OUT= 424.24 (6)	HDPE YARD INLET
22	432.00 INV. IN= 424.70 (23) INV. IN= 424.70 (29) INV. OUT= 424.60 (21)	NCDOT CURB INLET
23	435.97 INV. OUT= 426.78 (22)	NCDOT CURB INLET
24	437.18 INV. IN= 432.32 (33) INV. IN= 432.32 (25) INV. OUT= 432.22 (10)	HDPE YARD INLET
25	440.83 INV. IN= 437.54 (26) INV. OUT= 434.35 (24)	HDPE YARD INLET
26	441.63 INV. IN= 438.26 (27) INV. OUT= 438.26 (25)	HDPE YARD INLET
27	441.50 INV. IN= 438.42 (28) INV. OUT= 438.42 (26)	HDPE YARD INLET

STORMDRAINAGE STRUCTURE TABLE

STRUCTURE NAME	INSERTION RIM ELEVATION (FLOWLINE)	STRUCTURE TYPE
28	441.72 INV. OUT= 438.96 (27)	HDPE YARD INLET
29	428.50 INV. OUT= 425.05 (22)	HDPE YARD INLET
30	430.24 INV. OUT= 426.34 (17)	NCDOT CURB INLET
31	434.19 INV. OUT= 429.82 (18)	NCDOT CURB INLET
32	435.81 INV. OUT= 429.50 (9)	NCDOT CURB INLET
33	437.54 INV. OUT= 432.43 (24)	NCDOT CURB INLET
34	431.00 INV. OUT= 428.09 (17)	HDPE YARD INLET

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NO.	DATE	DESCRIPTION	BY
		REVISIONS	

JOB NO. 03-19157 | DATE | PROGRESS | DRAWN BY MRM | CHK BY: MDB | SCALE:

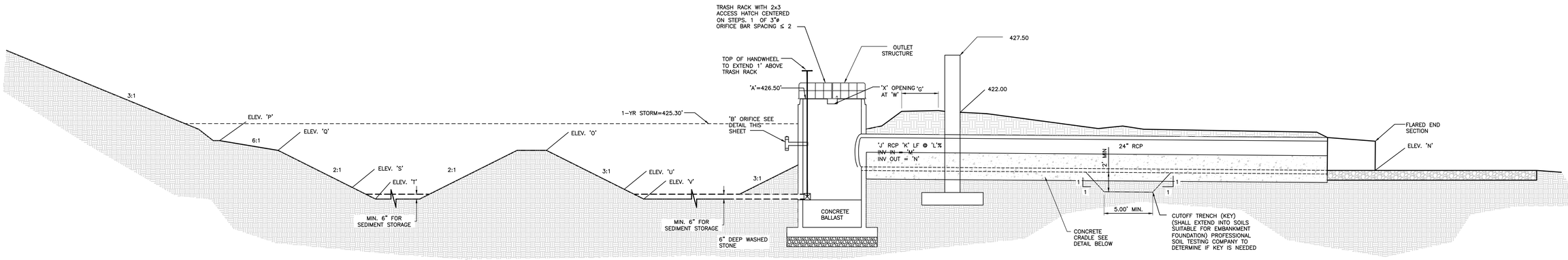
STORM DRAINAGE PIPE & STRUCTURE TABLE

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARY D. BIZZELL
06/23/21

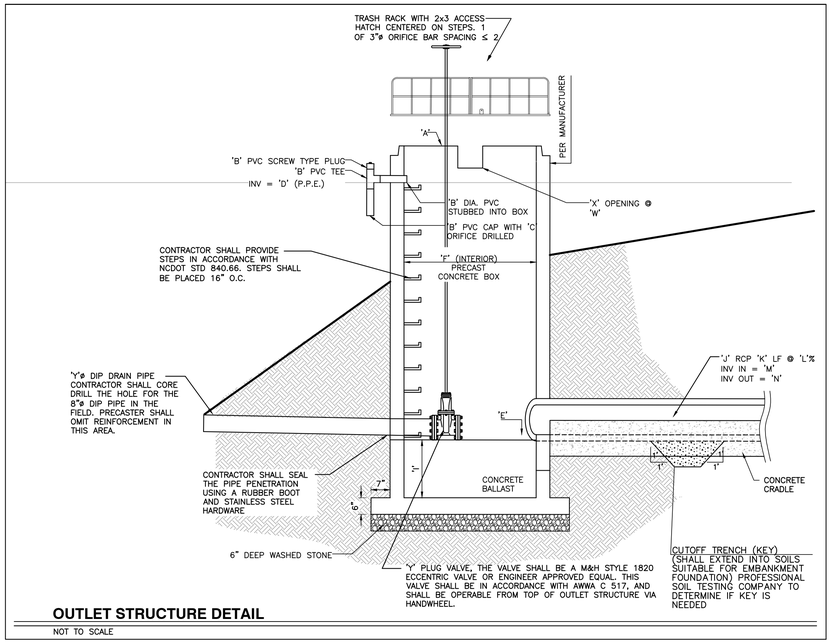
SHEET C3.8

TOWN OF ROLESVILLE PROJECT NO.



CROSS-SECTION OF WET POND A-A

NTS



OUTLET STRUCTURE DETAIL

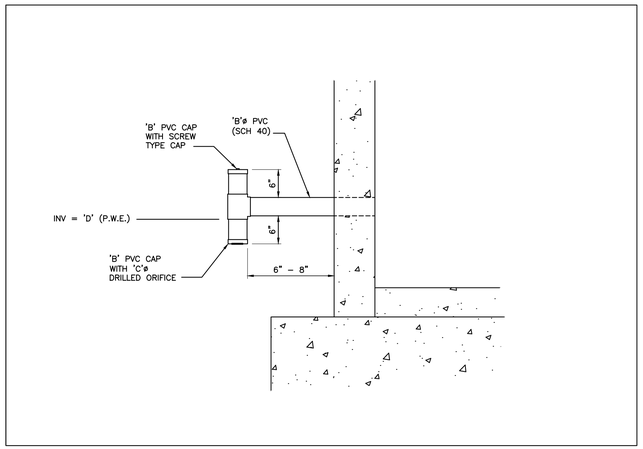
NOT TO SCALE

BOUYANCY CALCULATIONS FOR RISER/BARREL
COBBLESTONE VILLAGE
WET POND - SCM

Square Riser Inside Length (ft):	4.0
Riser Wall Thickness (in):	6
Pond Bottom Elevation (ft):	420.00
Riser Crest Elevation (ft):	426.50
Density of Riser Matl (lb/cf):	150.00
Pipe Inside Diameter (in):	24
Pipe Wall Thickness (in):	3
Length of Pipe Exposed (ft):	1.00
Density H2O (lb/cf):	62.40
Volume H2O Displaced by Riser (cf):	131.63
Weight H2O Displaced by Riser (lb):	8213.40
Volume H2O Displaced by Pipe (cf):	4.91
Weight H2O Displaced by Pipe (lb):	306.31
Total Uplift Force (lb):	8519.71
Weight of Riser (lb):	4,144
Weight of Pipe (lb):	265.07
Pipe/Riser Downward Force (lb):	4408.82

Ballast Concrete:

Minimum Factor of Safety:	1.2
Required ballast thickness (in):	37.02
Provided Ballast Thickness (in):	40
Total Downward Force (lb):	10,692
Provided Factor of Safety:	1.25



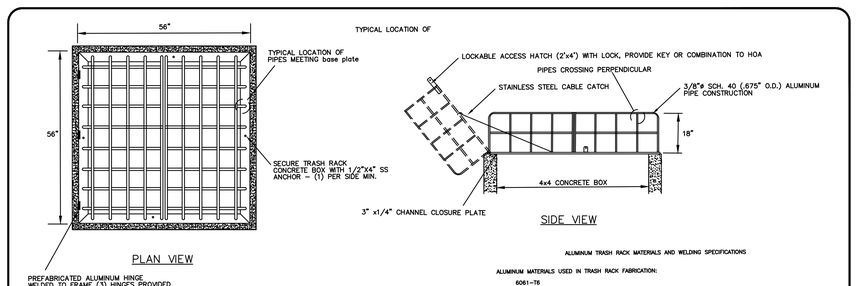
INVERTED INTAKE DETAIL (RISER)

NTS

POND LEGEND - SCM			
	Description	Design	As-Built
A	Top of Riser	426.50 ft	
B	Diameter of PVC Drawdown Pipe	4 in	
C	Drawdown Orifice Opening	2.5 in	
D	Drawdown Pipe Elevation / Permanent Pool	424.50 ft	
E	Inside Bottom Riser Elevation	420.00 ft	
F	Outlet Structure Size	4ft x 4ft	
G	Top of Berm Width	10 ft	
H	Top of Dam	428.00 ft	
I	Ballast Thickness	40 in	
J	Size of Outlet Pipe	24 in	
K	Length of Outlet Pipe	18 ft	
L	Slope of Outlet Pipe	2.78 %	
M	Invert in Outlet Pipe	420.00 ft	
N	Invert Out Outlet Pipe	419.80 ft	
O	Top Elevation Forebay Berm	424.00 ft	
P	Elevation Top of Litoral Shelf	425.00 ft	
Q	Elevation Bottom of Litoral Shelf	424.00 ft	
R	Slope of Litoral Shelf	6:1	
S	Sediment Cleanout Elevation Forbay	422.00 ft	
T	Bottom Elevation Forebay	421.00 ft	
U	Sediment Cleanout Elevation Permanent Pool	421.00 ft	
V	Bottom Elevation Permanent Pool	420.00 ft	
W	Elevation Secondary Weir	426.20 ft	
X	Width Secondary Weir	12 in	

Special Instructions

Place Drawdown pipe opposite of outlet pipe and ensure a minimum of 12" clearance between drawdown pipe opening and ground elevation to allow for proper drainage. Place secondary weir above drawdown pipe on same side of outlet structure.



TRASH RACK SUBMITTAL - Aluminum Trashrack for 4x4 Box

ALUMINUM TRASH RACK MATERIALS AND WELDING SPECIFICATIONS

ALUMINUM MATERIALS USED IN TRASH RACK FABRICATION:
6061-T6

GENERAL CHARACTERISTICS:
6061-T6 HEAVY DUTY STRUCTURAL CORROSION RESISTANCE (B) STRESS, CRACKING (B)

ALUMINUM MILL PRODUCT SPECIFICATIONS
6061 PIPE MILITARY (MIL-P-25995) ASTM B241) ANSI (H38.7)

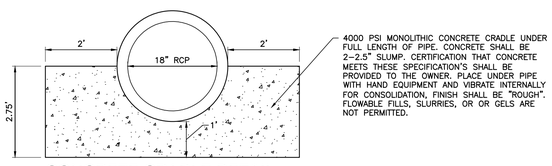
TYPICAL MECHANICAL PROPERTIES:
TENSILE STRENGTH (ksi)
6061-T6 ULTIMATE (45) YIELD (40) ULTIMATE SHEARING STRENGTH ksi (30)

TYPICAL MECHANICAL PROPERTIES OF TIG WELDED JOINT ON ALUMINUM ALLOYS:
WELD DUCTILITY
BASE METAL 6061
FILLER 5356 ULTIMATE STRENGTH (29,000#) YIELD STRENGTH (17,000 #)

NOTE: WELDING OF ALUMINUM HAS LITTLE, IF ANY, ROOT PENETRATION INTO BASE METAL. TO ACHIEVE PROPER JOINT ATTACHMENT BEVELING OF BASE METAL IS NECESSARY AND GENEROUS AMOUNT OF WELD ROD IS REQ'D. WE USE BOTH 4043 AND 5356 FILLER RODS TO ACHIEVE THE BEST STRENGTH AND CORROSION RESISTANCE FOR THE APPLICATION. ALL PIPES THAT CROSS PERPENDICULAR TO ONE ANOTHER ARE WELDED TOP AND BOTTOM WITH A 1/4" TO 3/8" WIDE FILLET. PIPES THAT MEET THE BASE PLATES ARE WELDED COMPLETELY AROUND WITH A 1/4" TO 3/8" WELD FILLET. ALL WELDS ARE DONE IN A MANNER TO ACHIEVE MAXIMUM STRENGTH AND IN AN EFFORT TO MINIMIZE ANNEALING OF THE BASE METAL IN ORDER TO AVOID CRACKING.

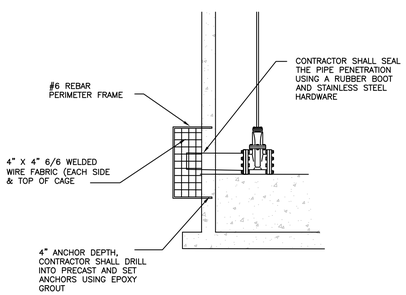
TRASH RACK DETAIL

NTS



CONCRETE CRADLE DETAIL

NOT TO SCALE



(IF APPLICABLE) EMERGENCY DRIP DRAIN TRASH RACK DETAIL

NOT TO SCALE

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

03-19157 JOB NO. | PROGRESS DATE | MRM DRAWN BY | SCALE: N.T.S. | CHK BY: MDB

BMP DETAILS

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C3.2

TOWN OF ROLESVILLE PROJECT NO.

CONSTRUCTION SEQUENCE - STAGE 1

1. ONCE THE EROSION AND SEDIMENT CONTROL PLAN APPROVAL AND NCG01 CERTIFICATE OF COVERAGE ARE OBTAINED, SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL CONSULTANT. OBTAIN A LAND-DISTURBING PERMIT.
2. INSTALL GRAVEL CONSTRUCTION PAD, TEMPORARY DIVERSIONS, SILT FENCE, SKIMMER SEDIMENT BASINS AND OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS, BERMS AND BASINS IMMEDIATELY AFTER CONSTRUCTION.
3. CALL ENVIRONMENTAL CONSULTANT FOR AN ONSITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT TO OBTAIN A CERTIFICATE OF COMPLIANCE.
4. BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. ROUGH GRADE SITE.
5. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
6. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, ALLEY PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
7. CALL ENVIRONMENTAL CONSULTANT FOR AN ONSITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT PRIOR TO THE REMOVAL OF SKIMMER SEDIMENT BASIN #1.
8. CONTINUE TO SOIL EROSION PLAN STAGE 2 ONCE SKIMMER BASIN #1 HAS BEEN REMOVED.

NOTE: WAKE COUNTY MUST GRANT PERMISSION TO CONVERT THE SEDIMENT BASIN OVER TO THE STORMWATER USE PRIOR TO COMPLETING ANY RELATED WORK.

TOTAL DISTURBED AREA = 11.0 AC

DENUDED AREA = 10.96 AC

REQUIRED WAKE COUNTY BASIN REMOVAL AND/OR CONVERSION SEQUENCE

1. SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED OR CONVERTED TO A PERMANENT STORMWATER POND. INSTALL SILT FENCING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
2. UTILIZE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SEDIMENT BASIN SURFACE FOR DRAW DOWN OF WATER IN BASIN FOR MAINTENANCE OR CLOSE OUT UNLESS INFEASIBLE. SEE REQUIREMENTS OF NCG01 PERMIT PART II, SECTION G, ITEM (4) ENTITLED "DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT" AND REFER TO WAKE COUNTY "FILTER BAG FOR DEWATERING ACTIVITIES" CONSTRUCTION DETAIL.
3. REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF CULVERT PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPARATION FOR SEEDING.
4. PERFORM SEEDBED PREPARATION, SEED, MULCH AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
5. INSTALL VELOCITY DISSIPATORS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
6. WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL CONSULTANT FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVICE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION. NOTE: A MEETING SHOULD ALSO BE SCHEDULED WITH THE ENVIRONMENTAL CONSULTANT TO DETERMINE WHEN A BASIN MAY BE CONVERTED FOR STORMWATER USE. SOME MUNICIPALITIES MAY ALSO REQUIRE THIS.

SEDIMENT BASIN SUMMARY CHART

Sediment Basin Number	1	2	3
Drainage Area (acres)	3.42	4.61	0.6
Q10(cfs)	(0.5)(7.22)(3.42)=12.35	(0.5)(7.22)(4.61)=16.64	(0.5)(7.22)(0.60)=2.17
Weir Size (ft)	10 x 1.5	10 x 1.5	10 x 1.5
Surface Area Required (SF)	(435)(12.35)=5,372	(435)(16.64)=7,238	(435)(2.17)=944
Volume Required (CF)	(1800)(3.42)= 6,156	(1800)(4.61)= 8,298	(1800)(0.60)= 1,080
Dimensions (ft)	see plans	see plans	see plans
Surface Area Provided (SF)	5,400	10,640	1,584
Volume Provided (CF)	13,572	27,636	2,563
Skimmer Size	4"	4"	3
Orifice Radius	0.5"	0.63"	0.25
Orifice Diameter	1.0"	1.25"	0.5
Drawdown Time (Days)	4.62	3.98	3.74
Number of Baffles	3	3	3

Structure	d_c (ft)	Velocity (fps)	Length (ft)	Width (ft)	Depth (in)	Type	d_{50}
FES 1	2.00	7.4	12	6	22	Class 'B'	6" - 13"
FES 3	3.00	6.5	18	9	22	Class 'B'	6" - 13"
DV DITCH 1*	1.25	5.3	5	4	9	Class 'A'	3" - 6"
DV DITCH 2*	1.25	5.3	5	4	9	Class 'A'	3" - 6"
DV DITCH 3*	1.25	5.3	5	4	9	Class 'A'	3" - 6"
DV DITCH 4*	1.25	5.3	5	4	9	Class 'A'	3" - 6"
PIPE 1**	1.25	5.3	5	4	9	Class 'A'	3" - 6"
PIPE 2**	1.25	5.3	5	4	9	Class 'A'	3" - 6"

*Per NYDoT Dissipator Schedule Fig.1

DITCH/CHANNEL CALCULATIONS

DIVERSION DITCH ID	LENGTH (LF)	DA (Ac)	Q10 (CFS)	SLOPE (%)	V10 (FPS)	LINER *	PERMISSIBLE SHEAR STRESS (PSF)	CALCULATED SHEAR STRESS (PSF)
DV-1	296	1.02	2.34	2.00	2.01	SC150	2.00	0.78
DV-2	495	1.00	2.30	2.60	2.29	SC150	2.00	0.94
DV-3	442	0.52	1.19	1.80	0.92	SC150	1.80	0.29
DV-4	167	0.06	0.13	2.90	0.96	SC150	1.80	0.38

* NAG = NORTH AMERICAN GREEN OR EQUIVALENT

Skimmer Basin #1

Okay

- 3.42 Drainage Area (Acres)
- 12.35 Peak Flow from 10-year Storm (cfs)
- 6156 Required Volume (ft³)
- 5372 Required Surface Area (ft²)
- 51.8 Suggested Width (ft)
- 103.7 Suggested Length (ft)
- 54 Trial Top Width at Spillway Invert (ft)
- 100 Trial Top Length at Spillway Invert (ft)
- 2 Trial Side Slope Ratio Z:1
- 3 Trial Depth (ft) (2 to 3.5 feet above grade)
- 42 Bottom Width (ft)
- 88 Bottom Length (ft)
- 3696 Bottom Area (ft²)
- 13572 Actual Volume (ft³) Okay
- 5400 Actual Surface Area (ft²) Okay
- 10 Trial Weir Length (ft)
- 1 Suggested Trial Depth of Flow (ft)
- 30.0 Spillway Capacity (cfs) Okay
- 4 Skimmer Size (inches)
- 0.333 Head on Skimmer (feet)
- 1 Orifice Size (1/4 inch increments)
- 4.62 Dewatering Time (days) Required 3 to 5 days for Wake County

Skimmer Size (inches)
1
1.5
2
2.5
3
4
5
6
8

Skimmer Basin #2

Okay

- 4.61 Drainage Area (Acres)
- 16.64 Peak Flow from 10-year Storm (cfs)
- 8298 Required Volume (ft³)
- 7238 Required Surface Area (ft²)
- 60.2 Suggested Width (ft)
- 120.3 Suggested Length (ft)
- 56 Trial Top Width at Spillway Invert (ft)
- 190 Trial Top Length at Spillway Invert (ft)
- 2 Trial Side Slope Ratio Z:1
- 3 Trial Depth (ft) (2 to 3.5 feet above grade)
- 44 Bottom Width (ft)
- 178 Bottom Length (ft)
- 7832 Bottom Area (ft²)
- 27636 Actual Volume (ft³) Okay
- 10640 Actual Surface Area (ft²) Okay
- 20 Trial Weir Length (ft)
- 0.75 Suggested Trial Depth of Flow (ft)
- 39.0 Spillway Capacity (cfs) Okay
- 4 Skimmer Size (inches)
- 0.333 Head on Skimmer (feet)
- 1.25 Orifice Size (1/4 inch increments)
- 3.98 Dewatering Time (days) Required 3 to 5 days for Wake County

Skimmer Size (inches)
1
1.5
2
2.5
3
4
5
6
8

Skimmer Basin #3

Okay

- 0.6 Drainage Area (Acres)
- 2.17 Peak Flow from 10-year Storm (cfs)
- 1080 Required Volume (ft³)
- 944 Required Surface Area (ft²)
- 21.7 Suggested Width (ft)
- 43.4 Suggested Length (ft)
- 33 Trial Top Width at Spillway Invert (ft)
- 48 Trial Top Length at Spillway Invert (ft)
- 2 Trial Side Slope Ratio Z:1
- 2 Trial Depth (ft) (2 to 3.5 feet above grade)
- 25 Bottom Width (ft)
- 40 Bottom Length (ft)
- 1000 Bottom Area (ft²)
- 2563 Actual Volume (ft³) Okay
- 1584 Actual Surface Area (ft²) Okay
- 10 Trial Weir Length (ft)
- 0.75 Suggested Trial Depth of Flow (ft)
- 19.5 Spillway Capacity (cfs) Okay
- 3 Skimmer Size (inches)
- 0.25 Head on Skimmer (feet)
- 0.5 Orifice Size (1/4 inch increments)
- 3.74 Dewatering Time (days) Required 3 to 5 days for Wake County

Skimmer Size (inches)
1
1.5
2
2.5
3
4
5
6
8

LEGEND

- TEMP CONCRETE WASHOUT
- TEMP LOW SPOT SILT FENCE OUTLET
- ROCK CHECK DAM
- TEMP CONSTRUCTION ENTRANCE
- RIP-RAP DISSAPTOR
- TEMP DIVERSION DITCH (LINED-SEE DETAIL)
- TEMP SILT FENCE
- TEMP TREE PROTECTION FENCE
- LIMITS OF DISTURBANCE
- SEDIMENT BASIN BAFFLE
- TEMP TREE PROTECTION & SILT FENCE COMBO

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT

SCALE IN FEET: 0 20 40 80 120 160

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARY D. BIZZELL 06/23/21

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

JOB NO. 03-19157 | DATE | PROGRESS | DRAWN BY: MRM | CHK BY: MDB

EROSION CONTROL PLAN - STAGE 1

SCALE: 1" = 40'

SHEET C3.3

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

TOWN OF ROLESVILLE PROJECT NO.

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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CONSTRUCTION SEQUENCE - STAGE 2

1. BEGIN CONSTRUCTION OF ALL BUILDINGS.
2. STABILIZE SITE AS NEW DISTURBED AREAS ARE BROUGHT UP TO FINISH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. SEED AND MULCH DENUDED AREAS PER GROUND STABILIZATION TIME FRAMES.
3. WHEN CONSTRUCTION OF PARKING LOTS ARE COMPLETE AND ALL AREAS ARE STABILIZED COMPLETELY, CALL ENVIRONMENTAL CONSULTANT FOR AN INSPECTION.
4. IF THE SITE IS APPROVED, REMOVE TEMPORARY DIVERSIONS, SILT FENCE, SEDIMENT BASINS, ETC., AND SEED OUT OR STABILIZE ANY RESULTING BARE AREAS. ALL REMAINING PERMANENT EROSION CONTROL DEVICES, SUCH AS VELOCITY DISSIPATORS, SHOULD NOW BE INSTALLED.
5. WHEN VEGETATION HAS BECOME ESTABLISHED, CALL FOR A FINAL SITE INSPECTION BY THE ENVIRONMENTAL CONSULTANT. OBTAIN A CERTIFICATE OF COMPLETION.

NOTE: WAKE COUNTY MUST GRANT PERMISSION TO CONVERT THE SEDIMENT BASIN OVER TO THE STORMWATER USE PRIOR TO COMPLETING ANY RELATED WORK.

TOTAL DISTURBED AREA = 10.96 AC

ENVIRONMENTAL CONSULTANT: JEEVAN NEUPANE (919-819-8907)

REQUIRED WAKE COUNTY BASIN REMOVAL AND/OR CONVERSION SEQUENCE

1. SCHEDULE A SITE MEETING WITH THE ENVIRONMENTAL CONSULTANT TO DETERMINE IF A BASIN CAN BE REMOVED OR CONVERTED TO A PERMANENT STORMWATER POND. INSTALL SILT FENCING OR OTHER TEMPORARY EROSION CONTROL MEASURES AS NEEDED PRIOR TO REMOVAL OF THE BASIN.
2. UTILIZE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SEDIMENT BASIN SURFACE FOR DRAW DOWN OF WATER IN BASIN FOR MAINTENANCE OR CLOSE OUT UNLESS INFEASIBLE. SEE REQUIREMENTS OF NCG01 PERMIT PART II, SECTION Q, ITEM (4) ENTITLED "DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT" AND REFER TO WAKE COUNTY "FILTER BAG FOR DEWATERING ACTIVITIES" CONSTRUCTION DETAIL.
3. REMOVE BASIN(S) AND ASSOCIATED TEMPORARY DIVERSION DITCHES. IF CULVERT PIPES NEED TO BE EXTENDED, PERFORM THIS OPERATION AT THIS TIME. FINE GRADE AREA IN PREPARATION FOR SEEDING.
4. PERFORM SEEDBED PREPARATION, SEED, MULCH AND ASPHALT TACK ANY RESULTING BARE AREAS IMMEDIATELY.
5. INSTALL VELOCITY DISSIPATORS AND/OR LEVEL SPREADERS AS REQUIRED ON THE EROSION CONTROL PLAN.
6. WHEN SITE IS FULLY STABILIZED, CALL ENVIRONMENTAL CONSULTANT FOR APPROVAL OF REMOVING REMAINING TEMPORARY EROSION CONTROL MEASURES AND ADVICE ON WHEN SITE CAN BE ISSUED A CERTIFICATE OF COMPLETION. NOTE: A MEETING SHOULD ALSO BE SCHEDULED WITH THE ENVIRONMENTAL CONSULTANT TO DETERMINE WHEN A BASIN MAY BE CONVERTED FOR STORMWATER USE. SOME MUNICIPALITIES MAY ALSO REQUIRE THIS.

Skimmer Basin #2

Okay	
6.99	Drainage Area (Acres)
25.23	Peak Flow from 10-year Storm (cfs)
12582	Required Volume (ft³)
10975	Required Surface Area (ft²)
74.1	Suggested Width (ft)
148.2	Suggested Length (ft)
58	Trial Top Width at Spillway Invert (ft)
190	Trial Top Length at Spillway Invert (ft)
2	Trial Side Slope Ratio Z:1
3	Trial Depth (ft) (2 to 3.5 feet above grade)
46	Bottom Width (ft)
178	Bottom Length (ft)
8188	Bottom Area (ft²)
28740	Actual Volume (ft³) Okay
11020	Actual Surface Area (ft²) Okay
20	Trial Weir Length (ft)
0.75	Suggested Trial Depth of Flow (ft)
39.0	Spillway Capacity (cfs) Okay
4	Skimmer Size (inches)
0.333	Head on Skimmer (feet)
1.5	Orifice Size (1/4 inch increments)
4.20	Dewatering Time (days) Required 3 to 5 days for Wake County

Skimmer Size (Inches)
1.5
2
2.5
3
4
5
6
8

SEDIMENT BASIN SUMMARY CHART

Sediment Basin Number	1	2
Drainage Area (acres)	1.74	6.99
Q10(cfs)	(0.5)(7.22)(1.74)=6.28	(0.5)(7.22)(6.99)=25.23
Weir Size (ft)	10 x 1.5	10 x 1.5
Surface Area Required (SF)	(435)(6.28)=2,732	(435)(25.23)=10,975
Volume Required (CF)	(1800)(1.74)= 3,132	(1800)(6.99)= 12,582
Dimensions (ft)	see plans	see plans
Surface Area Provided (SF)	2,800	11,000
Volume Provided (CF)	5,646	27,500
Skimmer Size	4"	4
Orifice Radius	0.4"	0.75
Orifice Diameter	0.75"	1.5
Drawdown Time (Days)	4.18	4.2
Number of Baffles	3	3

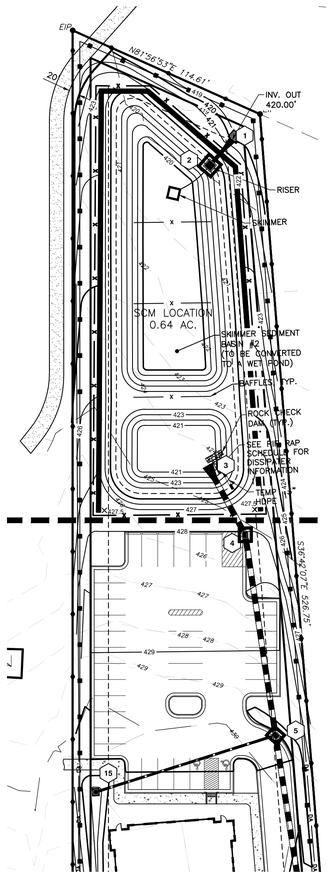
DITCH/CHANNEL CALCULATIONS

DIVERSION DITCH ID	LENGTH (LF)	DA (Ac)	Q10 (CFS)	SLOPE (%)	V10 (FPS)	LINER *	PERMISSIBLE SHEAR STRESS (PSF)	CALCULATED SHEAR STRESS (PSF)
DV-1	296	1.02	2.34	2.00	2.01	SC150	2.00	0.78
DV-2	495	1.00	2.30	2.60	2.29	SC150	2.00	0.94
DV-3	442	0.52	1.19	1.80	0.92	SC150	1.80	0.29
DV-4	167	0.06	0.13	2.90	0.96	SC150	1.80	0.38

* NAG = NORTH AMERICAN GREEN OR EQUIVALENT

LEGEND

- TEMP CONSTRUCTION ENTRANCE
- TEMP LOW SPOT SILT FENCE OUTLET
- TEMP INLET PROTECTION
- RIP-RAP DISSAPTOR
- TEMP SILT FENCE
- TPF — TEMP TREE PROTECTION FENCE
- LIMITS OF DISTURBANCE
- x — SEDIMENT BASIN BAFFLE
- TPF — TEMP TREE PROTECTION & SILT FENCE COMBO



NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARY D. BIZZELL 06/23/21

TOWN OF ROLESVILLE PROJECT NO.

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

JOB NO. 03-19157 DATE PROGRESS DRAWN BY MRM

EROSION CONTROL PLAN - STAGE 2

SCALE: 1" = 40' CHK BY: MDB

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C3.4

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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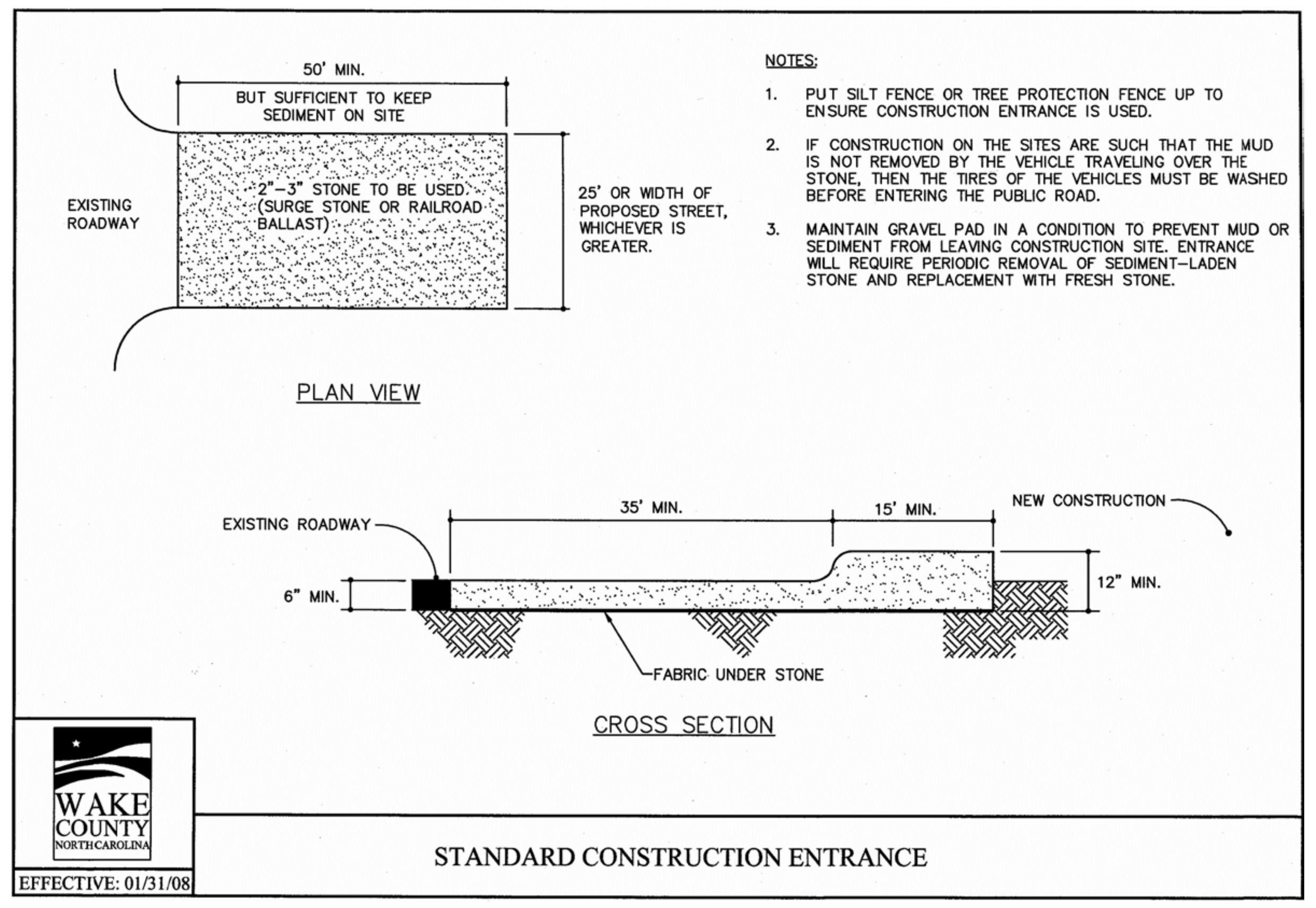
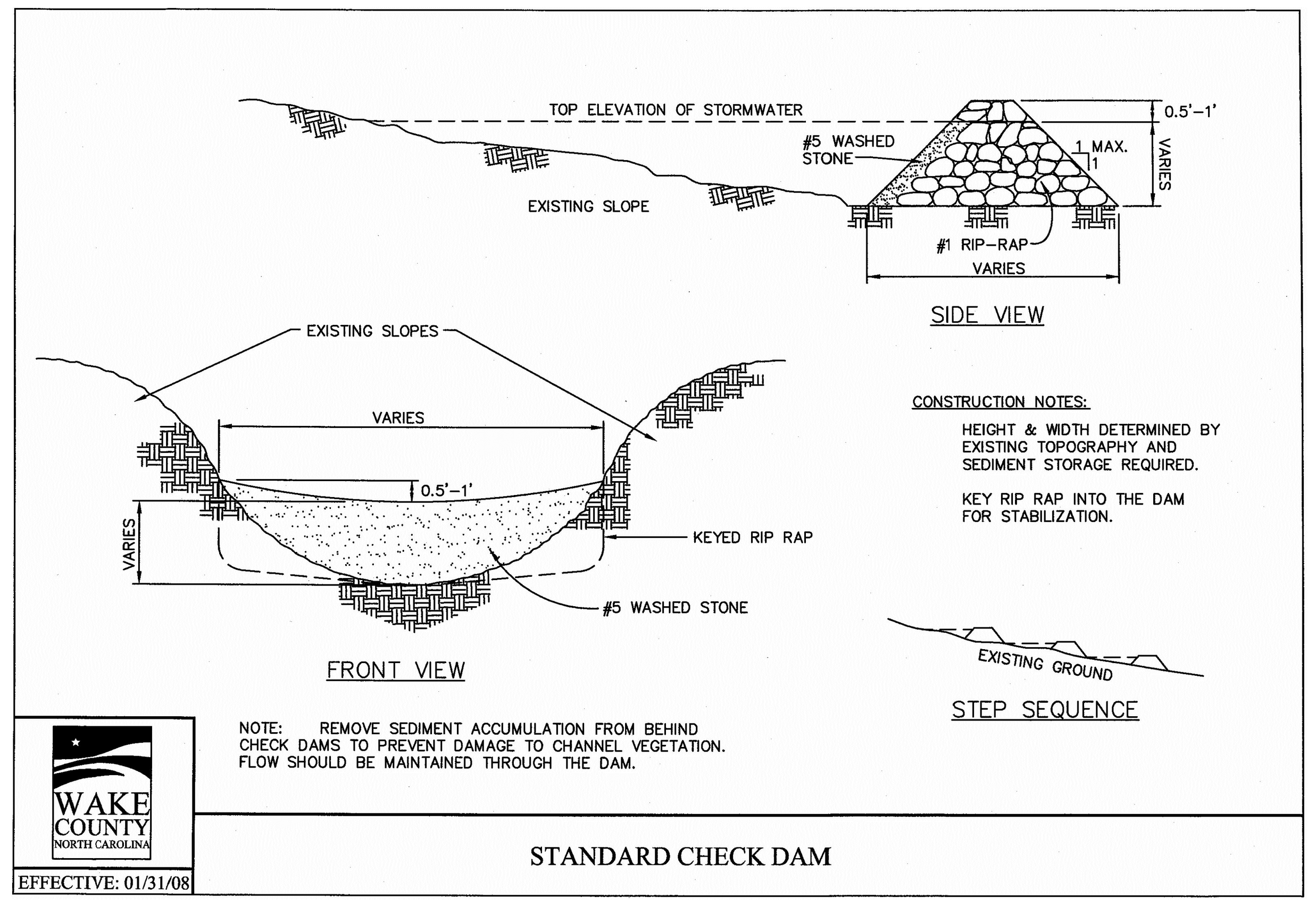
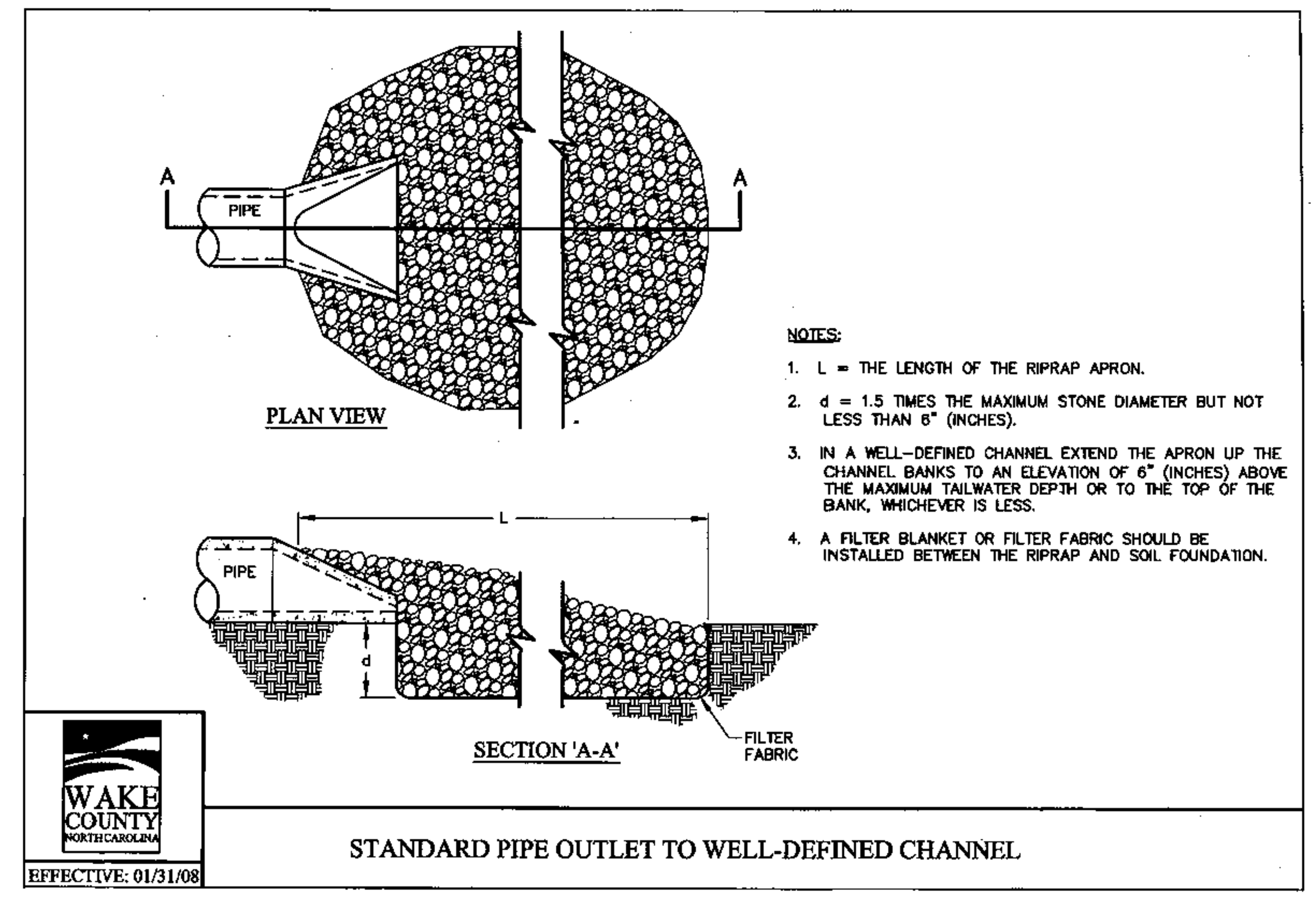
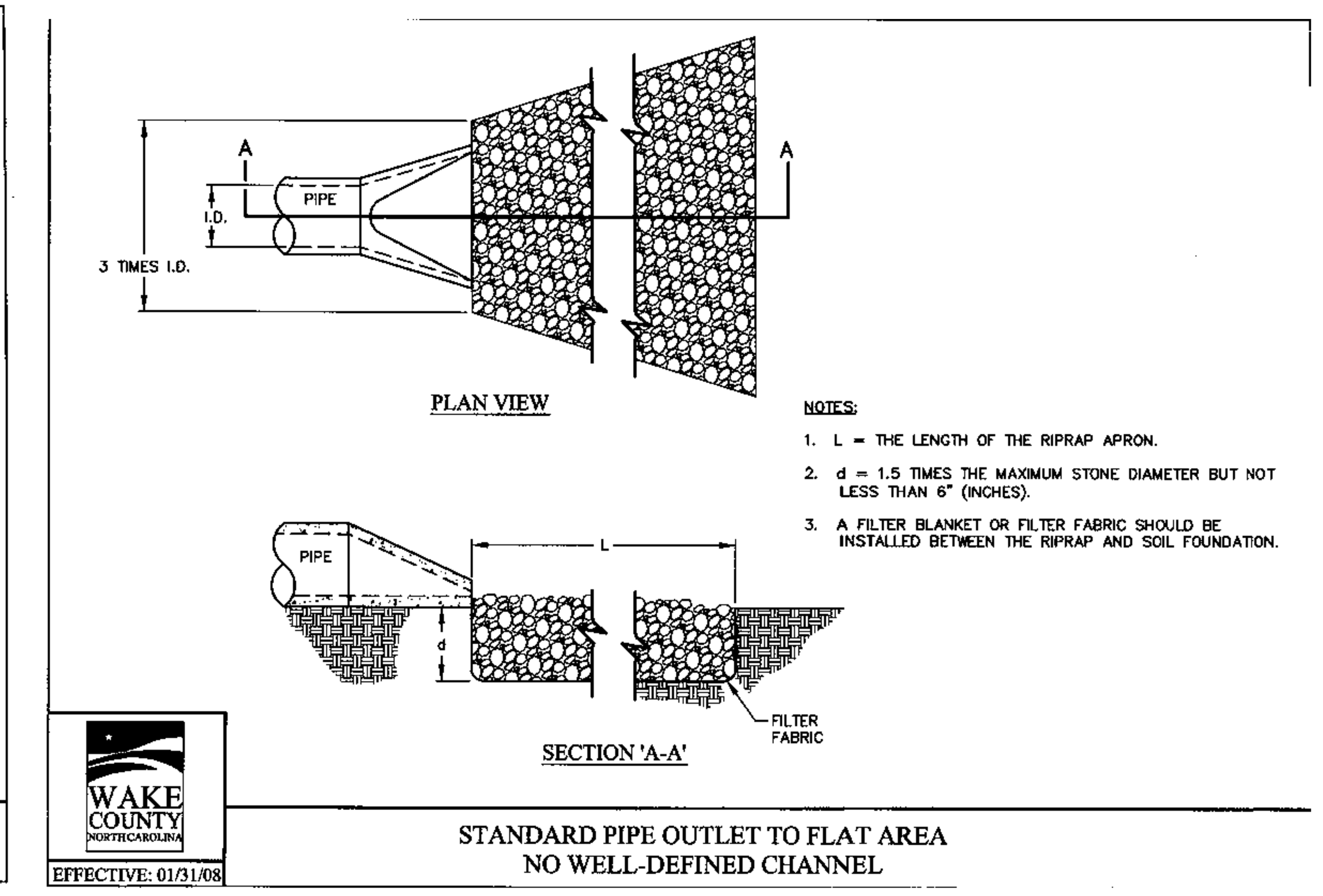
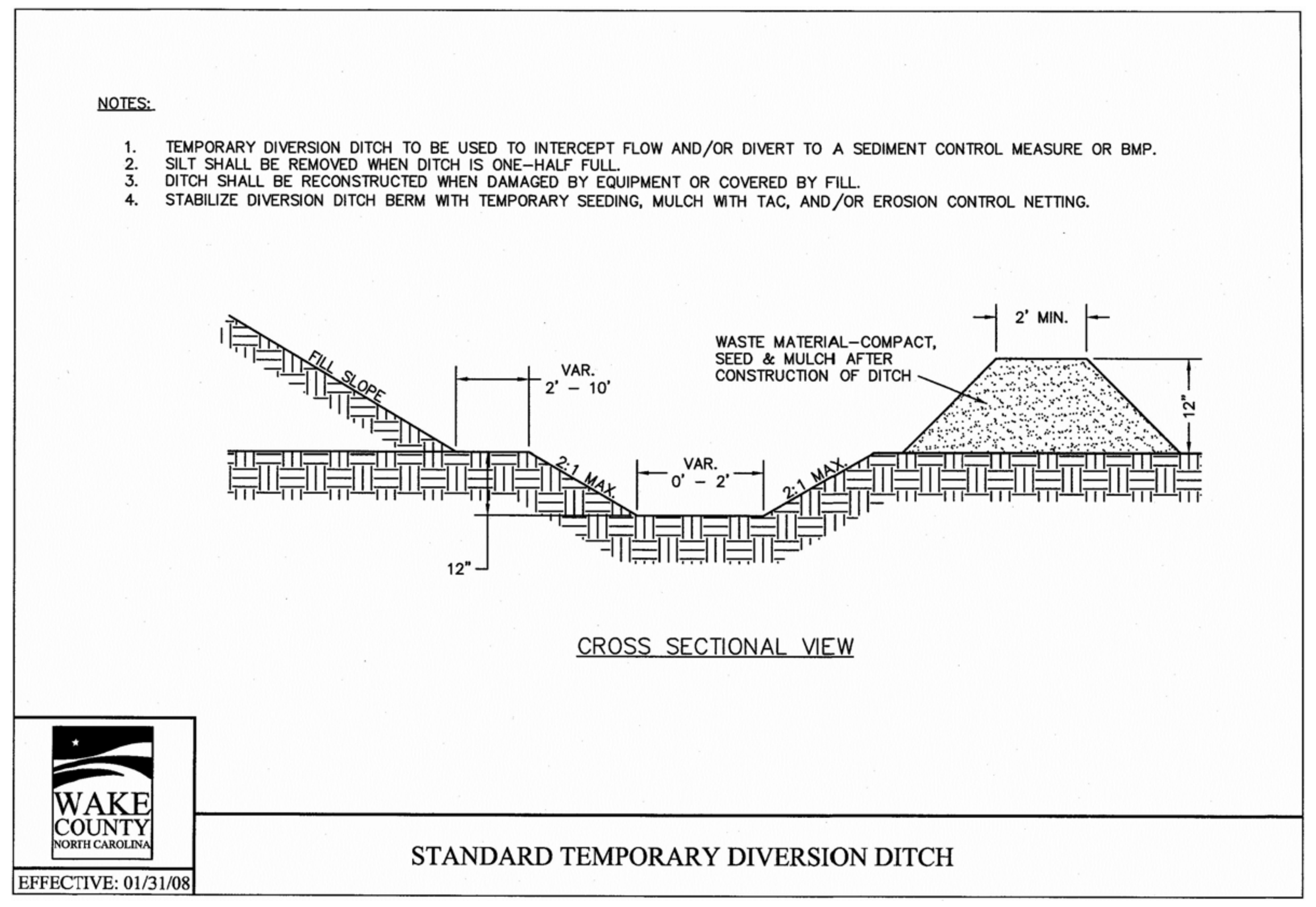
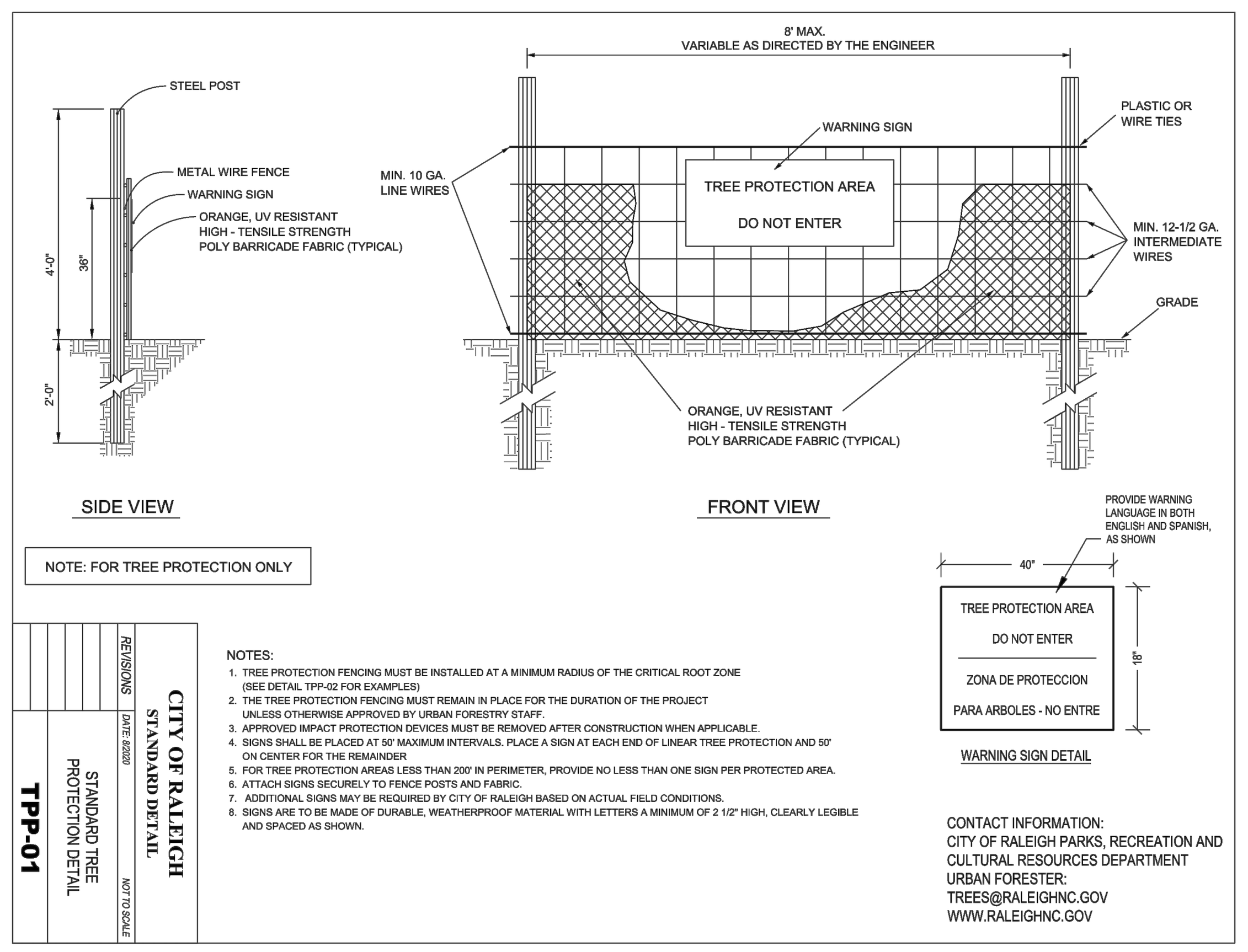

50' MIN.
BUT SUFFICIENT TO KEEP SEDIMENT ON SITE
EXISTING ROADWAY
2"-3" STONE TO BE USED (SURGE STONE OR RAILROAD BALLAST)
25' OR WIDTH OF PROPOSED STREET, WHICHEVER IS GREATER.
PLAN VIEW
EXISTING ROADWAY
35' MIN.
15' MIN.
NEW CONSTRUCTION
6" MIN.
12" MIN.
FABRIC UNDER STONE
CROSS SECTION
NOTES:
1. PUT SILT FENCE OR TREE PROTECTION FENCE UP TO ENSURE CONSTRUCTION ENTRANCE IS USED.
2. IF CONSTRUCTION ON THE SITES ARE SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLES MUST BE WASHED BEFORE ENTERING THE PUBLIC ROAD.
3. MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING CONSTRUCTION SITE. ENTRANCE WILL REQUIRE PERIODIC REMOVAL OF SEDIMENT-LADEN STONE AND REPLACEMENT WITH FRESH STONE.
WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08
STANDARD CONSTRUCTION ENTRANCE

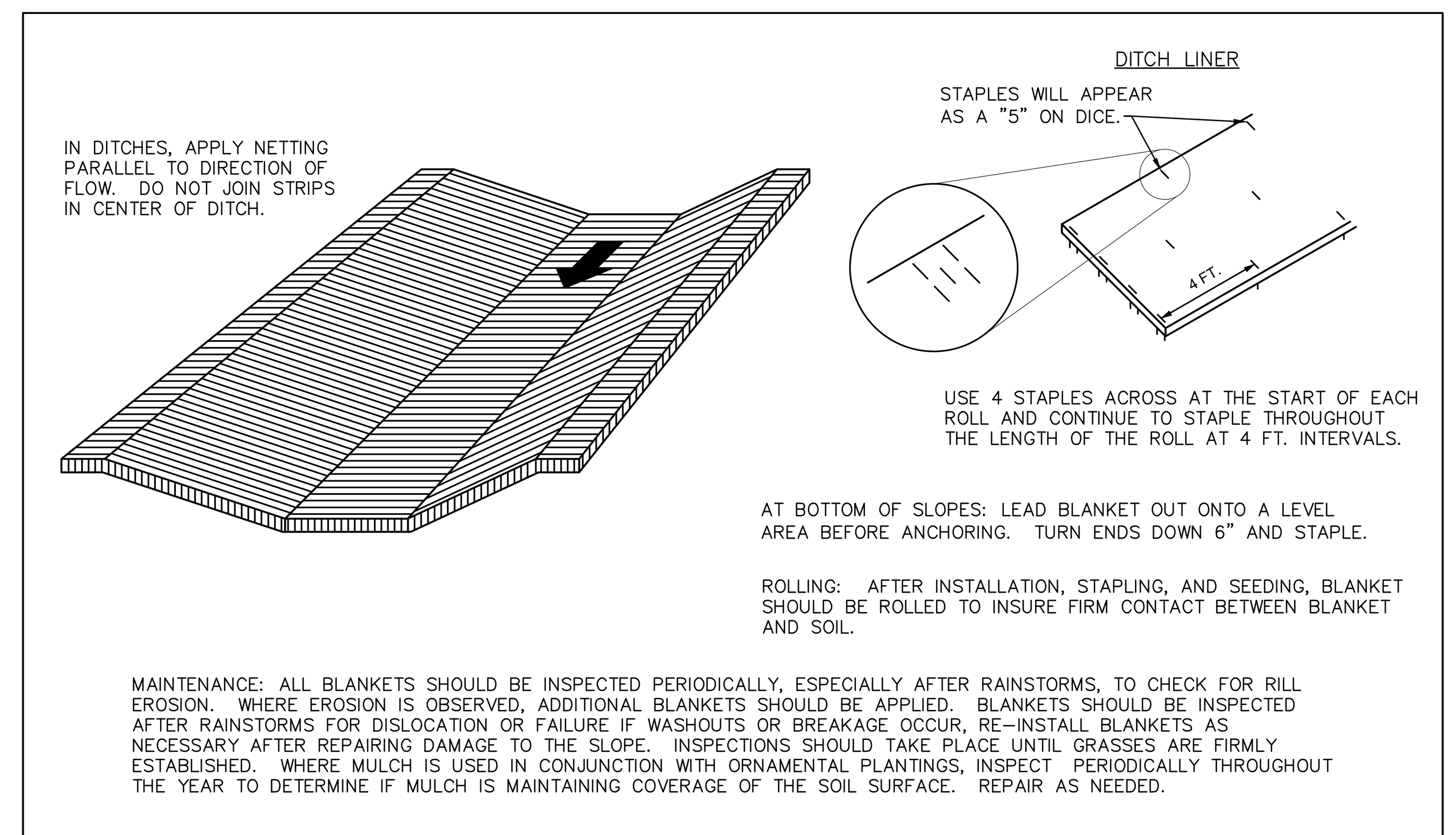

TOP ELEVATION OF STORMWATER
0.5'-1'
#5 WASHED STONE
1 MAX.
VARIES
EXISTING SLOPE
#1 RIP-RAP
VARIES
SIDE VIEW
EXISTING SLOPES
VARIES
0.5'-1'
KEYED RIP RAP
#5 WASHED STONE
FRONT VIEW
CONSTRUCTION NOTES:
HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
KEY RIP RAP INTO THE DAM FOR STABILIZATION.
EXISTING GROUND
STEP SEQUENCE
NOTE: REMOVE SEDIMENT ACCUMULATION FROM BEHIND CHECK DAMS TO PREVENT DAMAGE TO CHANNEL VEGETATION. FLOW SHOULD BE MAINTAINED THROUGH THE DAM.
WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08
STANDARD CHECK DAM

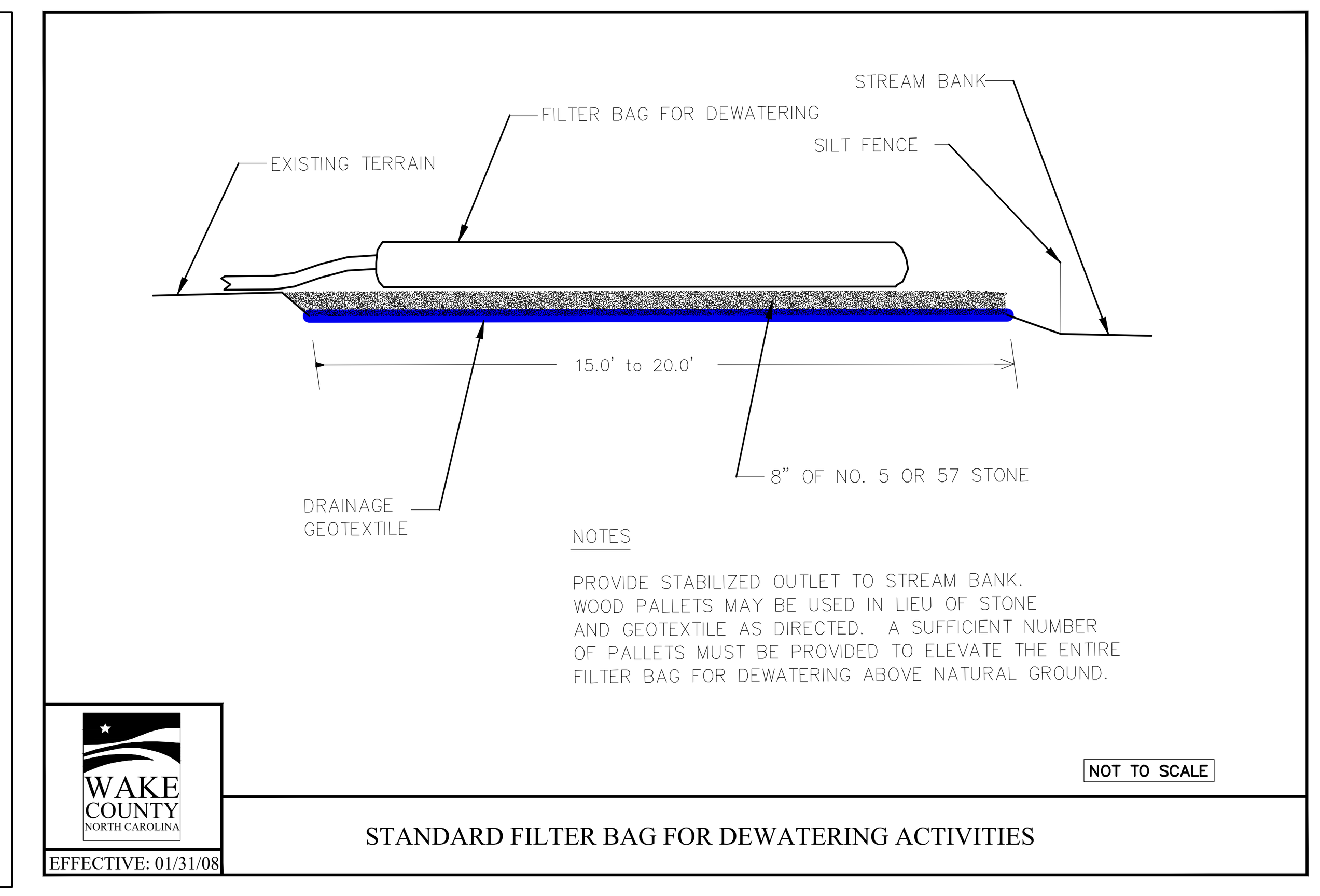

A
PIPE
A
PLAN VIEW
NOTES:
1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" (INCHES) ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.
PIPE
L
d
SECTION 'A-A'
FILTER FABRIC
WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08
STANDARD PIPE OUTLET TO WELL-DEFINED CHANNEL

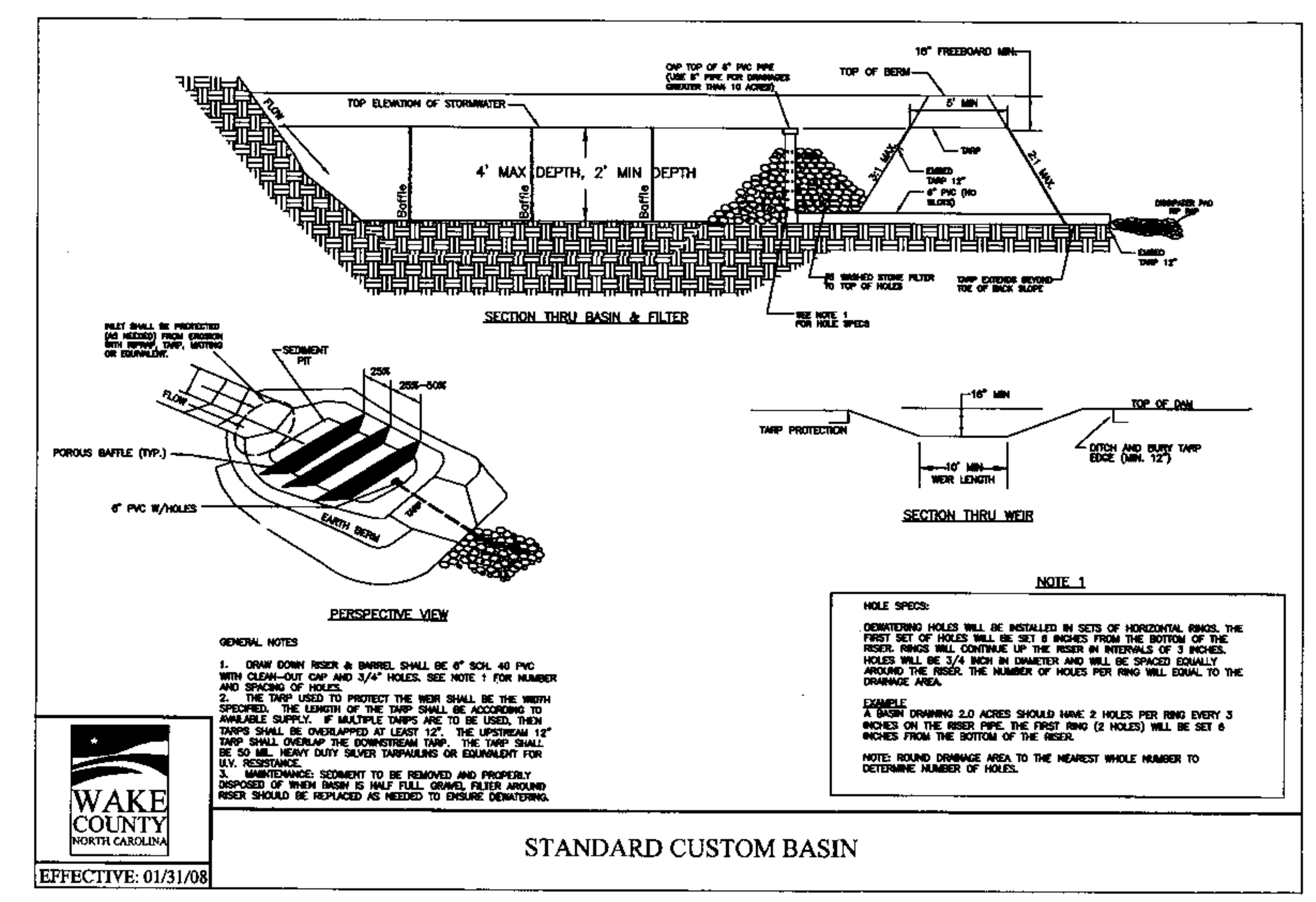

A
3 TIMES I.D.
I.D.
PIPE
A
PLAN VIEW
NOTES:
1. L = THE LENGTH OF THE RIPRAP APRON.
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6" (INCHES).
3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.
PIPE
L
d
SECTION 'A-A'
FILTER FABRIC
WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08
STANDARD PIPE OUTLET TO FLAT AREA NO WELL-DEFINED CHANNEL


NOTES:
1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.
FILL SLOPE
VAR. 2' - 10'
2:1 MAX.
VAR. 0' - 2'
2:1 MAX.
WASTE MATERIAL-COMPACT, SEED & MULCH AFTER CONSTRUCTION OF DITCH
2' MIN.
12"
12"
CROSS SECTIONAL VIEW
WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08
STANDARD TEMPORARY DIVERSION DITCH


STEEL POST
METAL WIRE FENCE
WARNING SIGN
ORANGE, UV RESISTANT HIGH - TENSILE STRENGTH POLY BARRICADE FABRIC (TYPICAL)
MIN. 10 GA. LINE WIRES
4'-0"
2'-0"
8' MAX. VARIABLE AS DIRECTED BY THE ENGINEER
WARNING SIGN
TREE PROTECTION AREA
DO NOT ENTER
PLASTIC OR WIRE TIES
MIN. 12-1/2 GA. INTERMEDIATE WIRES
GRADE
ORANGE, UV RESISTANT HIGH - TENSILE STRENGTH POLY BARRICADE FABRIC (TYPICAL)
SIDE VIEW
FRONT VIEW
NOTE: FOR TREE PROTECTION ONLY
PROVIDE WARNING LANGUAGE IN BOTH ENGLISH AND SPANISH, AS SHOWN.
TREE PROTECTION AREA
DO NOT ENTER
ZONA DE PROTECCION
PARA ARBOLES - NO ENTRE
WARNING SIGN DETAIL
NOTES:
CONTACT INFORMATION:
CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPARTMENT
URBAN FORESTER:
TREES@RALEIGHNC.GOV
WWW.RALEIGHNC.GOV
CITY OF RALEIGH STANDARD DETAIL
STANDARD TREE PROTECTION DETAIL
TPP-01


IN DITCHES, APPLY NETTING PARALLEL TO DIRECTION OF FLOW. DO NOT JOIN STRIPS IN CENTER OF DITCH.
DITCH LINER
STAPLES WILL APPEAR AS A "S" ON DICE.
4 FT
USE 4 STAPLES ACROSS AT THE START OF EACH ROLL AND CONTINUE TO STAPLE THROUGHOUT THE LENGTH OF THE ROLL AT 4 FT. INTERVALS.
AT BOTTOM OF SLOPES: LEAD BLANKET OUT ONTO A LEVEL AREA BEFORE ANCHORING. TURN ENDS DOWN 6" AND STAPLE.
ROLLING: AFTER INSTALLATION, STAPLING, AND SEEDING, BLANKET SHOULD BE ROLLED TO INSURE FIRM CONTACT BETWEEN BLANKET AND SOIL.
MAINTENANCE: ALL BLANKETS SHOULD BE INSPECTED PERIODICALLY, ESPECIALLY AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. WHERE EROSION IS OBSERVED, ADDITIONAL BLANKETS SHOULD BE APPLIED. BLANKETS SHOULD BE INSPECTED AFTER RAINSTORMS FOR DISLOCATION OR FAILURE IF WASHOUTS OR BREAKAGE OCCUR, RE-INSTALL BLANKETS AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE. INSPECTIONS SHOULD TAKE PLACE UNTIL GRASSES ARE FIRMLY ESTABLISHED. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED.
STABILIZING CHANNEL WITH EXCELSIOR BLANKET
SCALE: NTS


STREAM BANK
FILTER BAG FOR DEWATERING
EXISTING TERRAIN
SILT FENCE
15.0' to 20.0'
8" OF NO. 5 OR 57 STONE
DRAINAGE GEOTEXTILE
NOTES
PROVIDE STABILIZED OUTLET TO STREAM BANK. WOOD PALLETS MAY BE USED IN LIEU OF STONE AND GEOTEXTILE AS DIRECTED. A SUFFICIENT NUMBER OF PALLETS MUST BE PROVIDED TO ELEVATE THE ENTIRE FILTER BAG FOR DEWATERING ABOVE NATURAL GROUND.
NOT TO SCALE
WAKE COUNTY NORTH CAROLINA
EFFECTIVE: 01/31/08
STANDARD FILTER BAG FOR DEWATERING ACTIVITIES



STANDARD CUSTOM BASIN

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

03-19157 PROGRESS MRM
JOB NO. DATE DRAWN BY

EROSION CONTROL DETAILS

SCALE: N.T.S. CHK BY:MDB

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET
C3.5

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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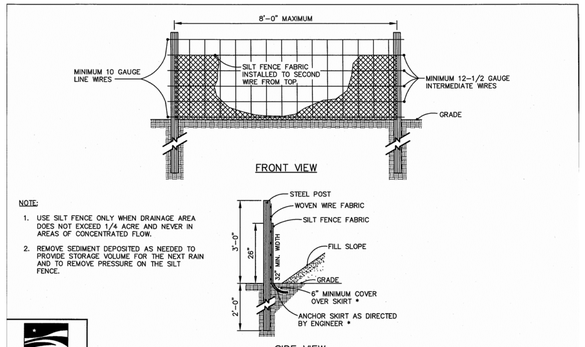
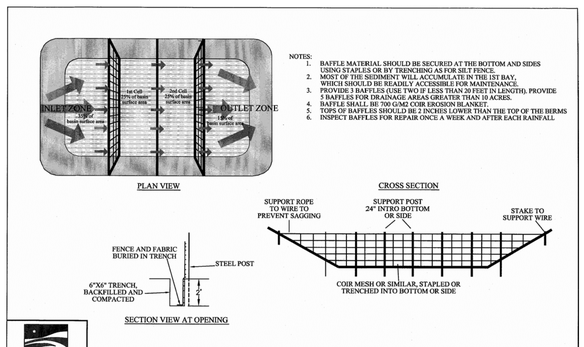
TOWN OF ROLESVILLE PROJECT NO.



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

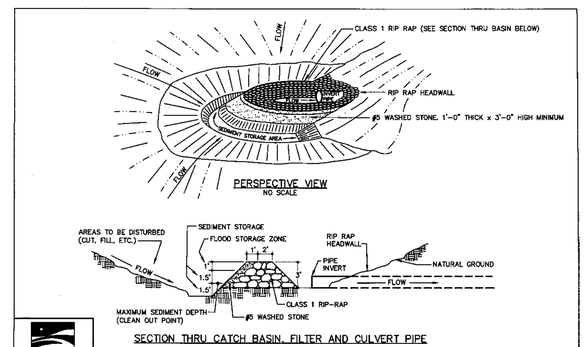
STANDARD TEMPORARY SILT FENCE



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

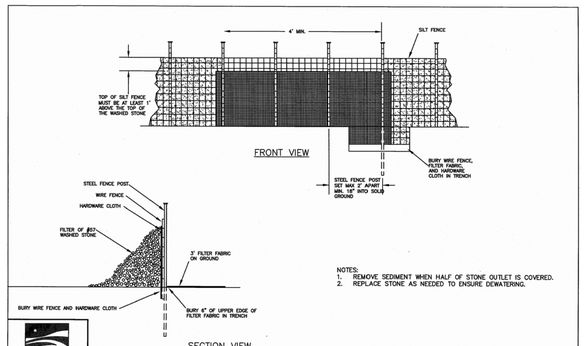
STANDARD BAFFLES DETAIL



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

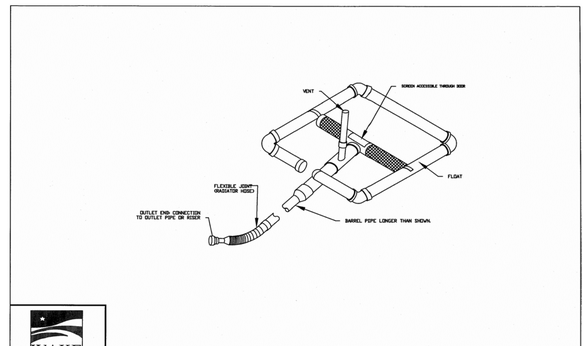
STANDARD HORSESHOE INLET PROTECTION



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

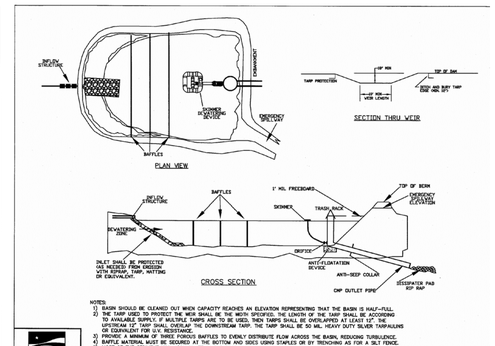
STANDARD SILT FENCE OUTLET



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SKIMMER DETAIL



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SKIMMER ATTACHED TO PERMANENT RISER

SEEDING INFORMATION:

SEEDBED PREPARATION

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPER PHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW*).
5. CONTINUE TILLAGE UNTIL A WELL PULVERIZED FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 80% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

* APPLY: AGRICULTURAL LIMESTONE – 2 TONS/ACRE
FERTILIZER – 10–10–10 ANALYSIS AT 800–1,000 LBS./ACRE
SUPER PHOSPHATE – 500 LBS.ORE OF 20% ANALYSIS SUPER PHOSPHATE
MULCH – 2 TONS (APPROX. 80 BALES) SMALL SMALL GRAIN STRAW/ACRE
ANCHOR –TACK WITH LIQUID ASPHALT AT 400 GAL./ACRE OR EMULSIFIED ASPHALT AT 300 GALLONS/ACRE

SEEDING SCHEDULE

PERMANENT SEEDING – SHOULDERS, SIDE DITCHES, SLOPES (MAX. 3:1)

DATE	TYPE	PLANTING RATE
AUG. 15 – NOV. 1	TALL FESCUE	200 LBS./ACRE
NOV. 1 – MAR.1	TALL FESCUE AND ABRUZZI RYE *(NURSE CROP)	200 LBS./ACRE 25 LBS./ACRE
MAR. 1 – APR. 15	TALL FESCUE	200 LBS./ACRE
APR. 15 – JUN. 30	HULLED COMMON BERMUDAGRASS	15 LBS./ACRE

PERMANENT SEEDING – SLOPES (3:1 TO 2:1)

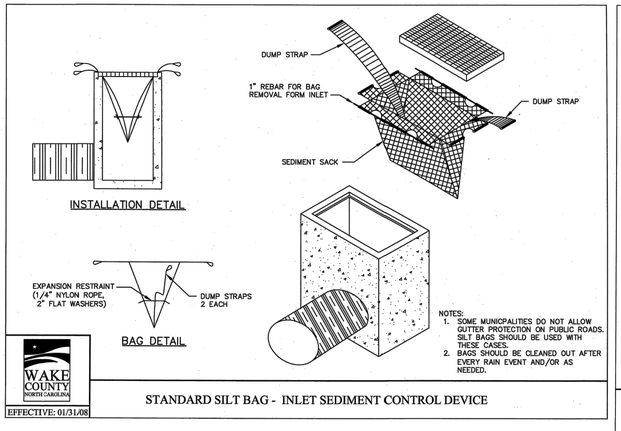
AUG. 15–NOV.1	TALL FESCUE AND SERICEA LESPEDEZA (UNHULLED, UNSCARIFIED)	200 LBS/ACRE 60 TO 70 LBS/ACRE
NOV. 1–MAR.1	TALL FESCUE AND SERICEA LESPEDEZA (UNHULLED, UNSCARIFIED) AND ABRUZZI RYE	200 LBS/ACRE 60 TO 70 LBS/ACRE 25 LBS/ACRE
MAR. 1–JUNE 1	TALL FESCUE AND SERICEA LESPEDEZA (SCARIFIED)	200 LBS/ACRE 40 TO 50 LBS/ACRE
MAR. 15–JUNE 30	WEEPING LOVEGRASS AND SERICEA LESPEDEZA (SCARIFIED)	10 LBS/ACRE 40 TO 50 LBS/ACRE
MAR. 15–JUNE 30	HULLED COMMON BERMUDAGRASS AND SERICEA LESPEDEZA (SCARIFIED)	15 LBS/ACRE 40 TO 50 LBS/ACRE

TEMPORARY SEEDING

JUNE 1–SEPT. 1	TALL FESCUE AND BROWNTOP MILLET *(NURSE CROP) OR SORGHUM–SUDAN HYBRIDS *(NURSE CROP)	200 LBS/ACRE 35 LBS/ACRE 30 LBS/ACRE

CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDED AREAS. THE ABOVE VEGETATION RATES ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

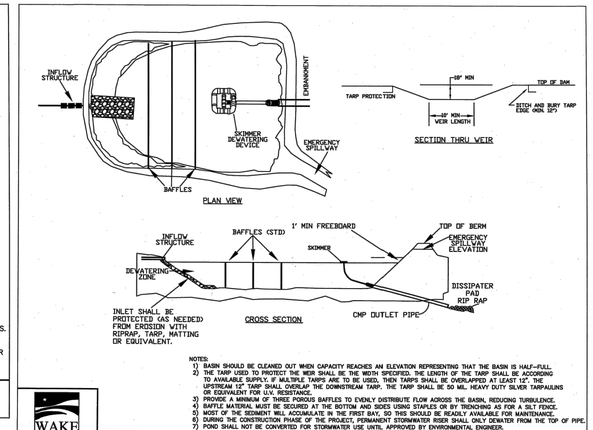
*NURSE CROP/TEMPORARY–RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW OVER 12" IN HEIGHT BEFORE MOWING, OTHERWISE FESCUE MAY BE SHADED OUT.



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SILT BAG - INLET SEDIMENT CONTROL DEVICE



WAKE COUNTY NORTH CAROLINA

EFFECTIVE: 01/31/08

STANDARD SKIMMER BASIN

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARY D. BIZZELL

06/23/21

BNK
BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

JOB NO. 03-19157 | DATE | PROGRESS | DRAWN BY: MRM | CHK BY: MDB | SCALE: N.T.S.

EROSION CONTROL DETAILS

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C3.6

TOWN OF ROLESVILLE PROJECT NO.

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GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

Temporary and Permanent Groundcover*

STABILIZATION TIMEFRAMES (Effective Aug. 1, 2011)

Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

*-For Falls Lake watershed, in disturbed areas where grading activities are incomplete, provide temporary groundcover no later than seven (7) days for slopes steeper than 3:1; ten (10) days for slopes equal to or flatter than 3:1; fourteen (14) days for areas with no slope.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

NORTH CAROLINA *Environmental Quality*

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number of waste containers on site to manage the quantity of waste produced.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow.
8. Dispose waste off-site at an approved disposal facility.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

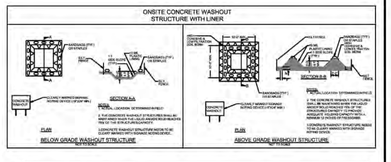
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 03/01/19

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours,*** an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible.*** The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours,*** an oral or electronic notification. • ***Within 7 calendar days,*** a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA *Environmental Quality*

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARTIN D. BIZZELL

06/23/21

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

JOB NO. 03-19157	DRAWN BY MRM
DATE	PROGRESS
SCALE: N.T.S.	CHK BY: MDB

NCG01 PLAN

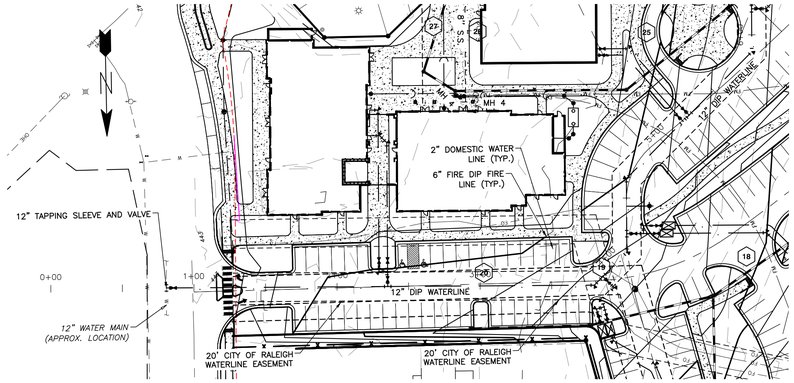
COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

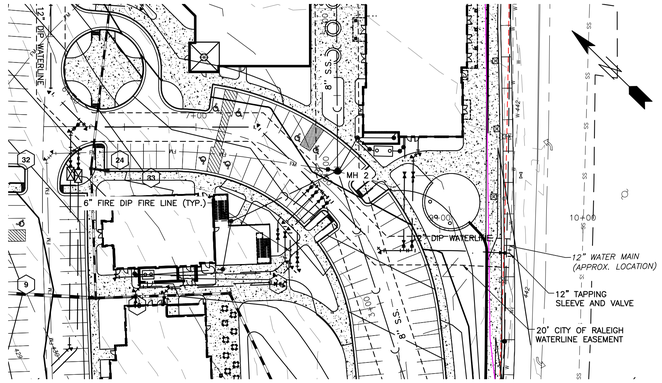
SHEET C3.7

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

TOWN OF ROLESVILLE PROJECT NO.

R:\2019\19157 - Rolesville Town Center\CIVIL\04 Construction\07 - 19157_Details.dwg, (C3.7) NCG01, 6/23/2021 10:18:47 AM, marc.mueller





Public

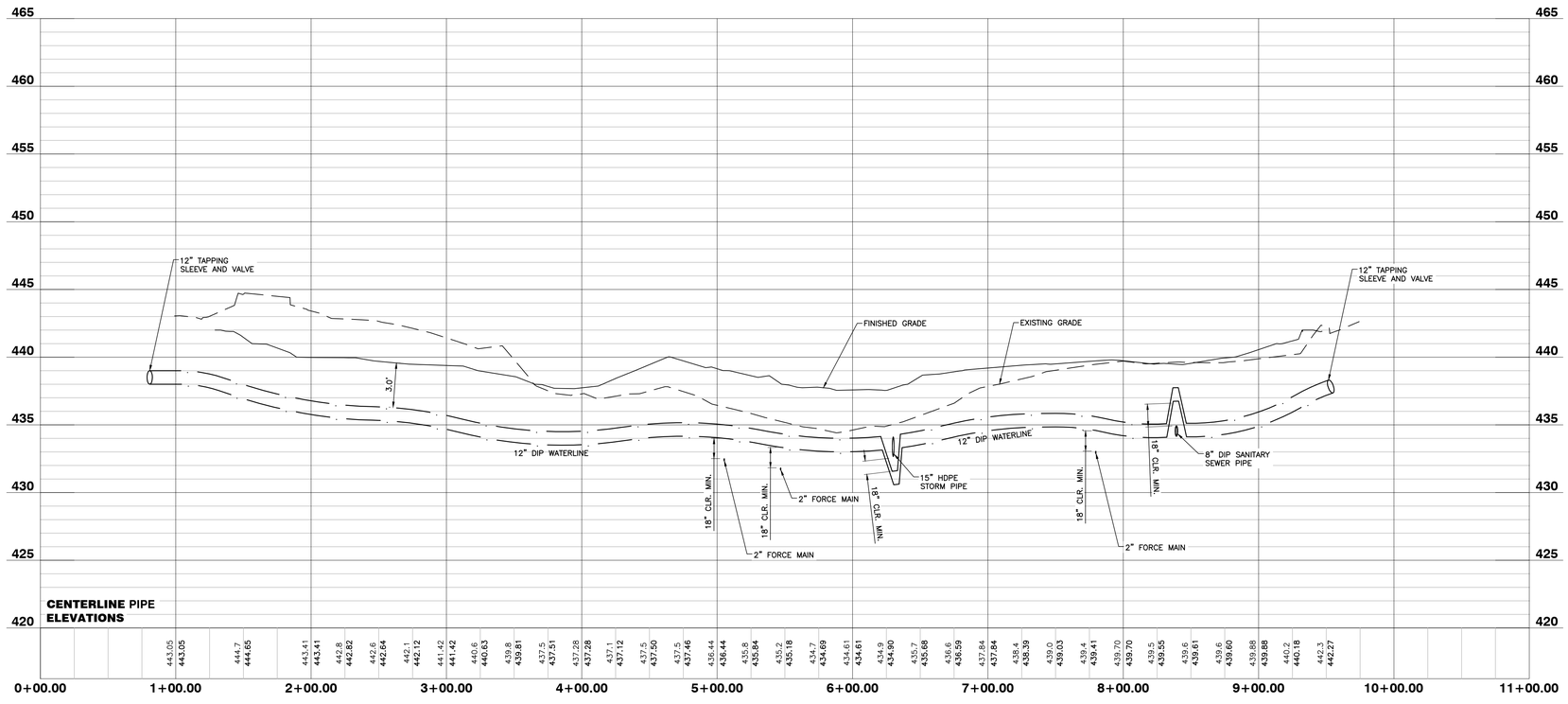
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct See digital signature

PUBLIC WATERLINE PROFILE



NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARY D. BIZZELL
06/23/21

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

JOB NO. 03-19157 PROGRESS MRM
DATE DRAWN BY

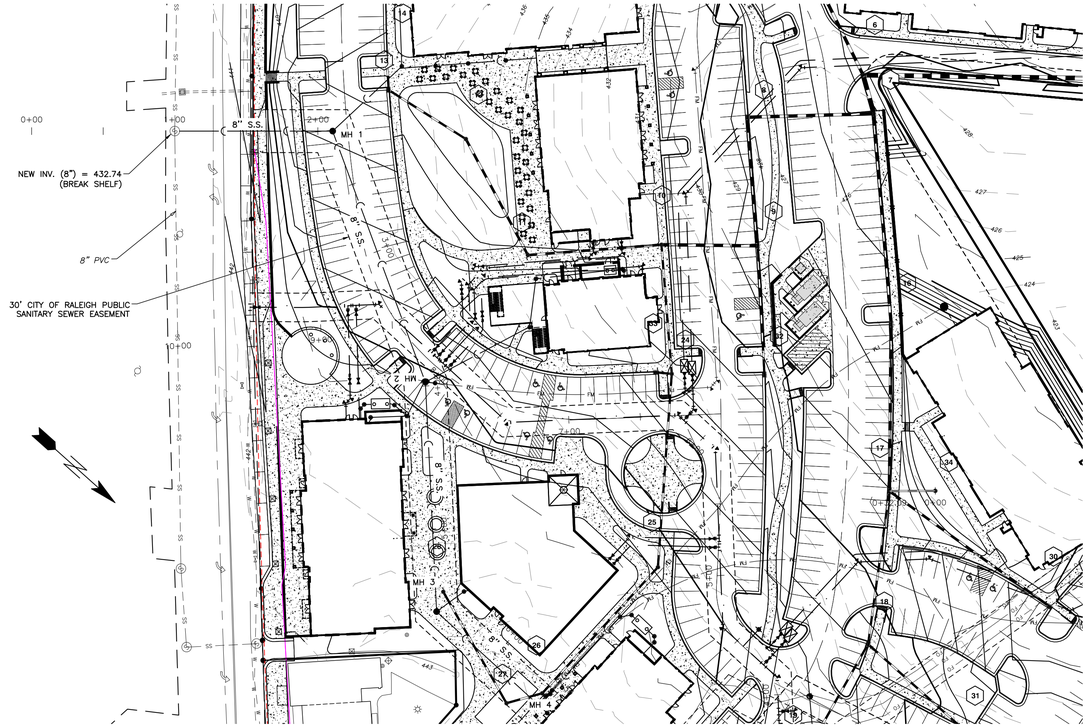
PUBLIC WATERLINE PROFILE

SCALE: 1" = 50' H/ 1"= 5' V CHK BY:MDB

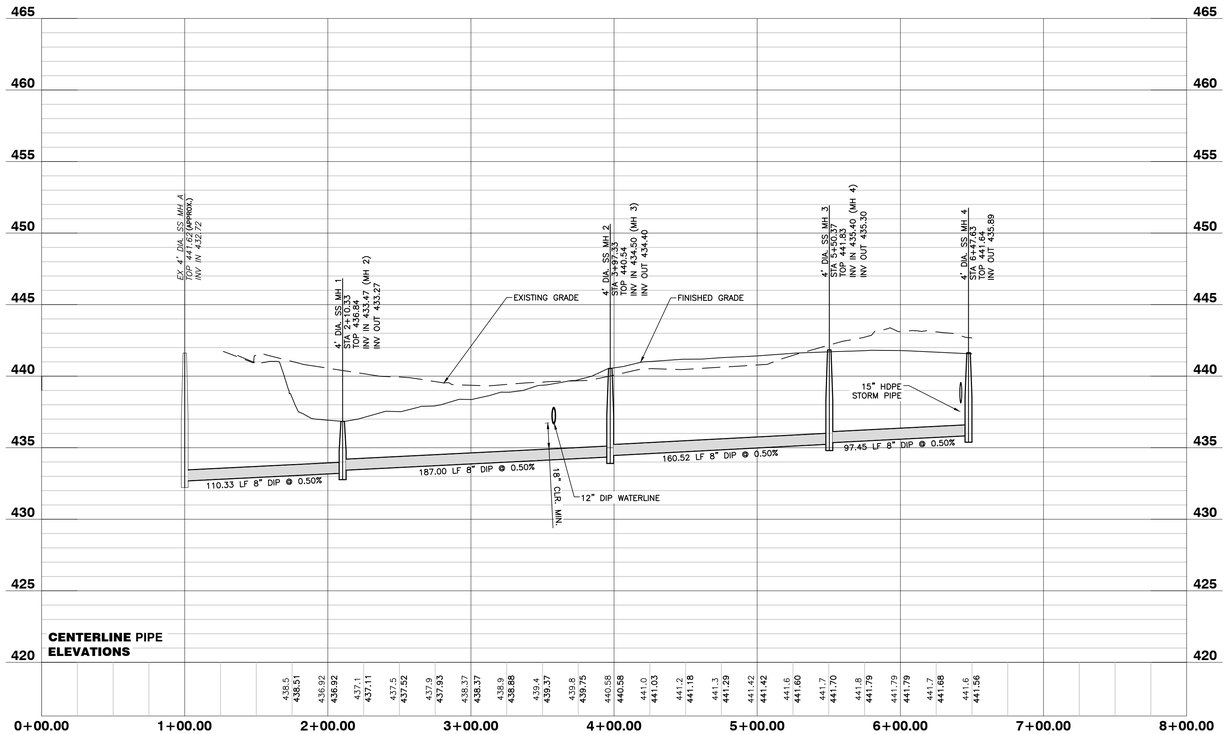
COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C4.1

TOWN OF ROLESVILLE PROJECT NO.



SANITARY SEWER PROFILE



Private

Sewer Collection / Extension System

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # S-4711 (P)

Authorization to Construct See digital signature

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARTY D. BIZZELL
06/23/21

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

03-19157 JOB NO. | PROGRESS DATE | MRM DRAWN BY

SANITARY SEWER PROFILE

SCALE: 1" = 50' H/ 1"= 5' V CHK BY: MDB

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C4.2

TOWN OF ROLESVILLE PROJECT NO.

GENERAL NOTES

1. A/C UNITS, TRANSFORMERS AND OTHER MECHANICAL OR UTILITY EQUIPMENT, NOT SHOWN ON THE PLAN, SHALL BE SCREENED FROM VIEW EITHER BY ADJUSTING PLANTINGS SHOWN IN CLOSE PROXIMITY TO EQUIPMENT OR BY THE ADDITION OF WAX MYRTLES @ 24" HT, 5' OC (SEE GENERAL NOTES FOR EQUIPMENT ACCESSIBILITY AND PLANTING PROXIMITY, ETC.). DUMPSTER IS SCREENED FROM OFF-SITE VIEWS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO PLANTING.
3. MULCH SHALL BE 3" DEEP MULCH UNLESS OTHERWISE NOTED.
4. VERIFICATION OF TOTAL QUANTITIES AS SHOWN IN THE PLANT LIST AND ON THE PLAN SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR. ANY DISCREPANCIES BETWEEN PLANT LIST AND PLANTING PLAN SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION.
5. ALL TREES, SHRUBS, GROUNDCOVER, ETC. SHALL CONFORM TO ACCEPTED STANDARDS ESTABLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
6. ALL ROOTBALLS REMOVED FROM CONTAINERS SHALL BE SCARIFIED PRIOR TO PLANTING.
7. B&B AS LISTED UNDER "ROOT" IN THE PLANT LIST INDICATES BALLED & BURLAPPED.
8. ALL PLANTS/PLANTINGS SHALL BE MULCHED IMMEDIATELY AFTER PLANTING AND WATERED.
9. ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS THEY BORE TO PREVIOUS EXISTING GRADE (UNLESS OTHERWISE NOTED).
10. ALL TREES AND SHRUBS SHALL REQUIRE MULCH RINGS AT THEIR BASE IF LEFT WITHIN LAWN AREAS.
11. MULCH EDGES AND PROPOSED PLANTINGS SHALL NOT DISTURB ANY EXISTING GROUPS OF TREES TO REMAIN. EDGES ARE SHOWN FOR APPROXIMATION ONLY, BUT ARE TO INDICATE SMOOTH, CLEAN CURVES.
12. CULVERTS, RIP-RAP STRUCTURES, AND OTHER STORMWATER DEVICES SHALL BE SCREENED WITH EVERGREEN SHRUBS. IF STRUCTURES ARE NOT SHOWN ON THE PLAN, INSTALL WAX MYRTLES @ 24" HT. - 5' OC.
13. A 2' BUMPER OVERHANG, FROM THE BACK OF CURB, SHALL BE ALLOTTED FOR MATURE SHRUBS.
14. TREE PROTECTION FENCING SHALL BE MAINTAINED UNTIL ALL SITE WORK IS COMPLETED. THE FENCING SHALL BE REMOVED PRIOR TO THE FINAL SITE INSPECTION FOR THE CERTIFICATE OF OCCUPANCY (C.O.). THE SITE SHALL BE STABILIZED AND SEEDED PRIOR TO THE ISSUANCE OF A (C.O.).

LANDSCAPE CALCULATIONS

PERIMETER BUFFERS (10' TYPICAL):

WEST (1) - 352 LF = 4 TREES / 100 LF = 14 TREES REQUIRED/PROVIDED
= 40 SHRUBS / 100 LF = 141 SHRUBS REQUIRED/PROVIDED
= 352 LF MIN. 6' TALL FENCE REQUIRED

NORTH (2) - 187 LF = 4 TREES / 100 LF = 8 TREES REQUIRED/PROVIDED
= 40 SHRUBS / 100 LF = 75 SHRUBS REQUIRED/PROVIDED
= 187 LF MIN. 6' TALL FENCE REQUIRED

NORTHEAST (3) - 249 LF = 4 TREES / 100 LF = 10 TREES REQUIRED/PROVIDED
= 40 SHRUBS / 100 LF = 100 SHRUBS REQUIRED/PROVIDED
= 249 LF MIN. 6' TALL FENCE REQUIRED

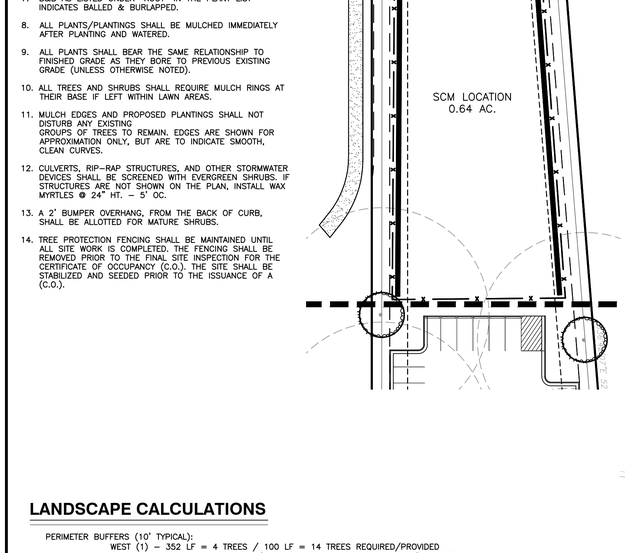
EAST (4) - 247 LF = 4 TREES / 100 LF = 10 TREES REQUIRED/PROVIDED
= 40 SHRUBS / 100 LF = 100 SHRUBS REQUIRED/PROVIDED
= 247 LF MIN. 6' TALL FENCE REQUIRED

STREET YARDS:

MAIN ST - 595 LF = 1 TREE / 50 LF = 12 TREES REQUIRED/PROVIDED

WEST YOUNG ST - 242 LF = 1 TREE / 50 LF = 5 TREES REQUIRED/PROVIDED

VEHICULAR USE AREA COVERAGE: 1 TREE WITHIN 60' OF EACH PARKING SPACE



NOTES:
1. APPROX. 1/3 OF ROOTBALL SHOULD BE SET ABOVE EXISTING GRADE. HOWEVER, IF ROOT-BALLS VARY IN DEPTH, INSURE THAT THE BASE AT THE TRUNK OF ALL TREES IS SET AT THE SAME ELEVATION.
2. REMOVE BURLAP, WIRE, ROPE, AND STRAPS ON UPPER 1/3 OF ROOTBALL.
3. PLACE (3) 1" X 2" X 24" WOOD STAKES, A MINIMUM OF ⅓ THEIR LENGTH INTO THE GROUND INSIDE MULCH RING.

TYPICAL TREE PLANTING
NOT TO SCALE

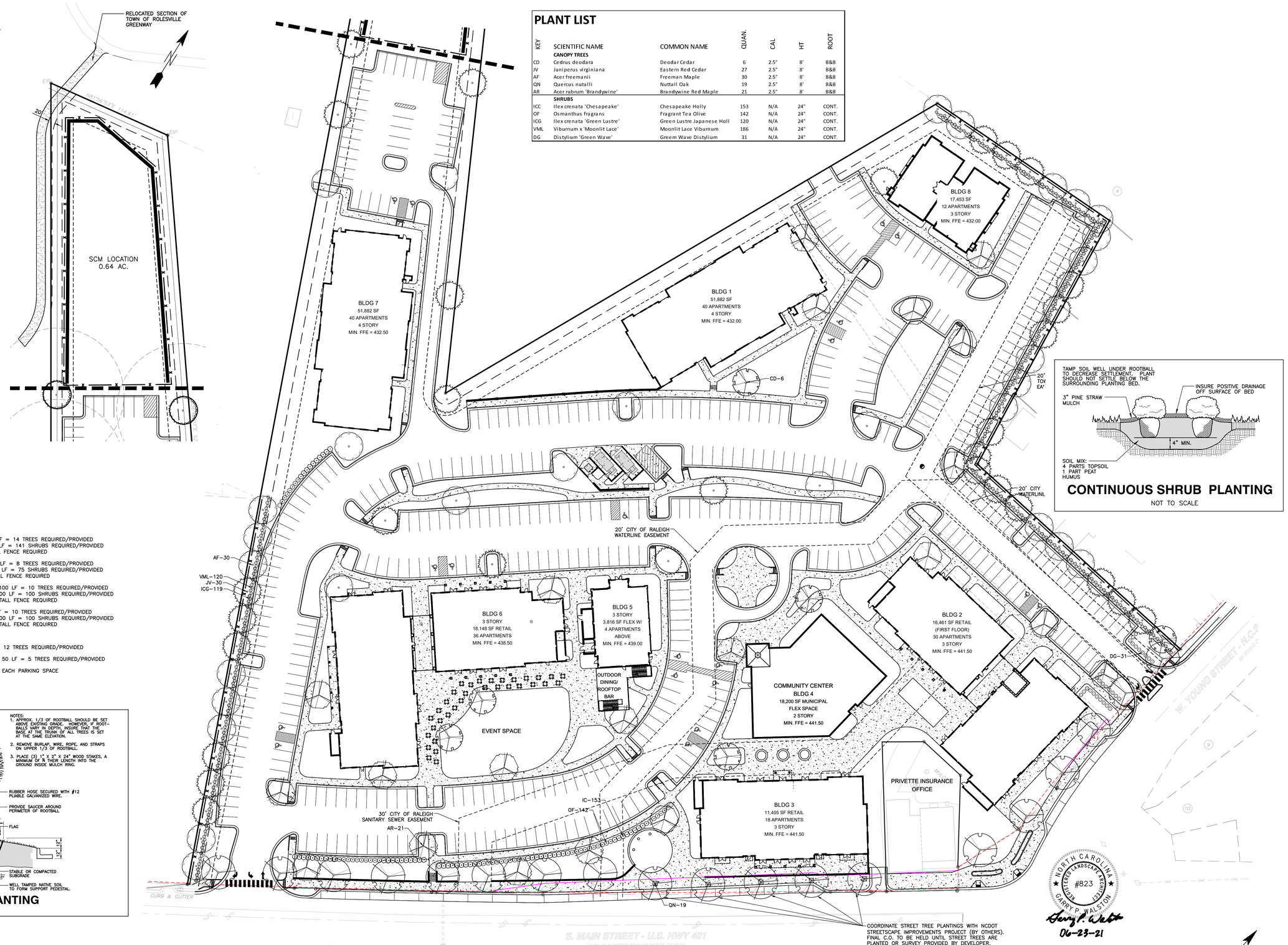
PLANTING NOTES:

LOCATE PLANTS AND PLANTING BEDS BY USING SCALED DIMENSIONS FROM STREET, PROPERTY LINES, BACK OF CURB, BUILDINGS, WALLS, ETC. ALL PLANTS SHALL MEET OR EXCEED THE MINIMUM STANDARDS SET BY THE U.S.D.A. FOR NURSERY STOCK SPONSORED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC., WASHINGTON, D.C. NO SUBSTITUTIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL FROM THE OWNER AND/OR THE LANDSCAPE ARCHITECT. SYMBOLS: B&B = BALLED & BURLAPPED; B.R. = BARE ROOT; CONT. = CONTAINER, O.C. = ON-CENTER

STREET TREE PLANTINGS TO BE COORDINATED IN CONCURRENCE WITH NCDOT STREETSCAPE IMPROVEMENT PROJECT ALONG S. MAIN AND YOUNG STREET(S).

PLANT LIST

KEY	SCIENTIFIC NAME	COMMON NAME	QUAN.	CAL	HT	ROOT
	CANOPY TREES					
CD	Cedrus deodara	Deodar Cedar	6	2.5"	8'	B&B
JV	Juniperus virginiana	Eastern Red Cedar	27	2.5"	8'	B&B
AF	Acer freemanii	Freeman Maple	30	2.5"	8'	B&B
QN	Quercus nutalli	Nuttall Oak	19	2.5"	8'	B&B
AR	Acer rubrum 'Brandywine'	Brandywine Red Maple	21	2.5"	8'	B&B
	SHRUBS					
ICC	Ilex crenata 'Chesapeake'	Chesapeake Holly	153	N/A	24"	CONT.
OF	Osmanthus fragrans	Fragrant Tea Olive	142	N/A	24"	CONT.
ICG	Ilex crenata 'Green Lustre'	Green Lustre Japanese Holl	120	N/A	24"	CONT.
VML	Viburnum x 'Moonlit Lace'	Moonlit Lace Vibumum	186	N/A	24"	CONT.
DG	Distylium 'Green Wave'	Greem Wave Distylium	31	N/A	24"	CONT.



TAMP SOIL WELL UNDER ROOTBALL TO DECREASE SETTLEMENT. PLANT SHOULD NOT SETTLE BELOW THE SURROUNDING PLANTING BED.

CONTINUOUS SHRUB PLANTING
NOT TO SCALE

COORDINATE STREET TREE PLANTINGS WITH NCDOT STREETSCAPE IMPROVEMENTS PROJECT (BY OTHERS). FINAL C.O. TO BE HELD UNTIL STREET TREES ARE PLANTED OR SURVEY PROVIDED BY DEVELOPER.

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT #823 GARRY P. WALSTON

Garry P. Walston 06-23-21

NO FLOODPLAINS EXIST ON-SITE

NOTE: ALL CONSTRUCTION ACTIVITY MUST BE IN ACCORDANCE WITH THE ACCEPTED POLICIES OF THE TOWN OF ROLESVILLE AND NCDOT

SCALE IN FEET
0 20 40 80 120 160

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

JOB NO. 03-19157 | DATE | PROGRESS | DRAWN BY LAK | CHK BY:GPW

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

LANDSCAPE PLAN

SCALE: 1" = 40'

SHEET L1.1

TOWN OF ROLESVILLE PROJECT NO.

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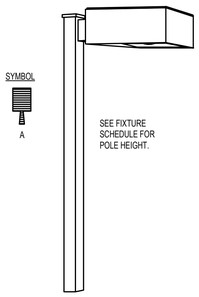
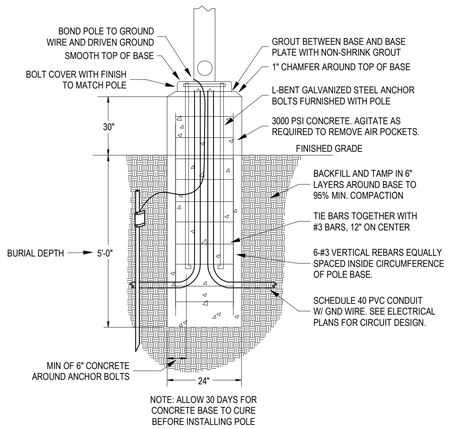


2 FIXTURE "A" DETAIL 4
SCALE: N.T.S



NOTE: ALLOW 30 DAYS FOR CONCRETE BASE TO CURE BEFORE INSTALLING POLE

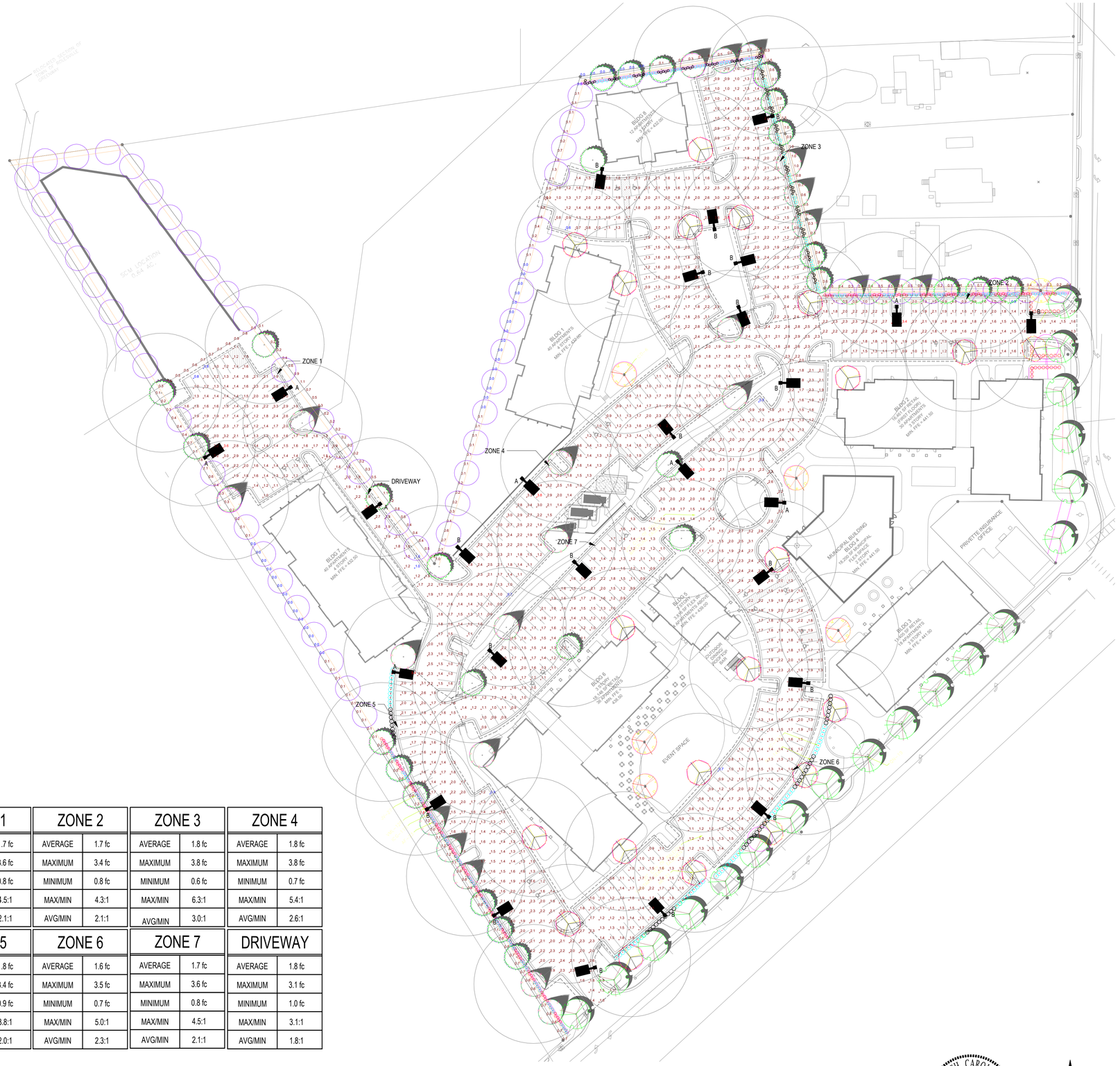
3 SITE LIGHTING POLE BASE DETAIL - 5'(30" AFG)
SCALE: N.T.S.

ZONE 1		ZONE 2		ZONE 3		ZONE 4	
AVERAGE	1.7 fc	AVERAGE	1.7 fc	AVERAGE	1.8 fc	AVERAGE	1.8 fc
MAXIMUM	3.6 fc	MAXIMUM	3.4 fc	MAXIMUM	3.8 fc	MAXIMUM	3.8 fc
MINIMUM	0.8 fc	MINIMUM	0.8 fc	MINIMUM	0.6 fc	MINIMUM	0.7 fc
MAX/MIN	4.5:1	MAX/MIN	4.3:1	MAX/MIN	6.3:1	MAX/MIN	5.4:1
AVG/MIN	2.1:1	AVG/MIN	2.1:1	AVG/MIN	3.0:1	AVG/MIN	2.6:1

ZONE 5		ZONE 6		ZONE 7		DRIVEWAY	
AVERAGE	1.8 fc	AVERAGE	1.6 fc	AVERAGE	1.7 fc	AVERAGE	1.8 fc
MAXIMUM	3.4 fc	MAXIMUM	3.5 fc	MAXIMUM	3.6 fc	MAXIMUM	3.1 fc
MINIMUM	0.9 fc	MINIMUM	0.7 fc	MINIMUM	0.8 fc	MINIMUM	1.0 fc
MAX/MIN	3.8:1	MAX/MIN	5.0:1	MAX/MIN	4.5:1	MAX/MIN	3.1:1
AVG/MIN	2.0:1	AVG/MIN	2.3:1	AVG/MIN	2.1:1	AVG/MIN	1.8:1

LIGHTING FIXTURE SCHEDULE

TYPE MARK	DESCRIPTION	MANUFACTURER	MODEL	WATTAGE
A	GALLEON AREA AND ROADWAY LUMINAIRE (3) 70 CRI, 4000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III ROADWAY OPTICS	EATON - STREETWORKS	GAN-AF-03-LED-U-T3R	166.0 W
B	GALLEON AREA AND ROADWAY LUMINAIRE (3) 70 CRI, 4000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS	EATON - STREETWORKS	GAN-AF-03-LED-U-T4W	166.0 W



1 SITE LIGHTING
SCALE: 1" = 50'-0"

SCALE IN FEET

0 25 50 100 150 200

BNK

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS

6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 OR (800)354-1875 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION

REVISIONS

JOB NO.	DATE	DRAWN BY
21108	6/23/21	SMD

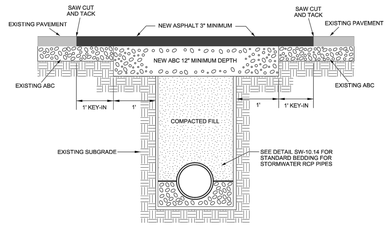
SITE LIGHTING

SCALE: As indicated | CHK BY: PLC

Cobblestone Village

Rolesville, NC

SHEET SL-101 OF

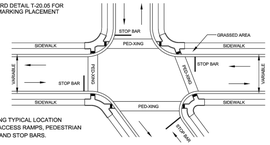


NOTES:
1. THE PAVEMENT EDGE SHALL BE DEFINED BY A STRAIGHT EDGE FORMED BY A MACHINED SAW CUT.
2. THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
3. THE FINAL 1' OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-80 AS MODIFIED BY NCDOT. BITUMINOUS BASE OR BINDER MAY BE SUBSTITUTED IF APPROVED BY TRANSPORTATION DIRECTOR OR DESIGNEE.
4. THE ENTIRE THICKNESS/VERTICAL EDGE OF THE CUT SHALL BE TACKED.
5. THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK.
6. THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY AND ROLLED WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH, LEVEL PATCH.

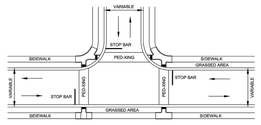
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	ASPHALT PAVEMENT PATCH AND RCP PIPE BACKFILL	
	T-10.05	

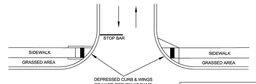
NOTE: SEE STANDARD DETAIL T-20.05 FOR PAVEMENT MARKING PLACEMENT



DETAIL SHOWING TYPICAL LOCATION OF SIDEWALK ACCESS RAMPS, PEDESTRIAN CROSSWALKS AND STOP BARS.



DETAIL SHOWING TYPICAL LOCATION OF SIDEWALK ACCESS RAMPS PEDESTRIAN CROSSWALKS AND STOP BARS FOR TEE INTERSECTION.



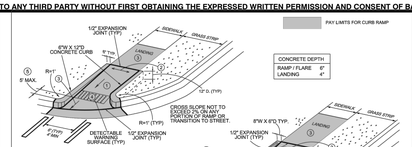
FOR RAMPS AT ASPHALT TO ASPHALT STREET TYPE DRIVEWAYS OR PRIVATE STREET TIE IN.

SHEET 1 OF 8

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	CURB RAMPS	
	T-20.01.1	

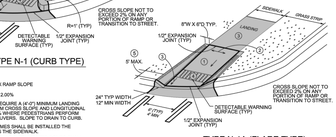
PAY LIMITS FOR CURB RAMP



CONCRETE DEPTH
RAMP / FLARE 6"
LANDING 4"

CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP OR TRANSITION TO STREET.

TYPE N-1 (CURB TYPE)

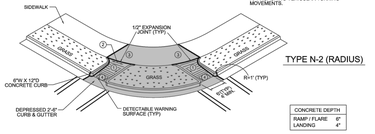


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP OR TRANSITION TO STREET.

TYPE N-1A (FLARE TYPE)

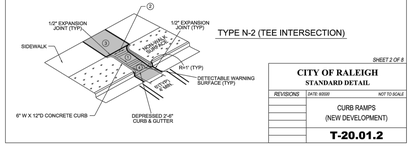
1. 8.33% (12:1) MAX RAMP SLOPE
2. CROSS SLOPE: 2.00%
3. CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.
4. RAMPS AND DOMES SHALL BE INSTALLED THE SAME WIDTH AS THE SIDEWALK.
5. 8' LENGTH EXCEEDS 5', TRUNCATED DOMES SHALL BE INSTALLED ALONG THE BACK OF THE CURB COVERING THE FULL WIDTH OF THE RAMP.

NOTE: USE SMALL FLARES ONLY WHEN A CURB RAMP IS NOT EXPECTED TO BE USED BY APPROACHING VEHICULAR TURNING MOVEMENTS.



TYPE N-2 (RADIUS)

CONCRETE DEPTH
RAMP / FLARE 6"
LANDING 4"



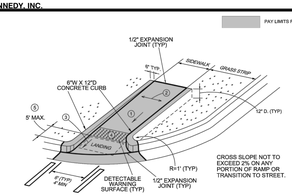
TYPE N-2 (TEE INTERSECTION)

SHEET 2 OF 8

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	CURB RAMPS (NEW DEVELOPMENT)	
	T-20.01.2	

PAY LIMITS FOR CURB RAMP

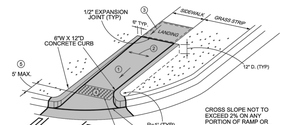


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP OR TRANSITION TO STREET.

TYPE N-4

1. SLOPE TO MEET GRADE, 15' MAXIMUM.
2. CROSS SLOPE: 2.00%
3. CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.
4. RAMPS AND DOMES SHALL BE INSTALLED THE SAME WIDTH AS THE SIDEWALK.
5. 8' LENGTH EXCEEDS 5', TRUNCATED DOMES SHALL BE INSTALLED ALONG THE BACK OF THE CURB COVERING THE FULL WIDTH OF THE RAMP.

CONCRETE DEPTH
RAMP 6"
LANDING 4"



CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP OR TRANSITION TO STREET.

TYPE N-4A

SHEET 4 OF 8

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	CURB RAMPS (NEW DEVELOPMENT)	
	T-20.01.4	

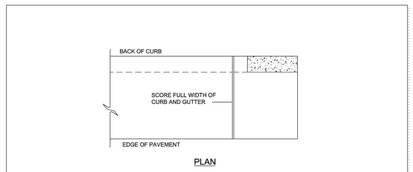
CITY OF RALEIGH
CURB RAMPS
GENERAL NOTES

1. CITY OF RALEIGH STANDARD CURB RAMPS HAVE BEEN DEVELOPED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND PUBLIC RIGHT OF WAY ACCESS GUIDELINES (PROWAG).
2. CURB RAMPS SHALL BE PROVIDED AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. SIDEWALK ACCESS RAMPS SHALL BE LOCATED AS INDICATED IN THE DETAIL, HOWEVER, THE LOCATION MAY BE ADJUSTED IN COORDINATION WITH THE CITY OF RALEIGH WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT.
3. DOUBLE WHEELCHAIR RAMPS ARE TO BE INSTALLED AT ALL PUBLIC STREET INTERSECTIONS WHERE SIDEWALK IS REQUIRED.
4. THE WALKING SURFACE SHALL BE SLIP RESISTANT, THE COLOR FOR THE DETECTABLE WARNING AREA SHALL BE YELLOW FOR CONTRAST.
5. NO SLOPE ON THE SIDEWALK ACCESS RAMP SHALL EXCEED 1":FT (12:1) IN RELATIONSHIP TO THE GRADE OF THE STREET.
6. IN NO CASE SHALL THE WIDTH OF THE SIDEWALK ACCESS RAMP BE LESS THAN 48" ALL RAMPS SHALL BE INSTALLED THE SAME WIDTH AS THE SIDEWALK.
7. USE CLASS A (3000 PSI) CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NONSKID SURFACE.
8. A 1/2" EXPANSION JOINT INSTALLED FULL DEPTH WILL BE REQUIRED WHERE THE CONCRETE SIDEWALK ACCESS RAMP JOINS THE CURB AND ALSO WHERE NEW CONCRETE ABUTS EXISTING CONCRETE.
9. CURB RAMPS SHOULD BE PLACED PARALLEL TO THE DIRECTION OF TRAVEL.

SHEET 6 OF 8

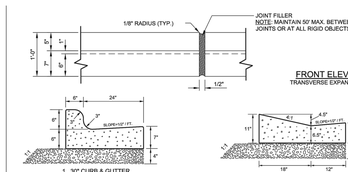
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	CURB RAMP NOTES	
	T-20.01.8	



CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	STANDARD METHOD OF ENDING CURB AND GUTTER	
	T-10.25	

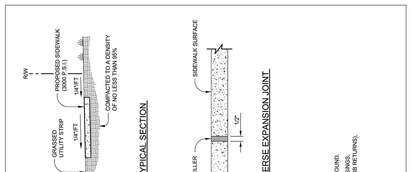


NOTES:
1. 10' MAXIMUM BETWEEN DUMMY JOINTS.
   10' MAXIMUM BETWEEN DUMMY JOINTS ON MACHINE POURS.
2. 1/2" EXPANSION JOINT EVERY 50'.
3. 3000 PSI CONCRETE MINIMUM, 4" SLUMP MAXIMUM.
4. LIQUID MEMBRANE CURING COMPOUND SHALL MEET THE REQUIREMENTS OF SECTION 1026-2 OF NCDOT STANDARDS & SPECIFICATIONS FOR ROADS AND STRUCTURES.
5. ALL CONSTRUCTION JOINTS SHALL BE FILLED WITH JOINT FILLER AND SEALER IN ACCORDANCE WITH NCDOT ROADWAY STANDARD DETAIL 846.01 THE JOINT MATERIAL SHALL CONFORM TO SECTION 1028-2 OF NCDOT STANDARD & SPECIFICATIONS FOR ROADS AND STRUCTURES.
6. REFER TO NCDOT DETAIL 846.01 FOR CURB AND GUTTER SUPERELEVATION RATES.

SHEET 1 OF 2

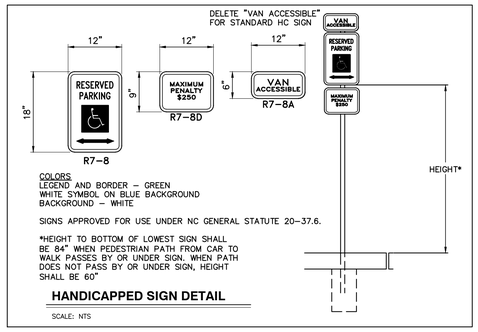
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	CURB AND GUTTER	
	T-10.26.1	



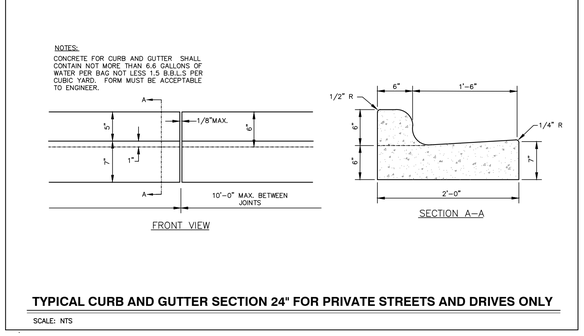
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	CONCRETE SIDEWALK	
	T-30.01	



HANDICAPPED SIGN DETAIL

SCALE: NTS



TYPICAL CURB AND GUTTER SECTION 24" FOR PRIVATE STREETS AND DRIVES ONLY

SCALE: NTS

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARTY D. BIZZELL

06/23/21

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

03-19157 JOB NO. | PROGRESS DATE | MRM DRAWN BY | CHK BY: MDB

DETAILS

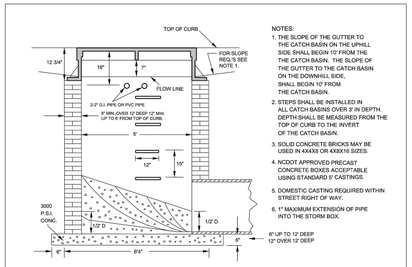
SCALE: N.T.S.

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET **C5.1**

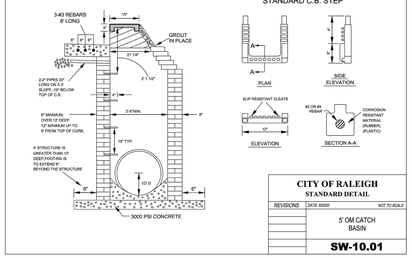
NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

TOWN OF ROLESVILLE PROJECT NO.



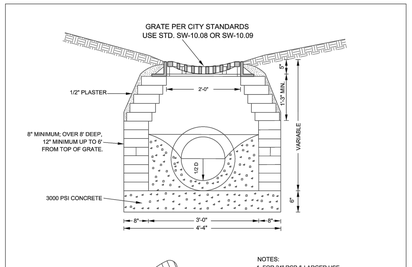
NOTES:
1. THE SLOPE OF THE GUTTER TO THE CATCH BASIN ON THE UPHILL SIDE SHALL BEGIN 10' FROM THE THE CATCH BASIN. THE SLOPE OF THE GUTTER TO THE CATCH BASIN ON THE DOWNHILL SIDE, SHALL BEGIN 10' FROM THE CATCH BASIN.
2. STEPS SHALL BE INSTALLED IN ALL CATCH BASINS OVER 3' IN DEPTH. DEPTH SHALL BE MEASURED FROM THE TOP OF CURB TO THE INVERT OF THE CATCH BASIN.
3. SOLID CONCRETE BRICKS MAY BE USED IN 4X4X8 OR 4X8X16 SIZES.
4. NCDOT APPROVED PRECAST CONCRETE BOXES ACCEPTABLE USING STANDARD 9' CASTINGS.
5. DOMESTIC CASTING REQUIRED WITHIN STREET RIGHT OF WAY.
6. 1" MAXIMUM EXTENSION OF PIPE INTO THE STORM BOX.
6" UP TO 12' DEEP
12" OVER 12' DEEP

STANDARD C.B. STEP



CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE 6/2020	NOT TO SCALE
		5' OM CATCH BASIN
		SW-10.01



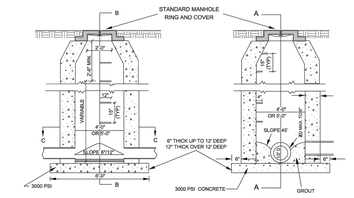
NOTES:
1. FOR 24" RCP & LARGER USE PIPE DIAMETER PLUS 12" FOR MINIMUM INSIDE DIMENSION.
2. 24" X 24" CASTING WITH 12", 15" & 18" PIPE, 24" X 36" CASTING USED WITH 24" PIPE OR LARGER. IF PLACED WITHIN PUBLIC R/W CASTING MUST BE TRAFFIC BEARING TYPE PER NCDOT STANDARDS.
3. USE 4" X 4" X 8" OR 4" X 8" X 16" SOLID CONCRETE BLOCK, CAST IN PLACE OR PRECAST CONCRETE TO MEET N.C.D.O.T. STANDARDS ACCEPTABLE.
4. STEPS SHALL BE INSTALLED IN ALL DROP INLETS OVER 3' IN DEPTH. DEPTH SHALL BE MEASURED FROM THE TOP OF GRATE TO THE INVERT OF THE DROP INLET.

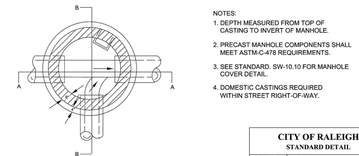
CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE 6/2020	NOT TO SCALE
		STANDARD DROP INLET
		SW-10.03

TYPICAL MH FOR STORM SEWER

PIPE SIZE	MH DIAMETER
12-24"	4'-0"
30-42"	5'-0"
48"	6'-0"
54"	8'-0"

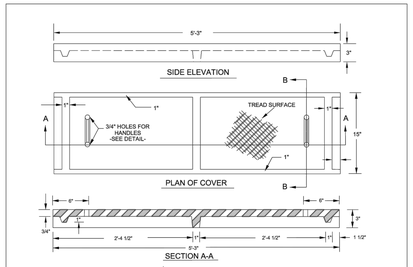


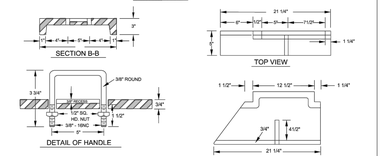


NOTES:
1. DEPTH MEASURED FROM TOP OF CASTING TO INVERT OF MANHOLE.
2. PRECAST MANHOLE COMPONENTS SHALL MEET ASTM-C-478 REQUIREMENTS.
3. SEE STANDARD. SW-10.10 FOR MANHOLE COVER DETAIL.
4. DOMESTIC CASTINGS REQUIRED WITHIN STREET RIGHT-OF-WAY.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE 6/2020	NOT TO SCALE
		STANDARD CLASS "A" MANHOLE
		SW-10.05

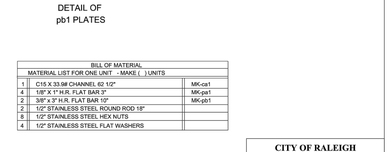




SHEET 1 OF 2

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE 6/2020	NOT TO SCALE
		CATCH BASIN CASTINGS
		SW-10.06.1

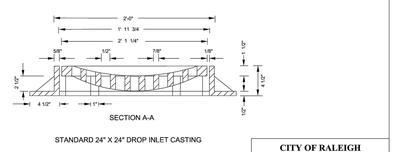


NOTES:
PAINT WITH RUST INHIBITING BLACK PAINT.

BILL OF MATERIAL		
MATERIAL LIST FOR ONE UNIT - MAKE ( ) UNITS		
1	C15 X 33.9# CHANNEL 62 1/2"	MK-ca1
4	1/8" X 1" H.R. FLAT BAR 3"	MK-pa1
2	3/8" x 3" H.R. FLAT BAR 10"	MK-pb1
2	1/2" STAINLESS STEEL ROUND ROD 18"	
8	1/2" STAINLESS STEEL HEX NUTS	
4	1/2" STAINLESS STEEL FLAT WASHERS	

CITY OF RALEIGH
STANDARD DETAIL

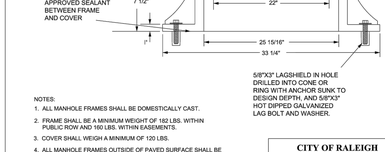
REVISIONS	DATE 6/2020	NOT TO SCALE
		CATCH BASIN STEEL TOP
		SW-10.07



STANDARD 24" X 24" DROP INLET CASTING

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE 6/2020	NOT TO SCALE
		DROP INLET CASTING
		SW-10.08



BUTYL-NEK OR APPROVED SEALANT BETWEEN FRAME AND COVER

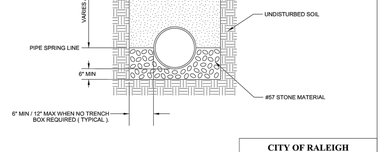
5/8"X3" LAGSHIELD IN HOLE DRILLED INTO CONE OR RING WITH ANCHOR SUNK TO DESIGN DEPTH, AND 5/8"X3" HOT DIPPED GALVANIZED LAG BOLT AND WASHER.

NOTES:
1. ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.
2. FRAME SHALL BE A MINIMUM WEIGHT OF 182 LBS. WITHIN PUBLIC ROW AND 160 LBS. WITHIN EASEMENTS.
3. COVER SHALL WEIGH A MINIMUM OF 120 LBS.
4. ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACE SHALL BE BOLTED TO THE CONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE 6/2020	NOT TO SCALE
		STANDARD STORM MANHOLE COVER
		SW-10.10

COVER FOR PIPES WITHIN THE R.O.W. MINIMUM PIPE CLEARANCE FROM INVERT TO SUBGRADE	
PIPE SIZE (in)	CLEARANCE DISTANCE (ft)
15	2.4
18	2.7
24	3.3
30	3.8
36	4.4
42	4.9
48	5.4
54	6.0
60	6.5
66	7.0
72	7.6



CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE 6/2020	NOT TO SCALE
		BEDDING FOR STORMWATER RCP PIPES
		SW-10.14

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARY D. BIZZELL

06/23/21

TOWN OF ROLESVILLE PROJECT NO.

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

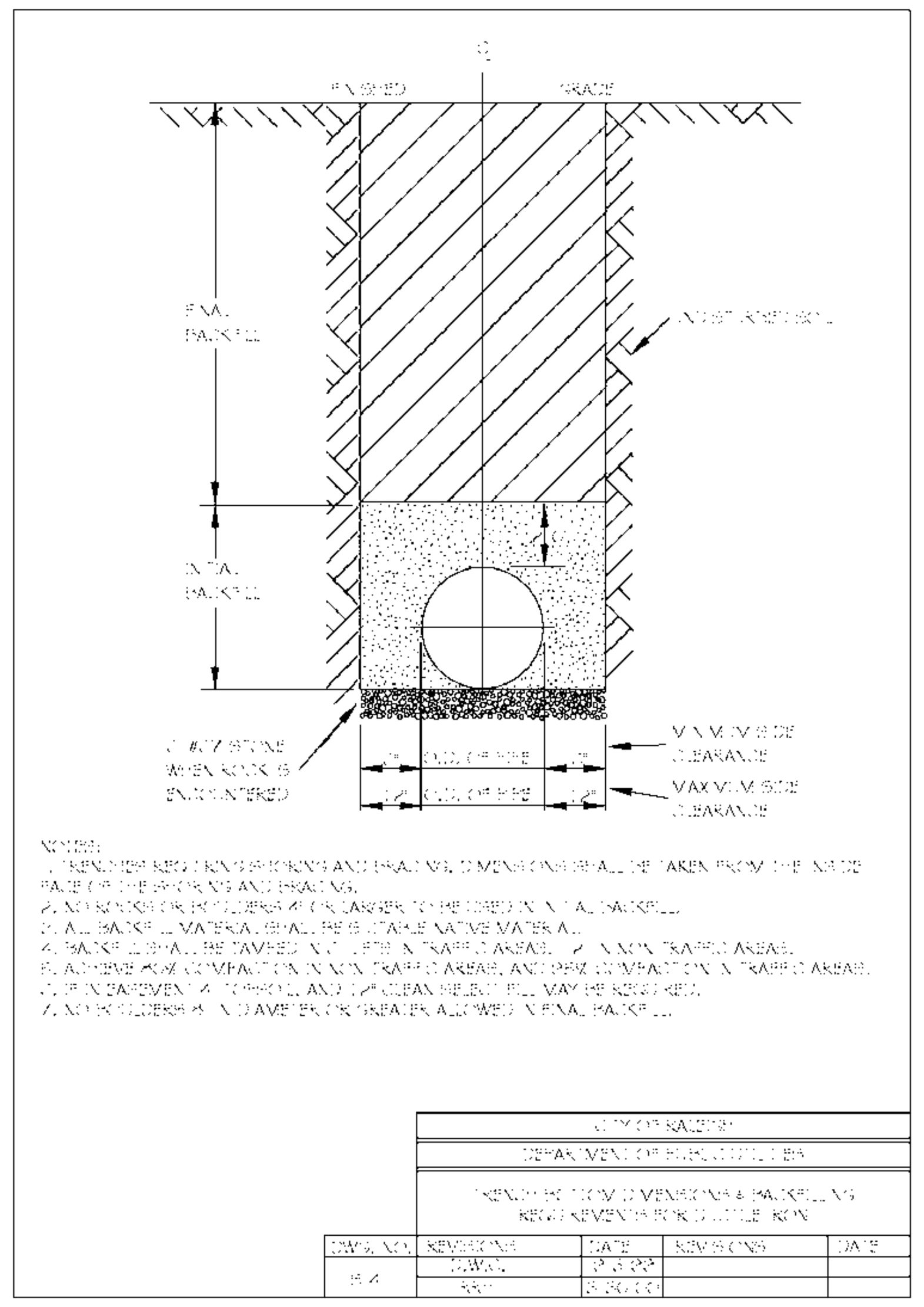
03-19157 JOB NO. | PROGRESS DATE | MRM DRAWN BY | CHK BY: MDB

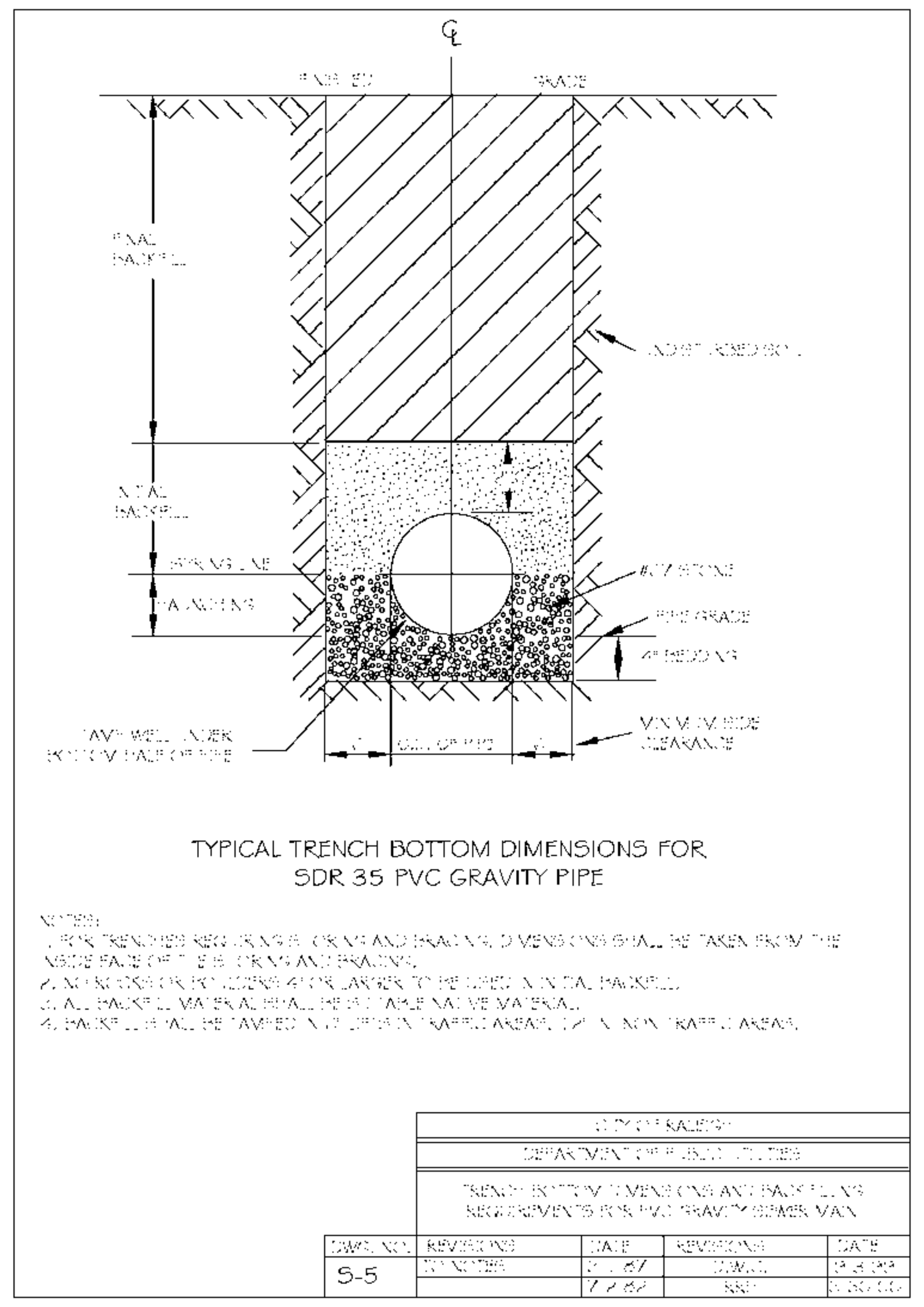
DETAILS

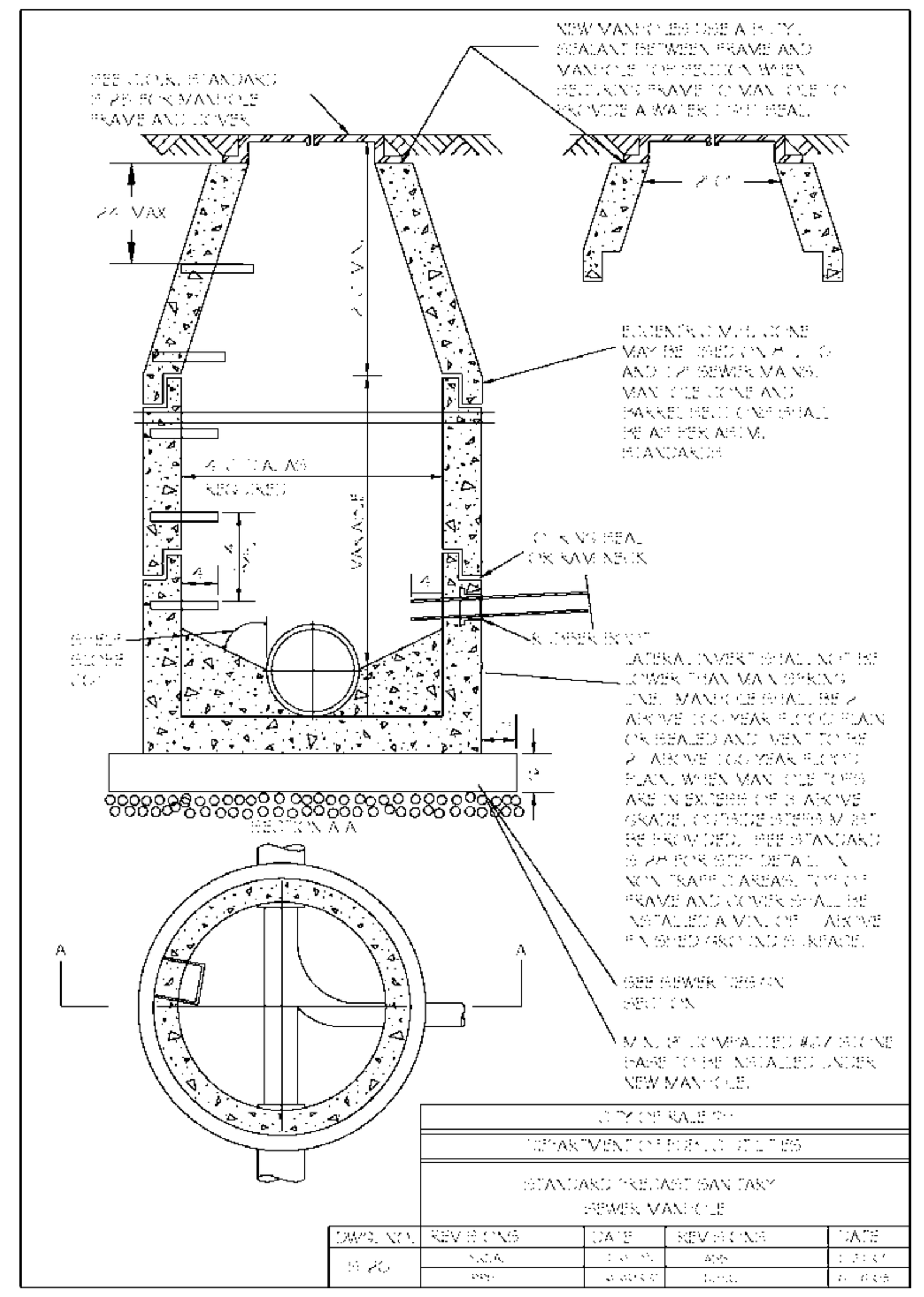
SCALE: N.T.S.

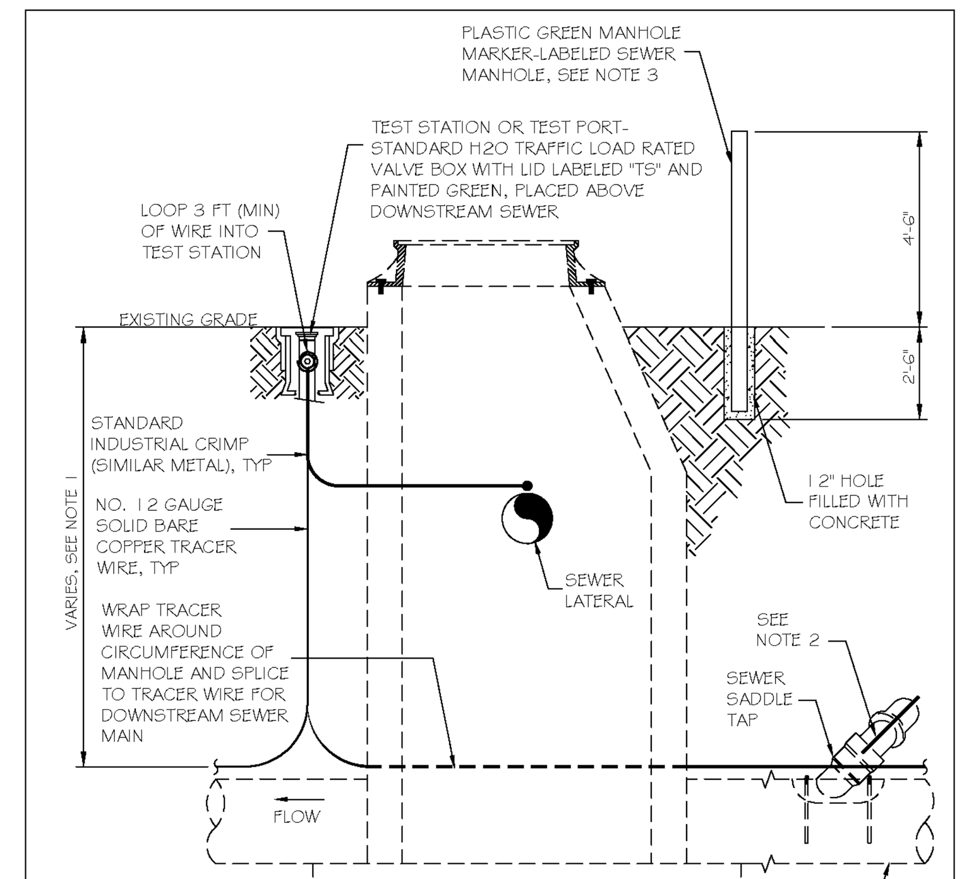
COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET **C5.2**







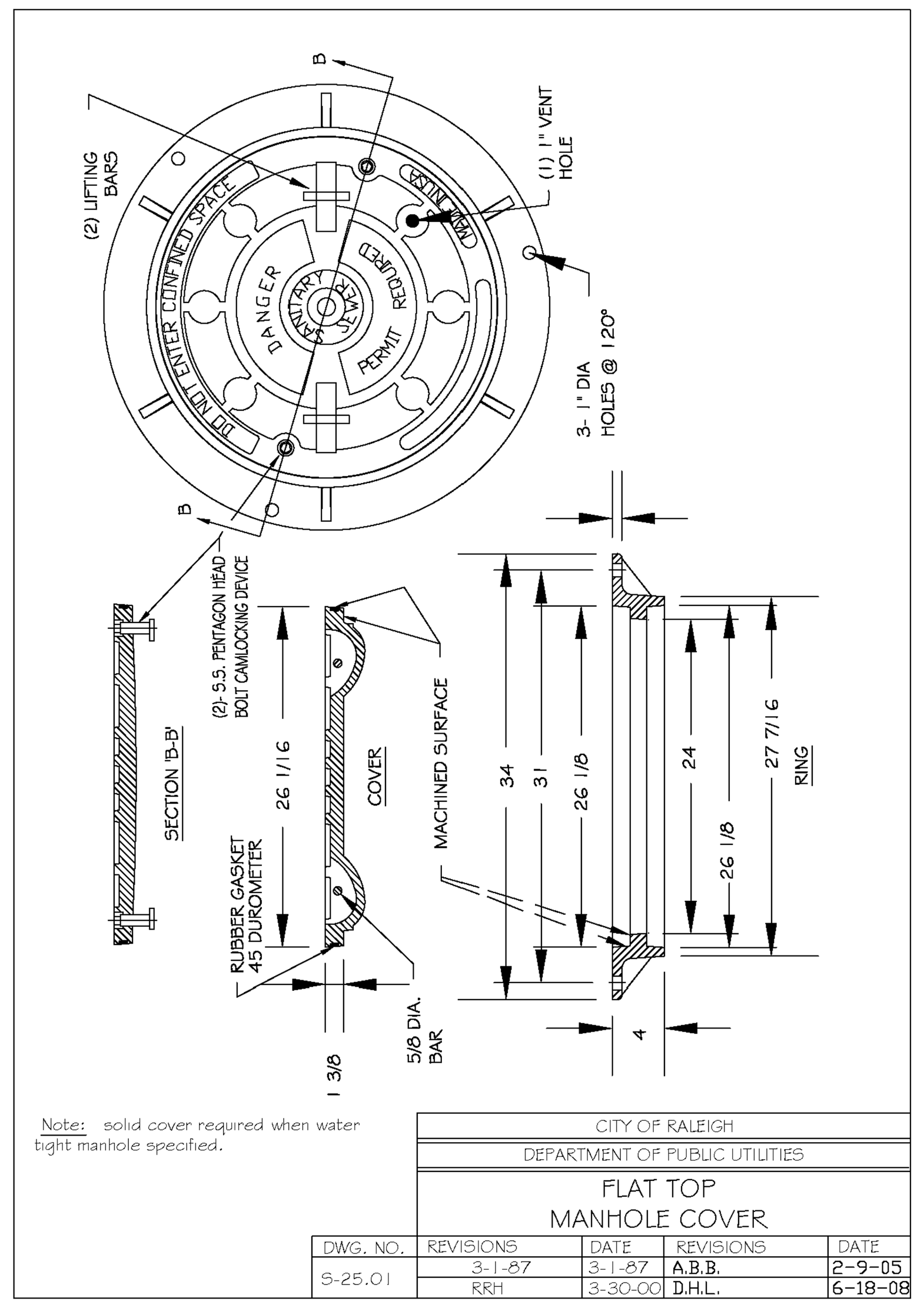


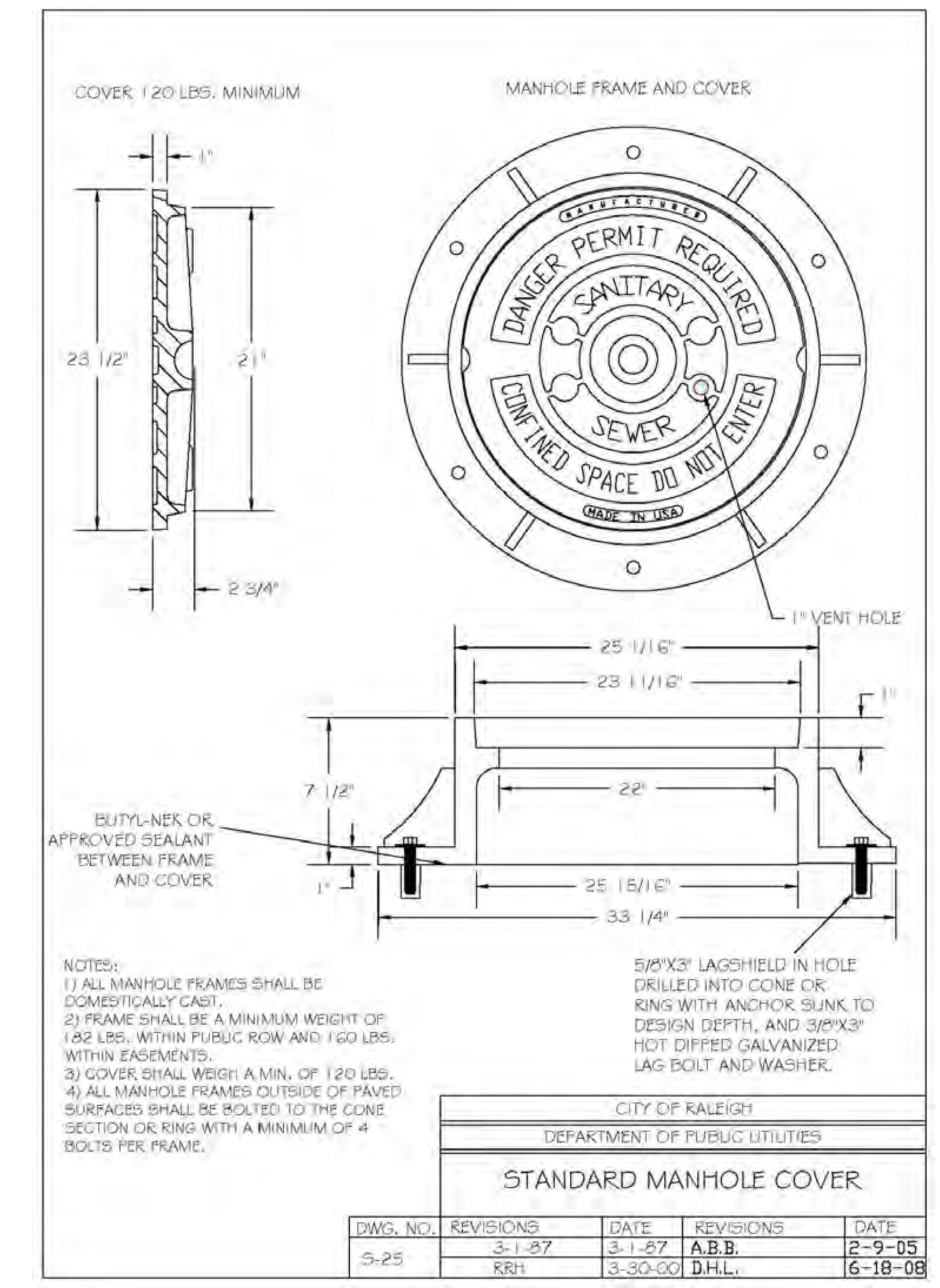
NOTES:

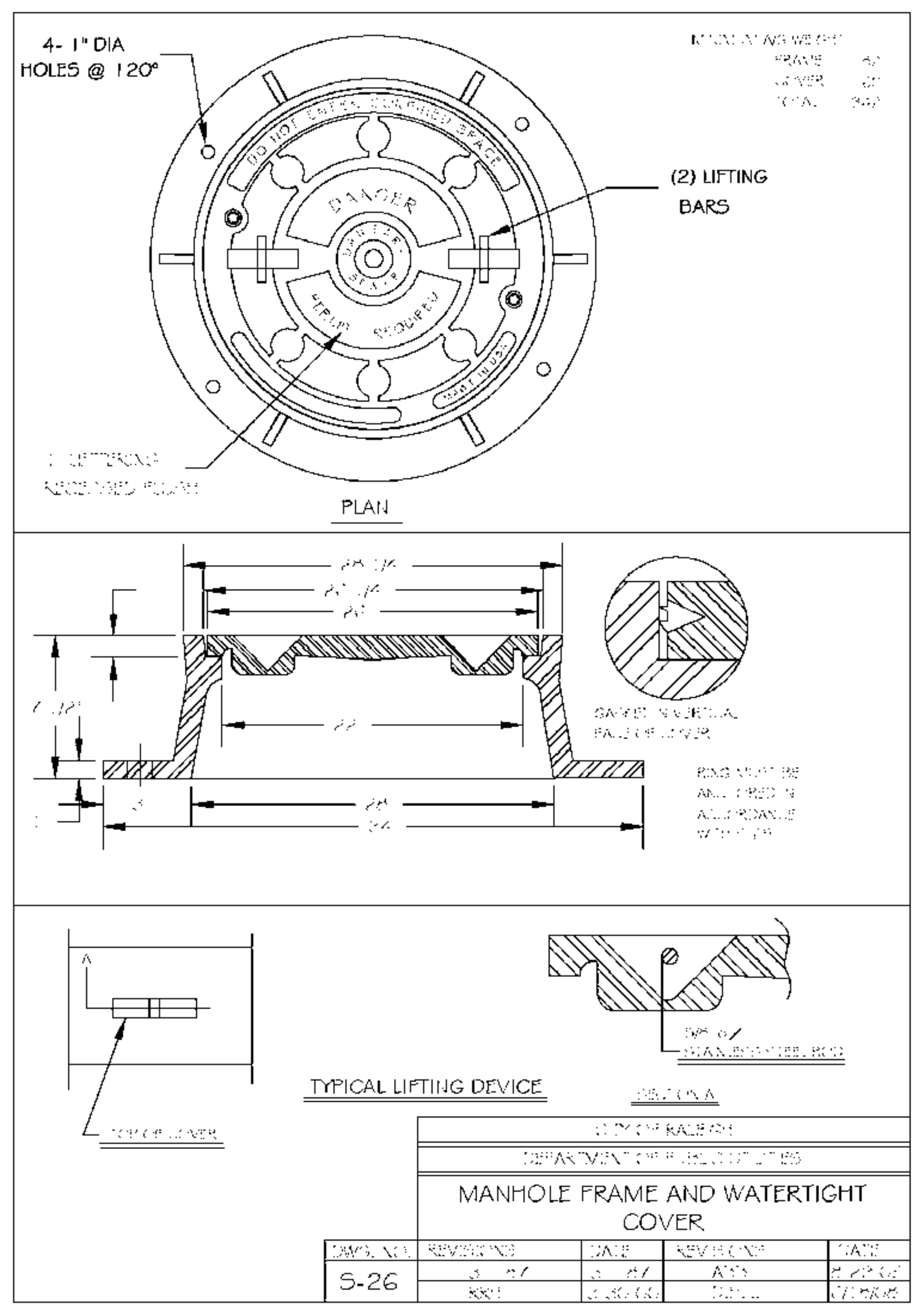
1. THE TRACER WIRE SHALL BE CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. FOR GRAVITY MAIN AND OR LATERAL INSTALLATIONS LESS THAN 8 FT, THE TRACING WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRE SHALL BE LAID FLAT AND SECURELY AFFIXED TO THE PIPE AT 10 FOOT INTERVALS. FOR GRAVITY MAIN AND OR LATERAL INSTALLATION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

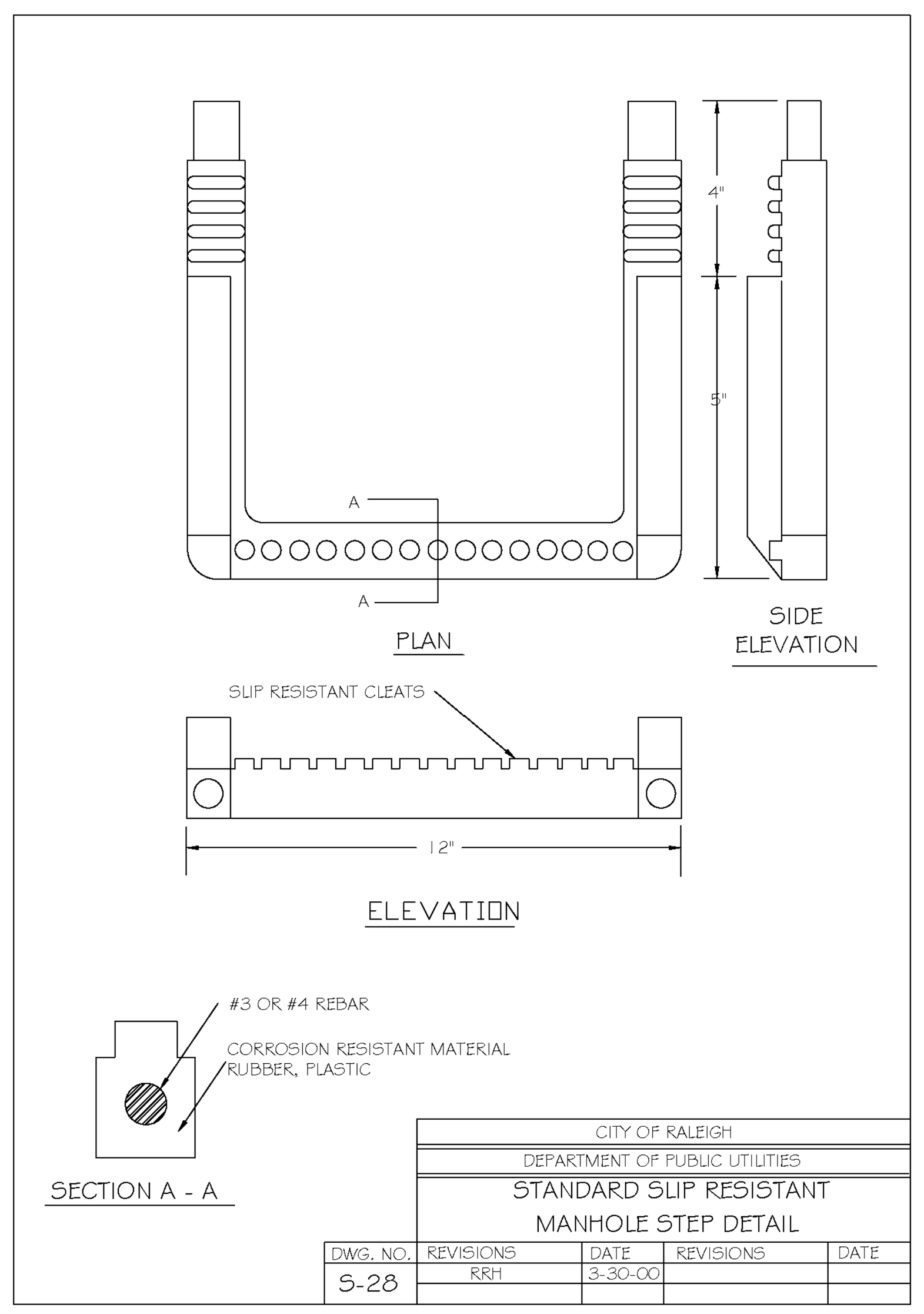
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
GRAVITY SEWER MAIN TRACER WIRE AND MANHOLE MARKER

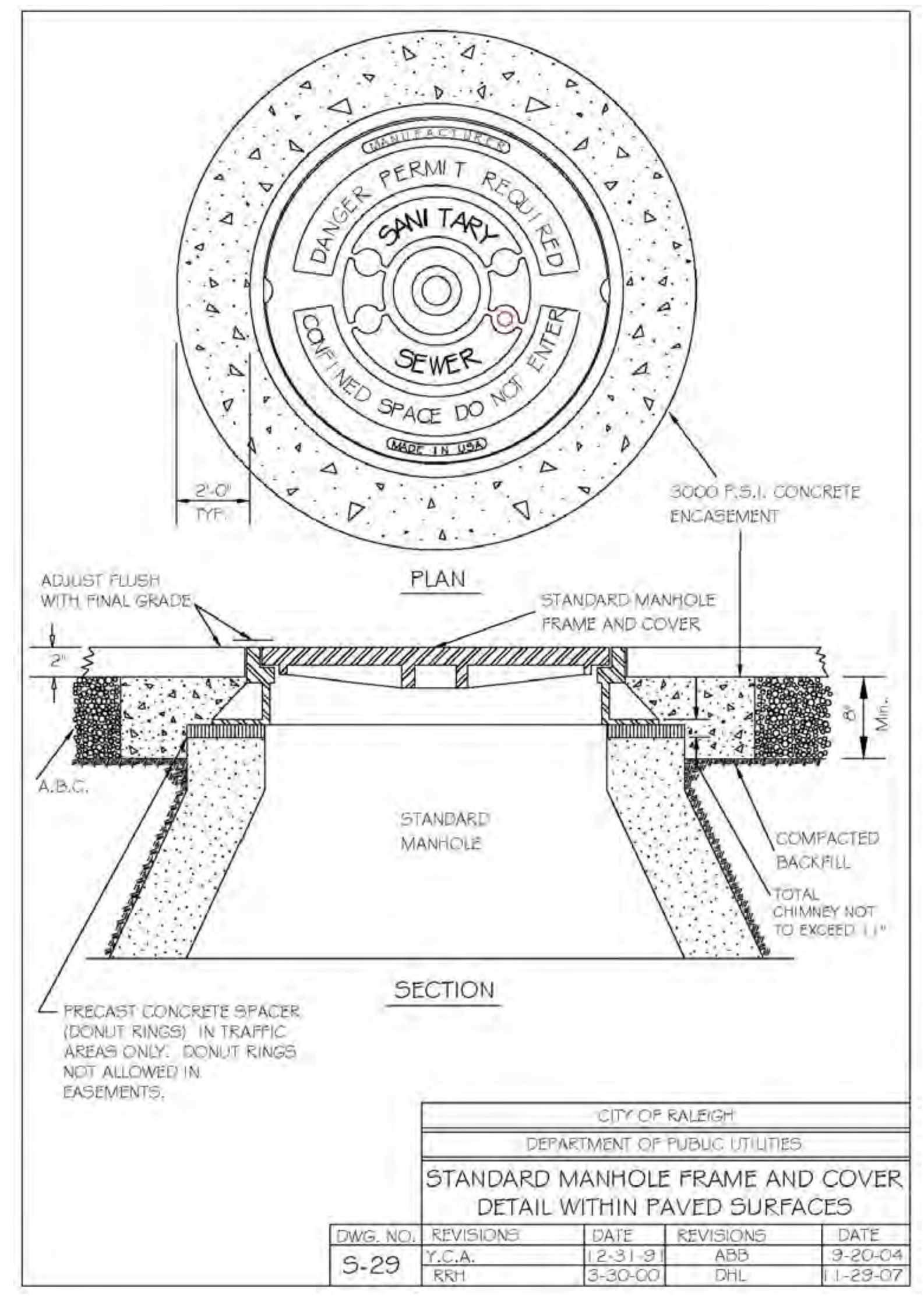
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20A	WKD	09-14		

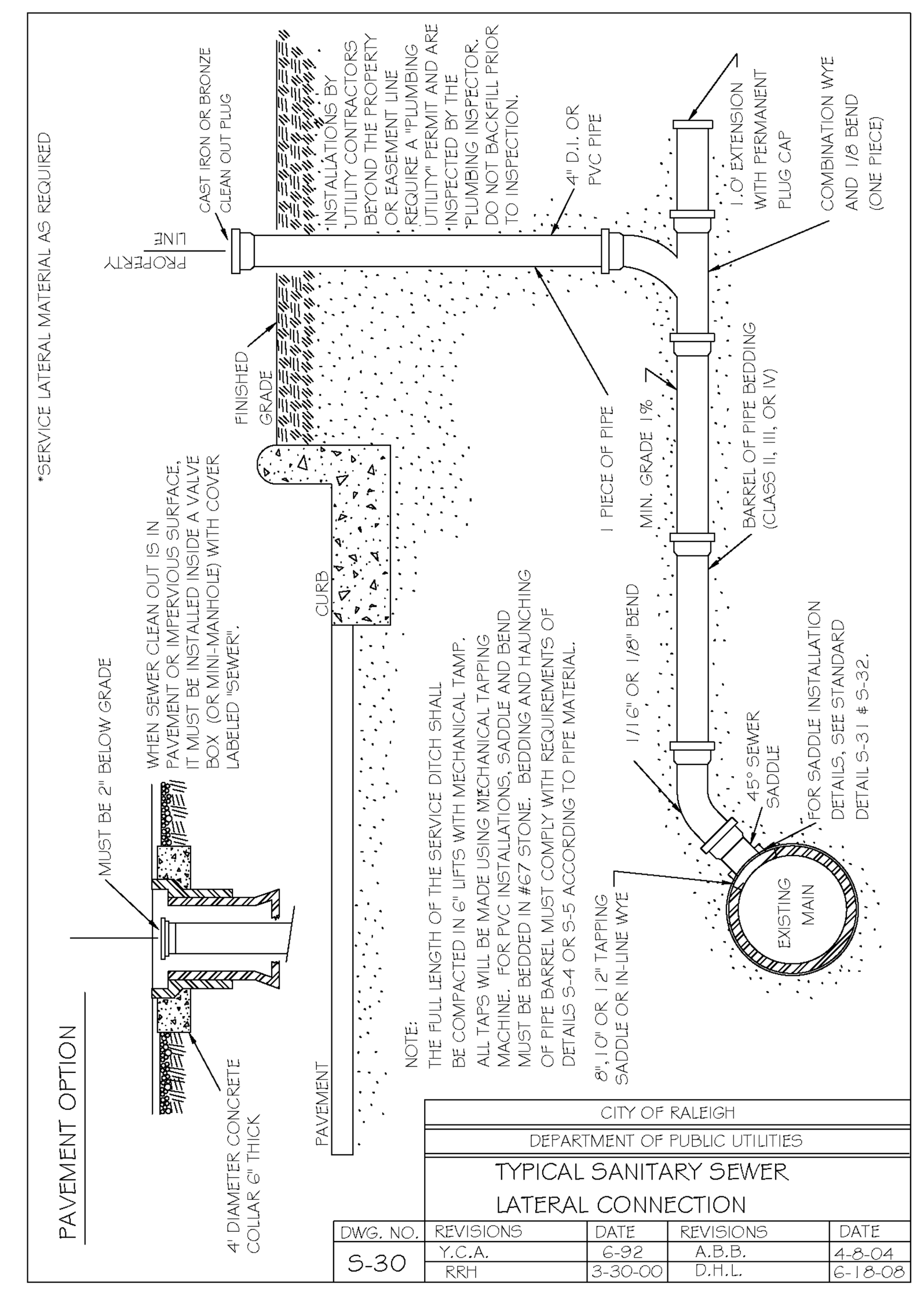


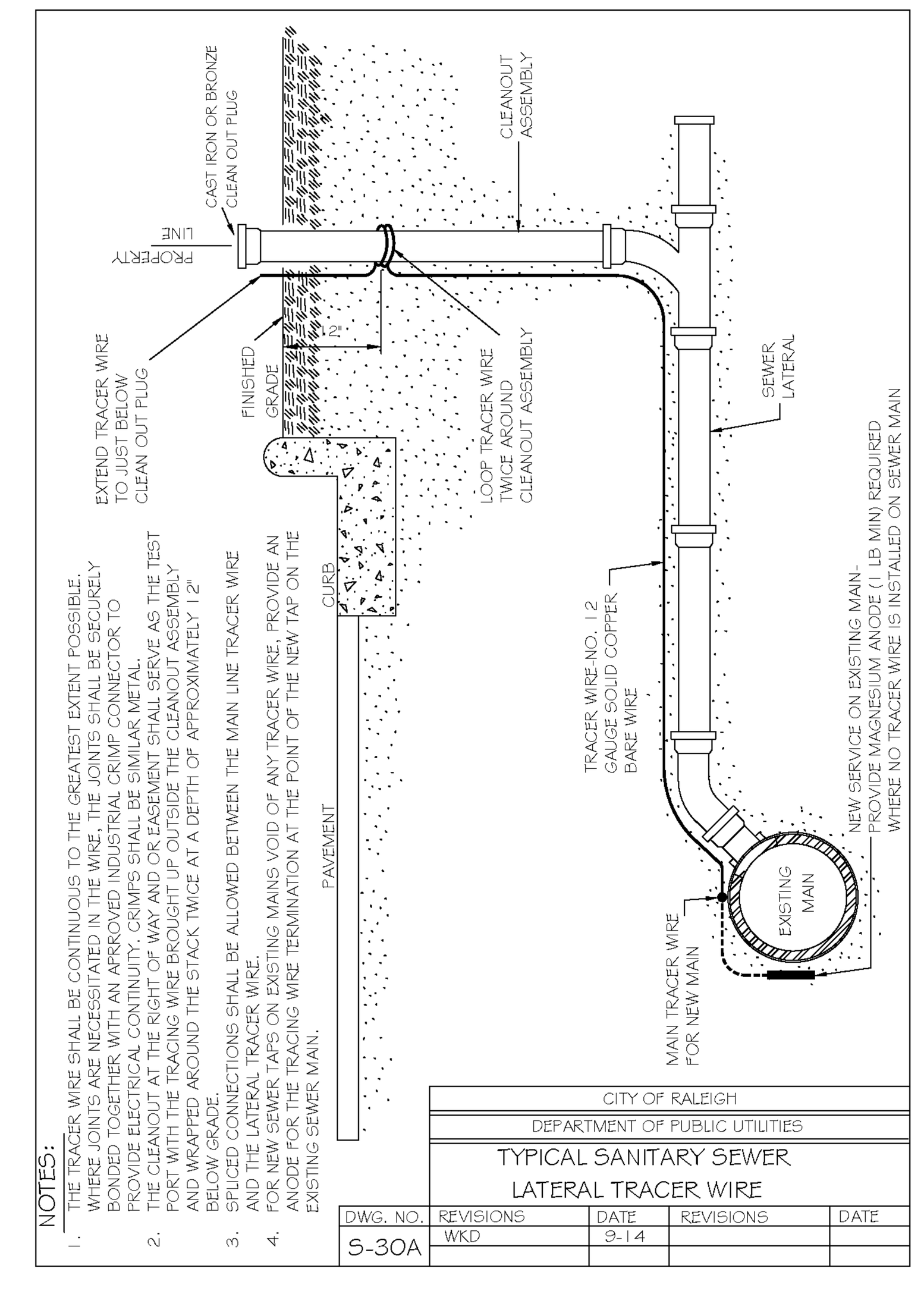


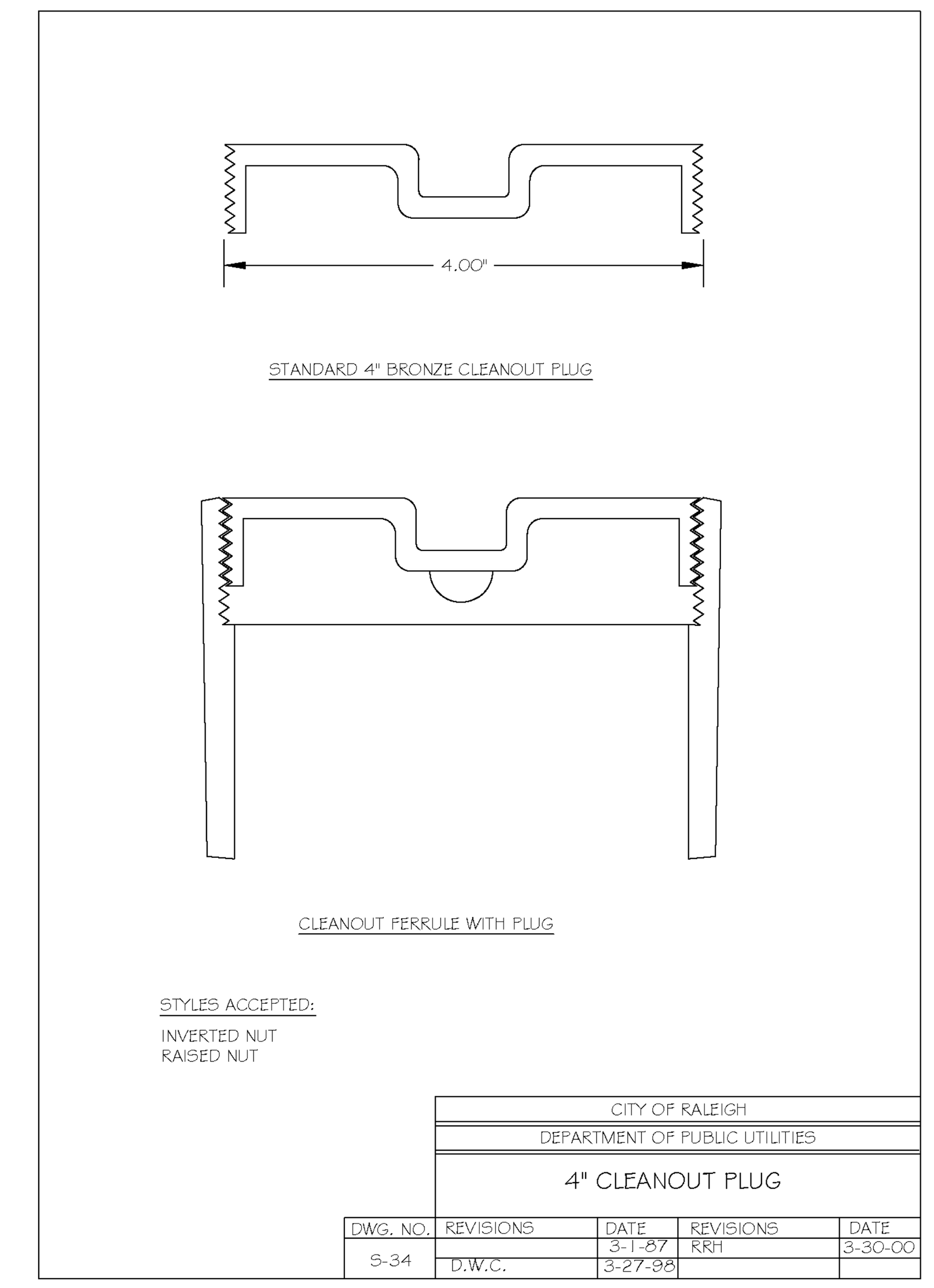


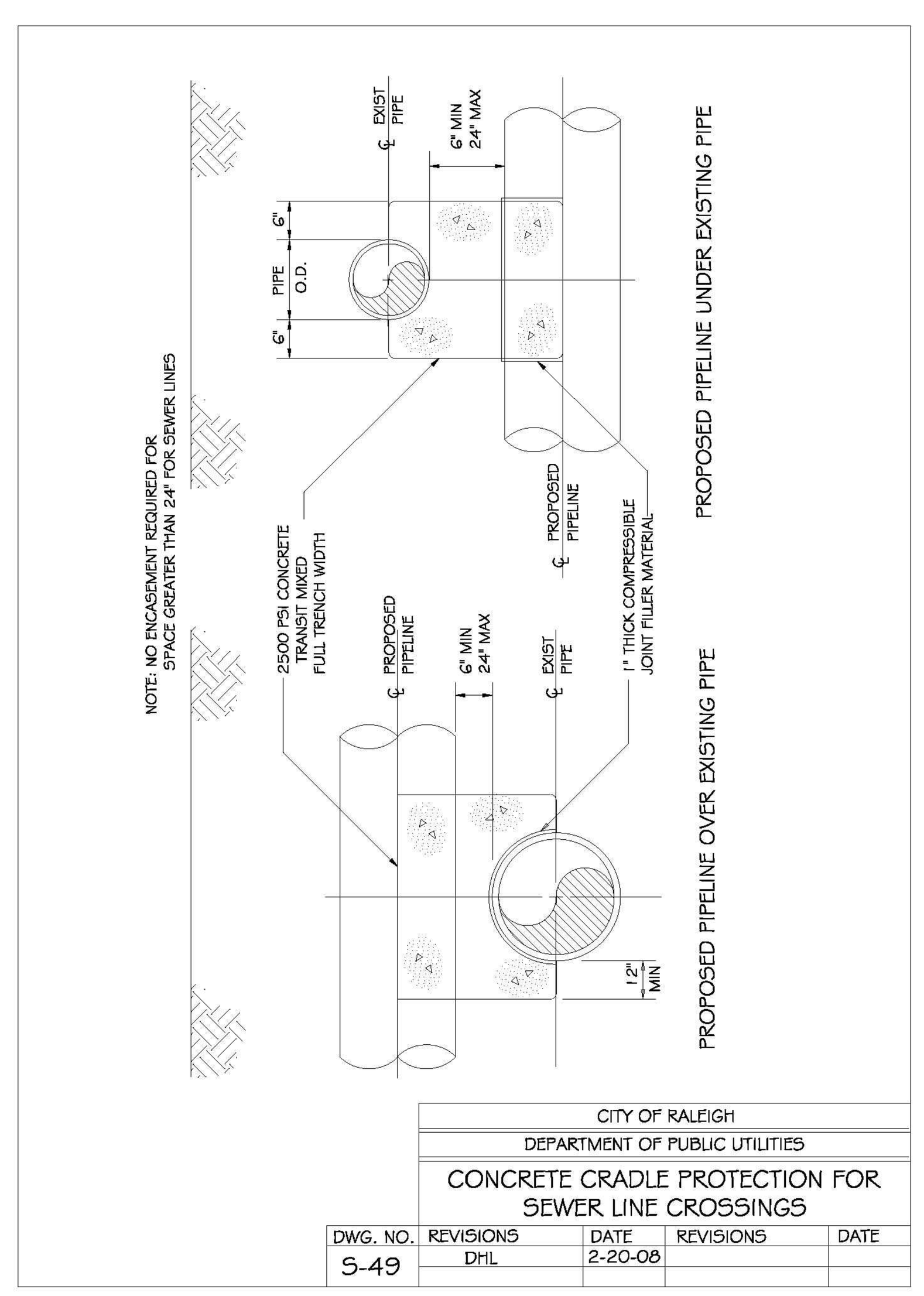


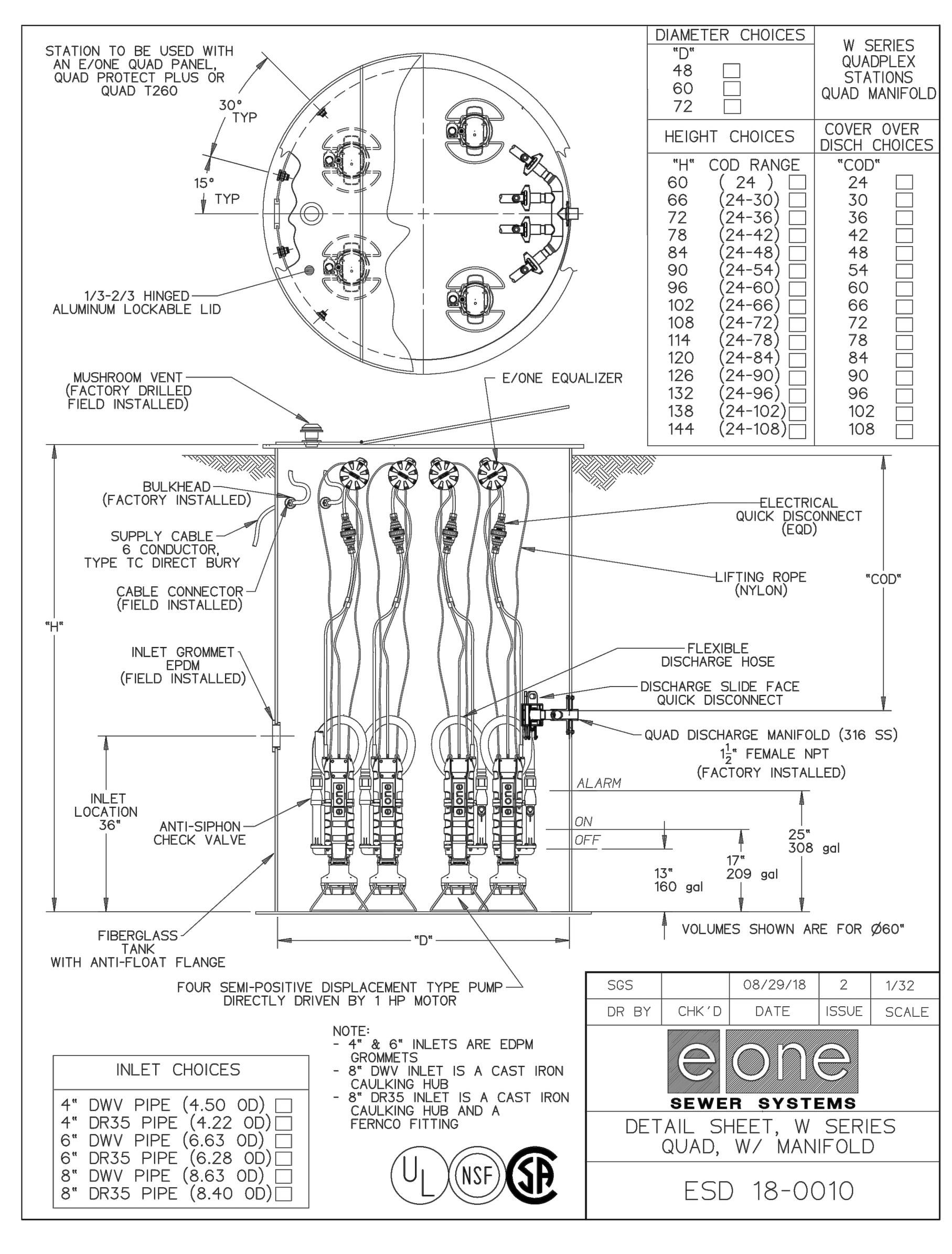


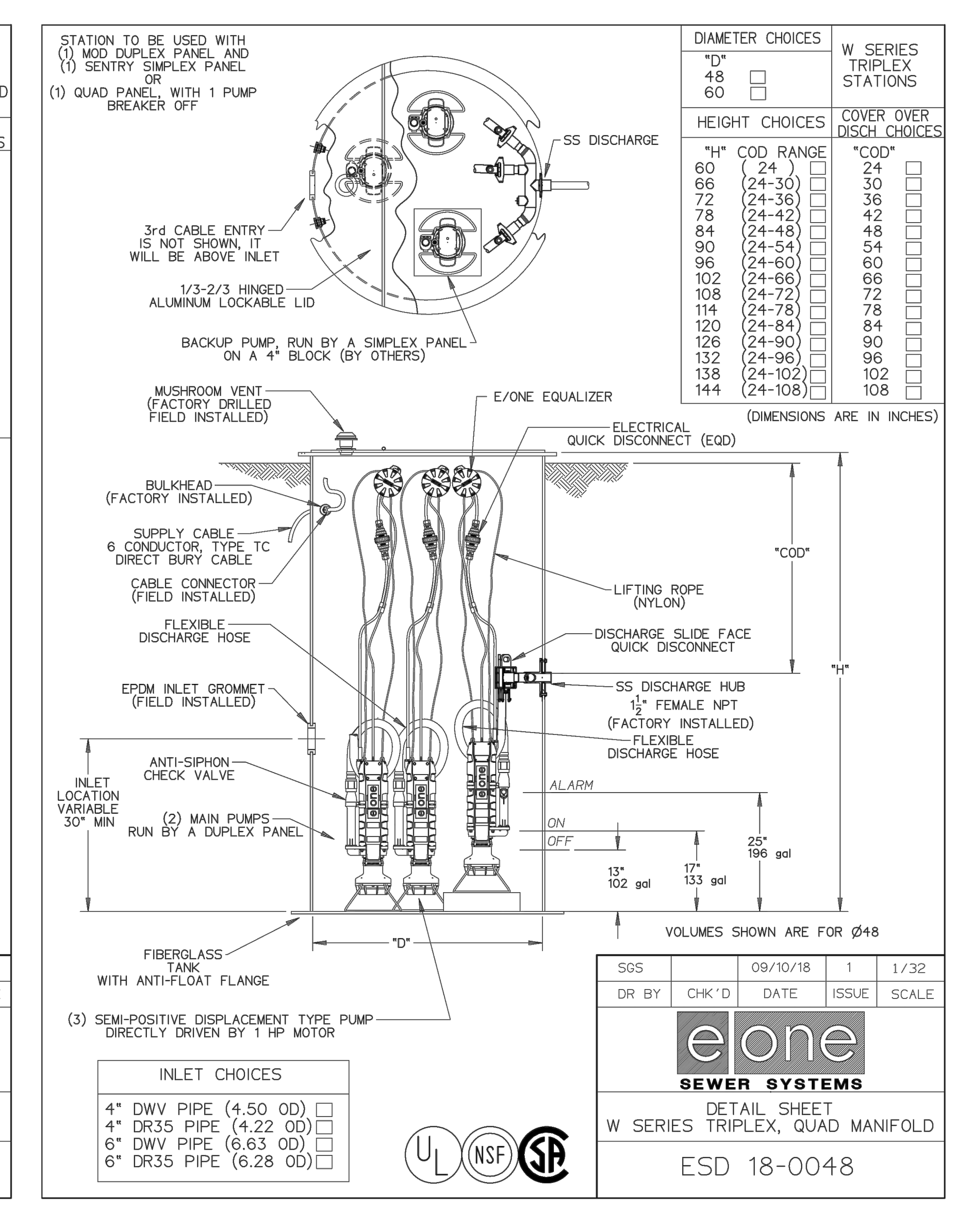












NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARTY D. BIZZELL
06/23/21

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

03-19157	PROGRESS	MRM
JOB NO.	DATE	DRAWN BY
DETAILS		
SCALE: N.T.S.		CHK BY: MDB

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET
C5.3

TOWN OF ROLESVILLE PROJECT NO.

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

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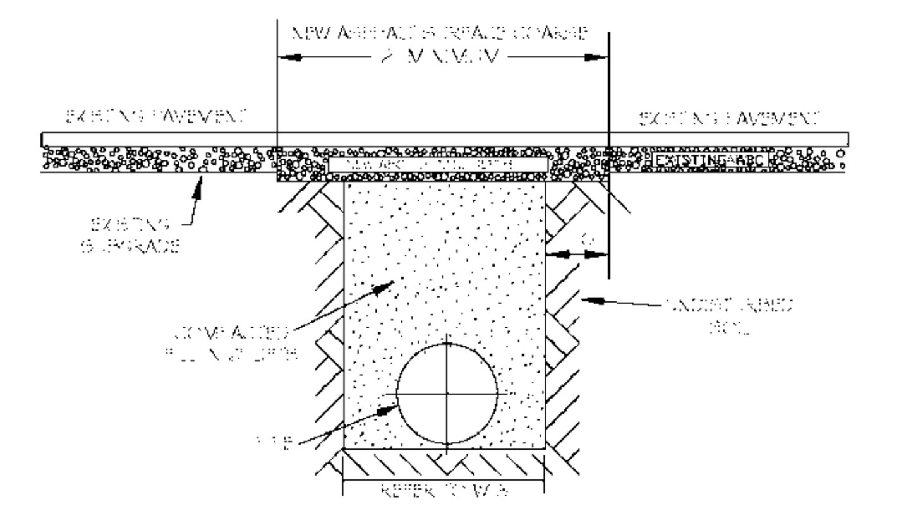
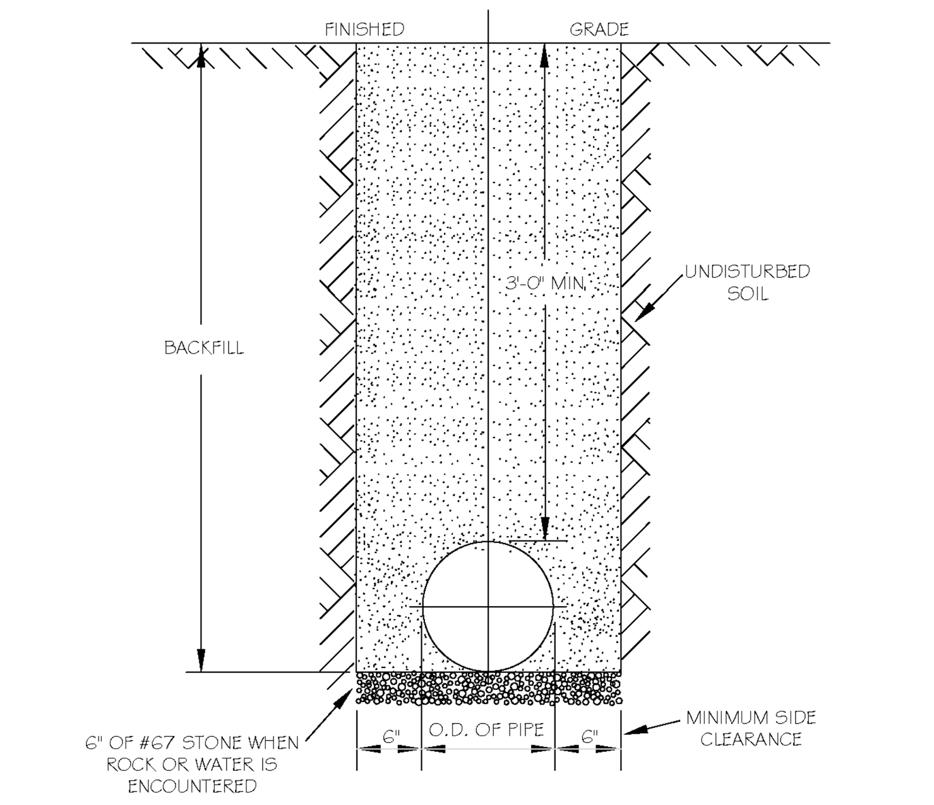
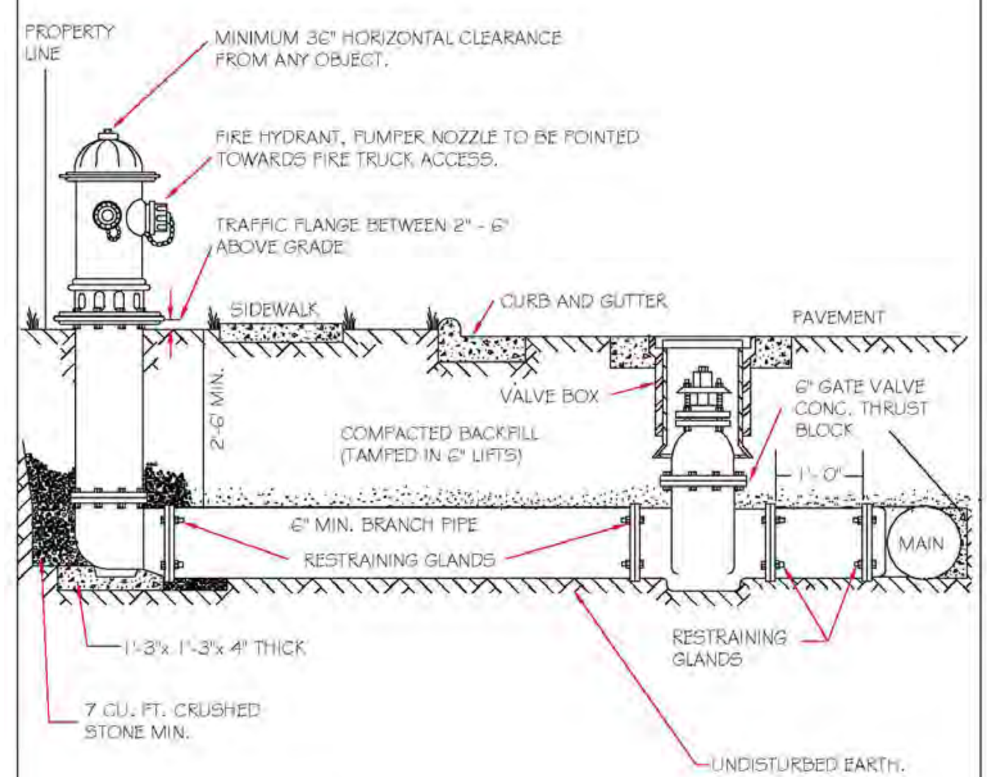


CITY OF RALEIGH
STANDARD ASPHALT PAVEMENT PATCH DETAIL
W-2



NOTES:
1. TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN BACKFILL.
3. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
5. ACHIEVE 95% COMPACTION IN BACKFILL.

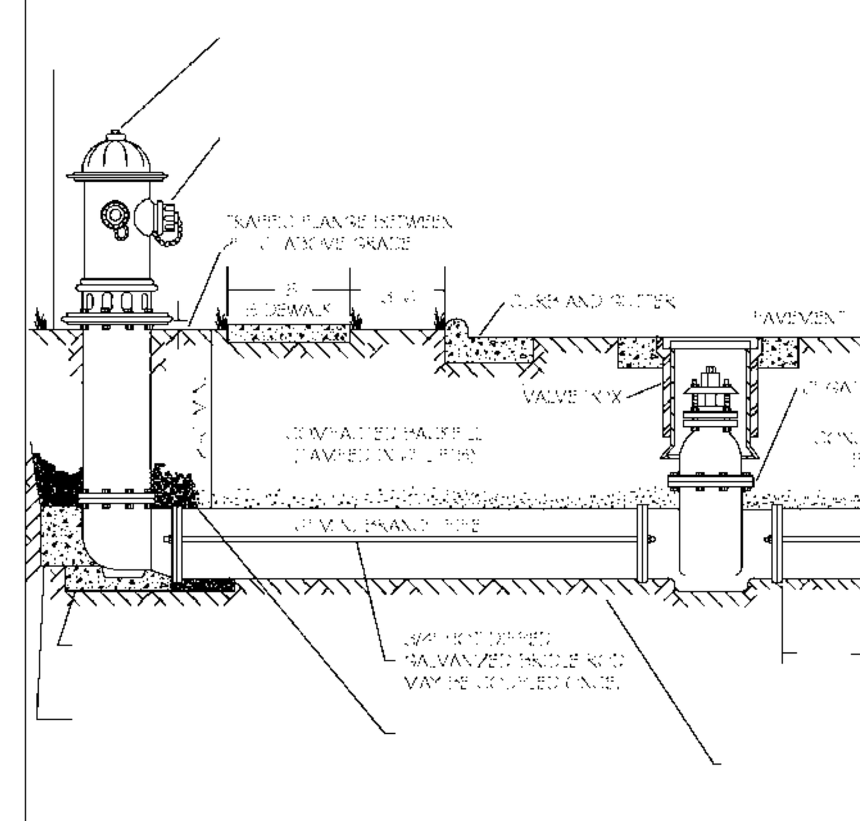
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON
W-3



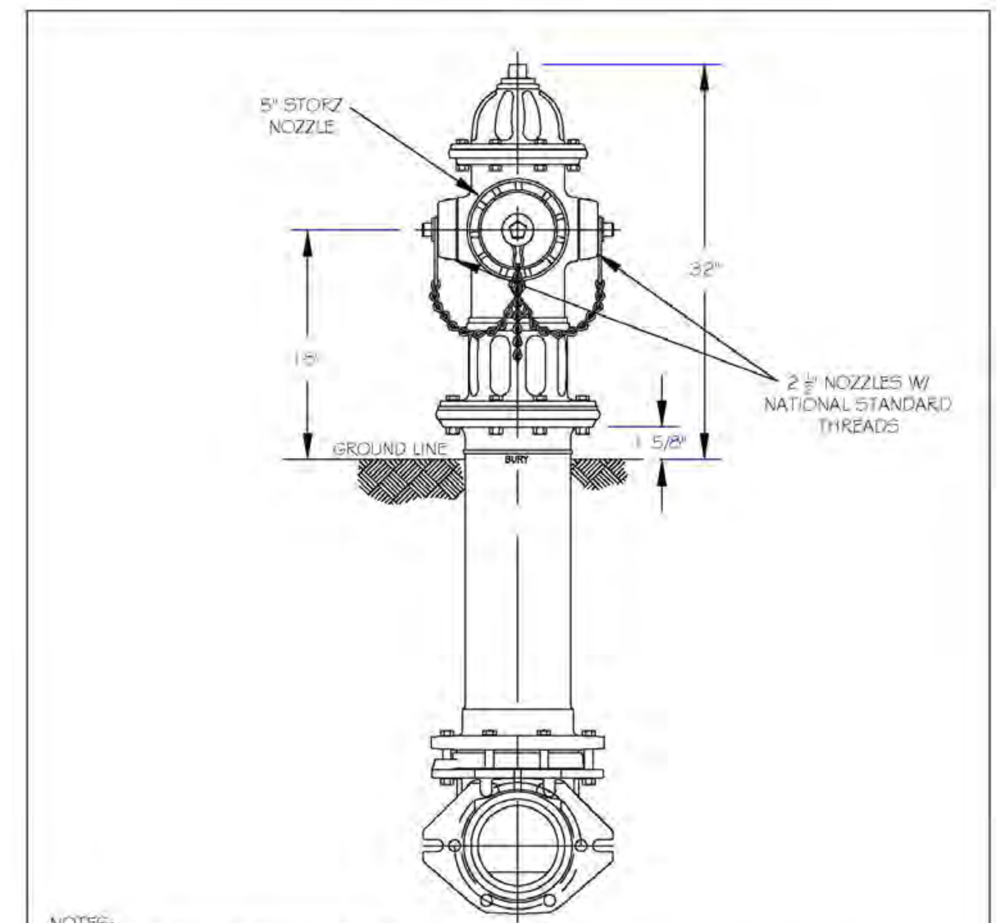
NOTES:
1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY, M&H, WATEROUS, CLOW, EAST JORDAN IRON WORKS, OR US PIPE.
2. BRANCH PIPE SHALL BE DUCTILE IRON AWWA C-150/151.
3. 6" GATE VALVE SHALL BE AWWA C500-80 OPEN LEFT.
4. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
5. FIRE HYDRANTS WILL BE INSTALLED IN TRUE VERTICAL POSITION.

ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE PERSON RESPONSIBLE FOR THE WORK IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD FIRE HYDRANT INSTALLATION DETAIL
W-4

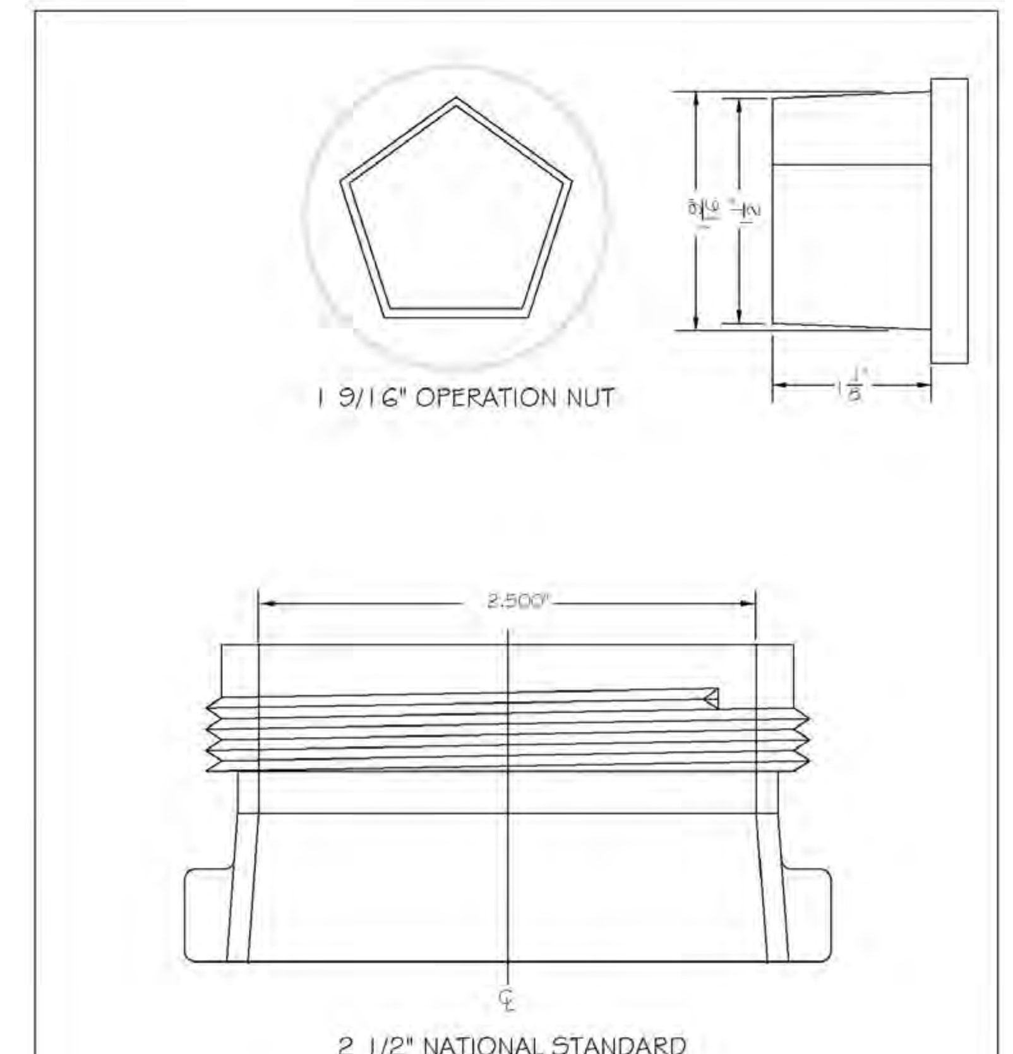


CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD FIRE HYDRANT INSTALLATION DETAIL
W-4a

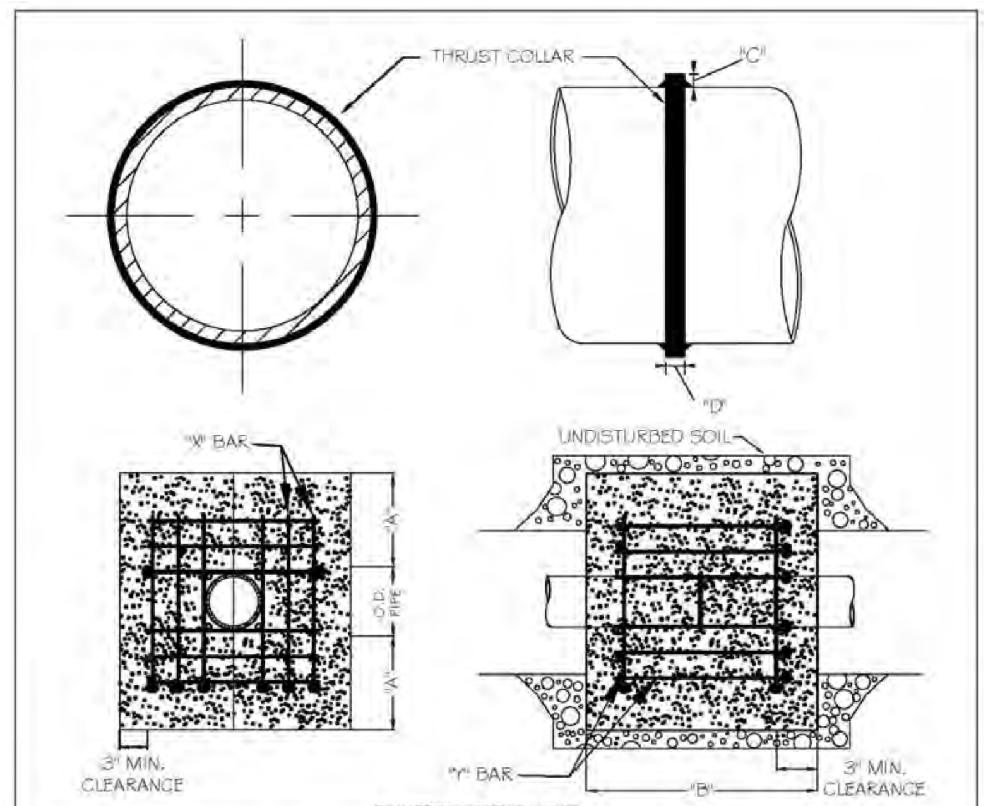


NOTES:
1. RALEIGH PUBLIC HYDRANTS SHALL BE PAINTED SOLID RED.
2. KNIGHTDALE, & ROLESVILLE PUBLIC HYDRANTS SHALL BE PAINTED RED W/SILVER OPERATING NUTS.
3. ZEBULON PUBLIC HYDRANTS SHALL BE PAINTED RED W/SILVER BONNETS AND OPERATING NUTS.
4. WAKE FOREST AND GARNER, AND WENDELL PUBLIC AND PRIVATE HYDRANTS TO BE PAINTED SAFETY YELLOW W/SILVER CAPS AND OPERATING NUTS.
5. OPERATING NUTS ON HYDRANTS CONNECTED TO PUBLIC MAINS SMALLER THAN 12" SHALL BE PAINTED BLACK.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
RALEIGH, GARNER, KNIGHTDALE, ROLESVILLE, WAKE FOREST, WENDELL & ZEBULON
STANDARD FIRE HYDRANT WITH 5" STORZ PUMPER NOZZLE
W-5



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
HYDRANT OPERATING NUT AND 2 1/2" OUTLET THREADS
W-6

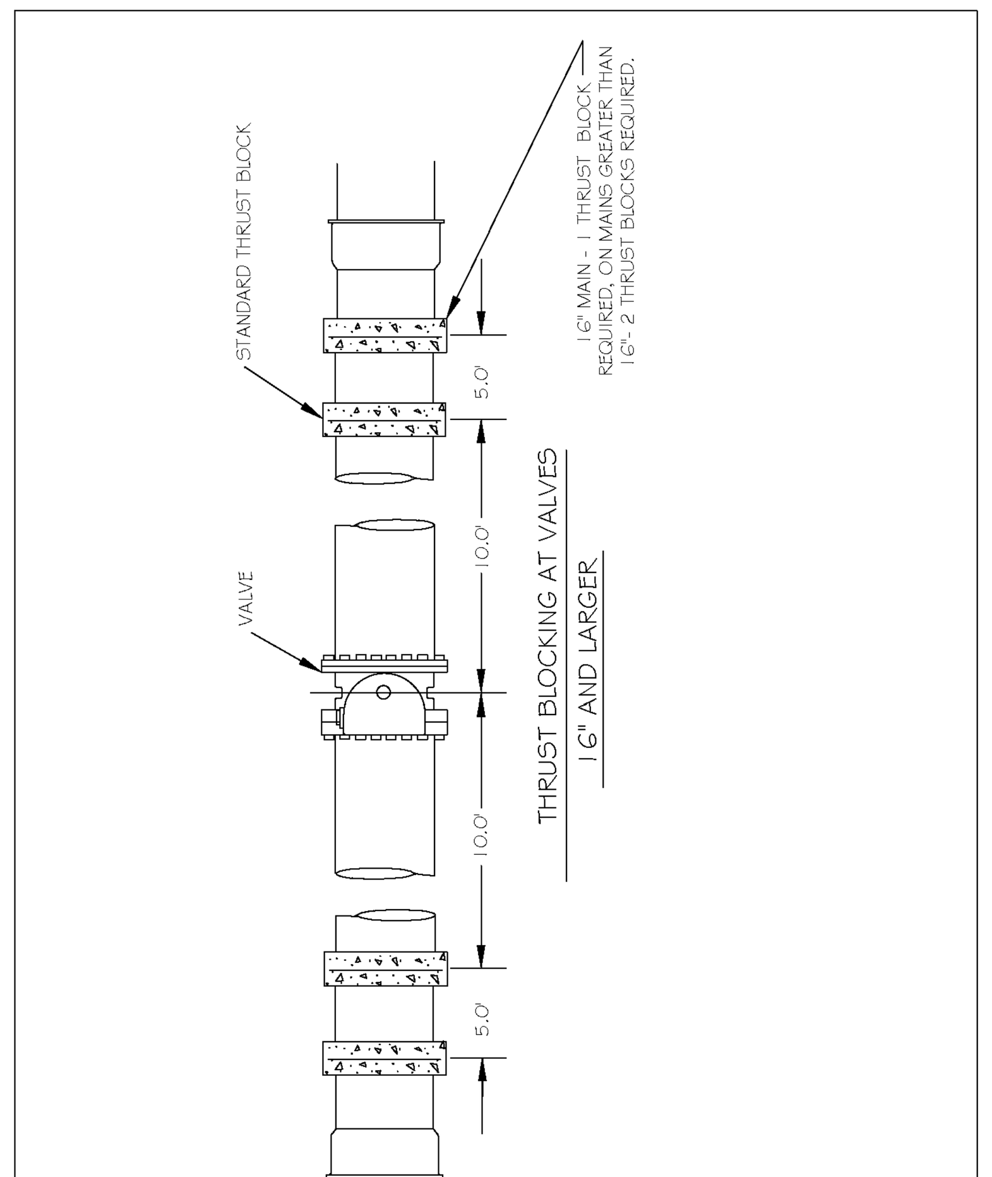


REINFORCING REQUIREMENTS

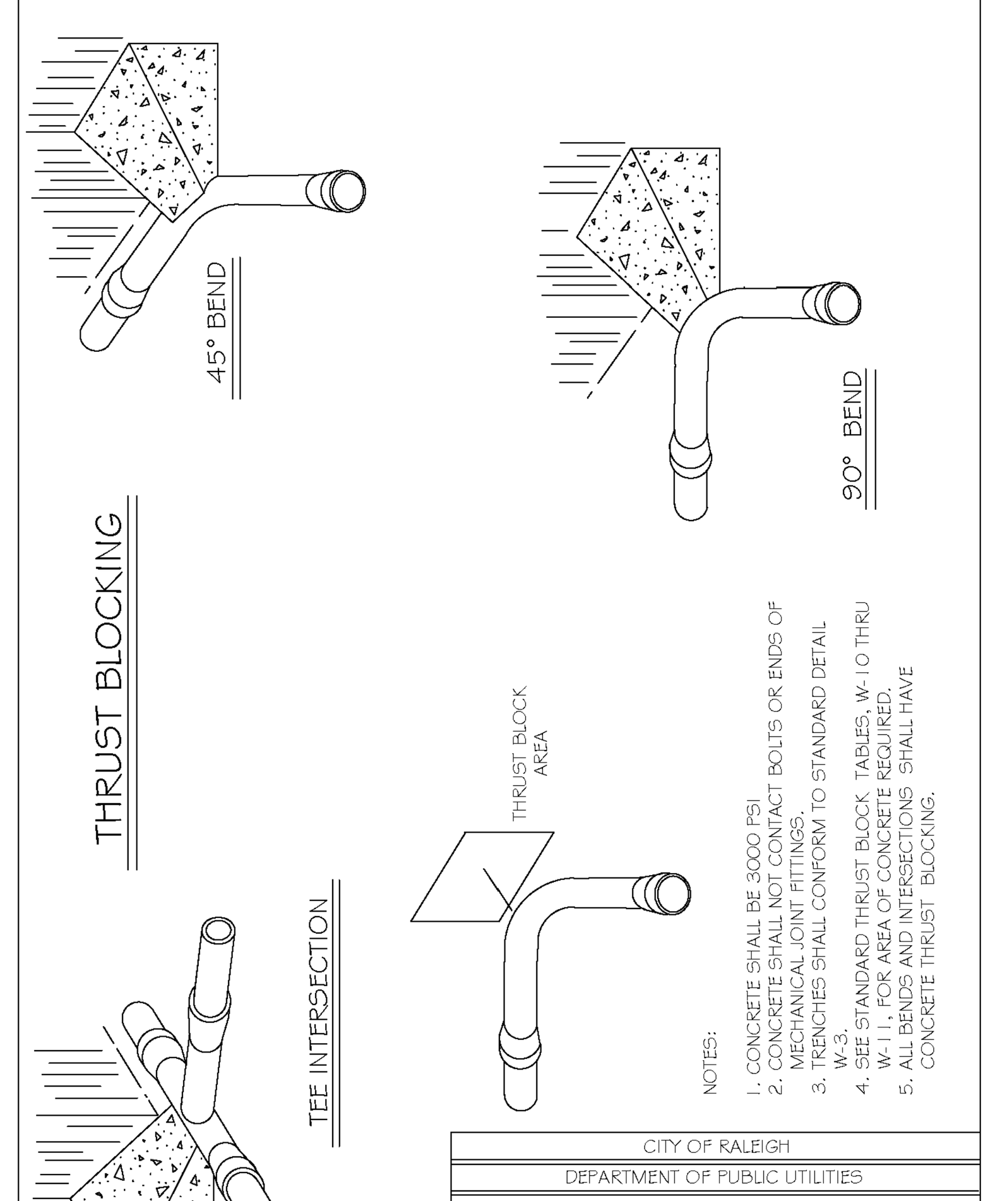
THRUST COLLAR AND THRUST SCHEDULE

NOTES:
1. SEE STANDARD DETAIL W-8 FOR THRUST BLOCK LOCATIONS.
2. CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
3. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
4. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN ON STANDARD DETAIL W-3.
5. BACKFILL TAMPED IN 6" LIFTS PER STANDARD DETAIL W-3.
6. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN DATA FOR WATER MAINS
W-7



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD THRUST BLOCK INSTALLATION FOR 16" AND LARGER VALVES AND DEAD END MAINS
W-8



CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
STANDARD THRUST BLOCKING VIEWS
W-9

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS

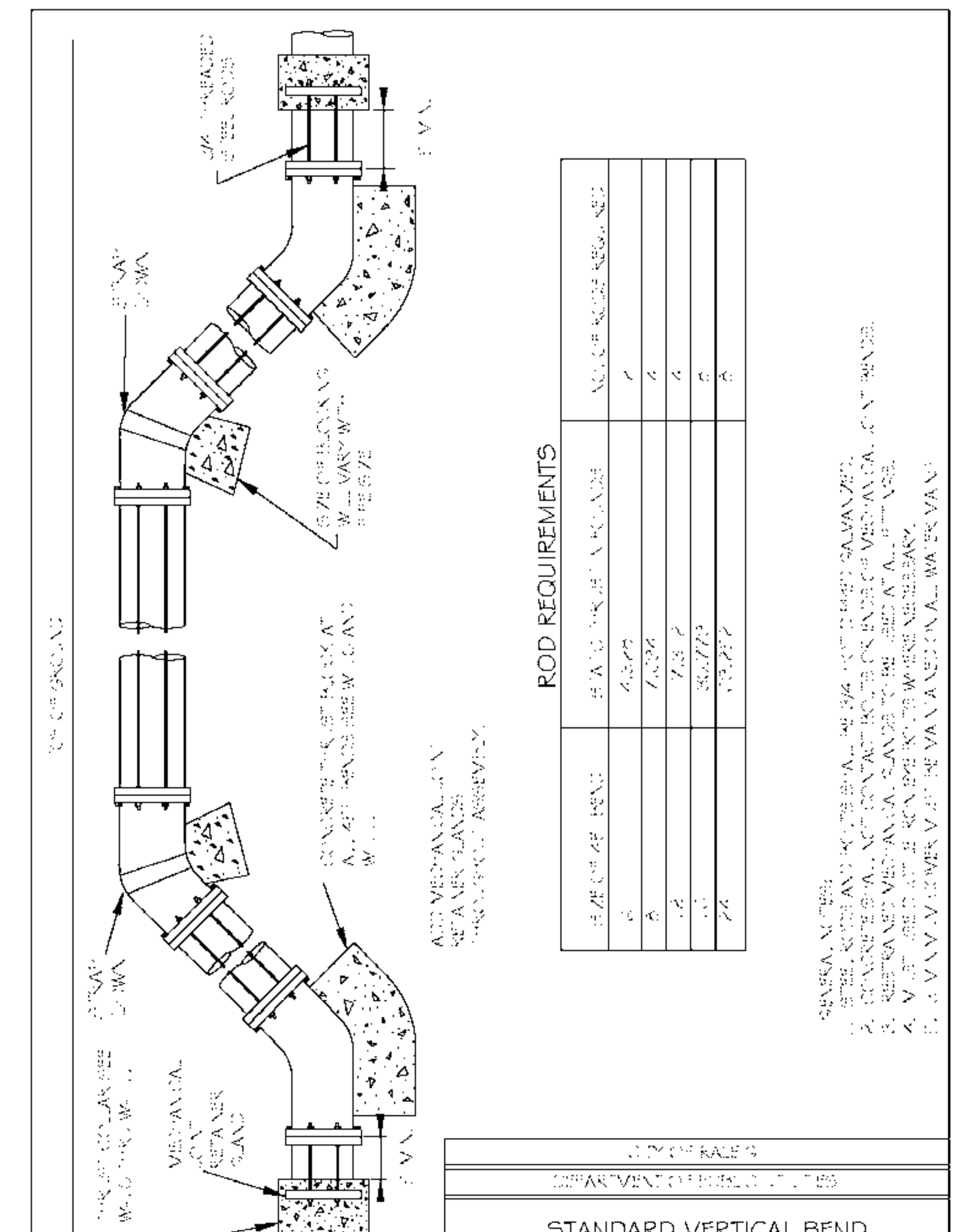
[illegible]	[illegible]

CITY OF RALEIGH
THRUST BLOCKING DESIGN QUANTITY TABLE
W-10

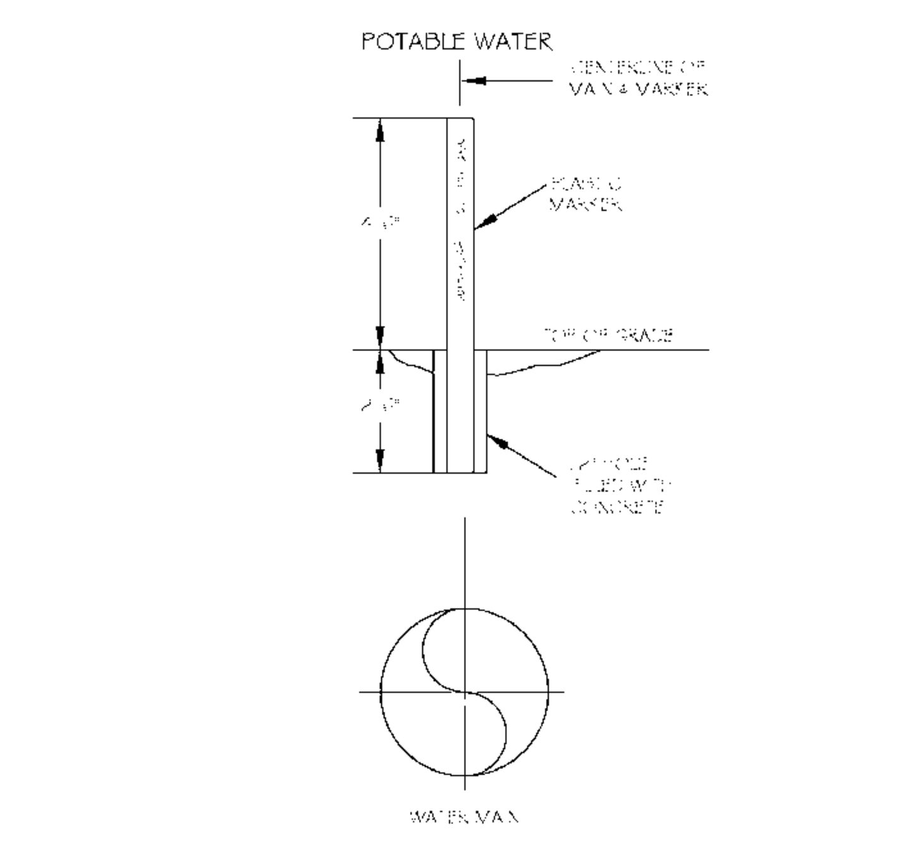
REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS

[illegible]	[illegible]

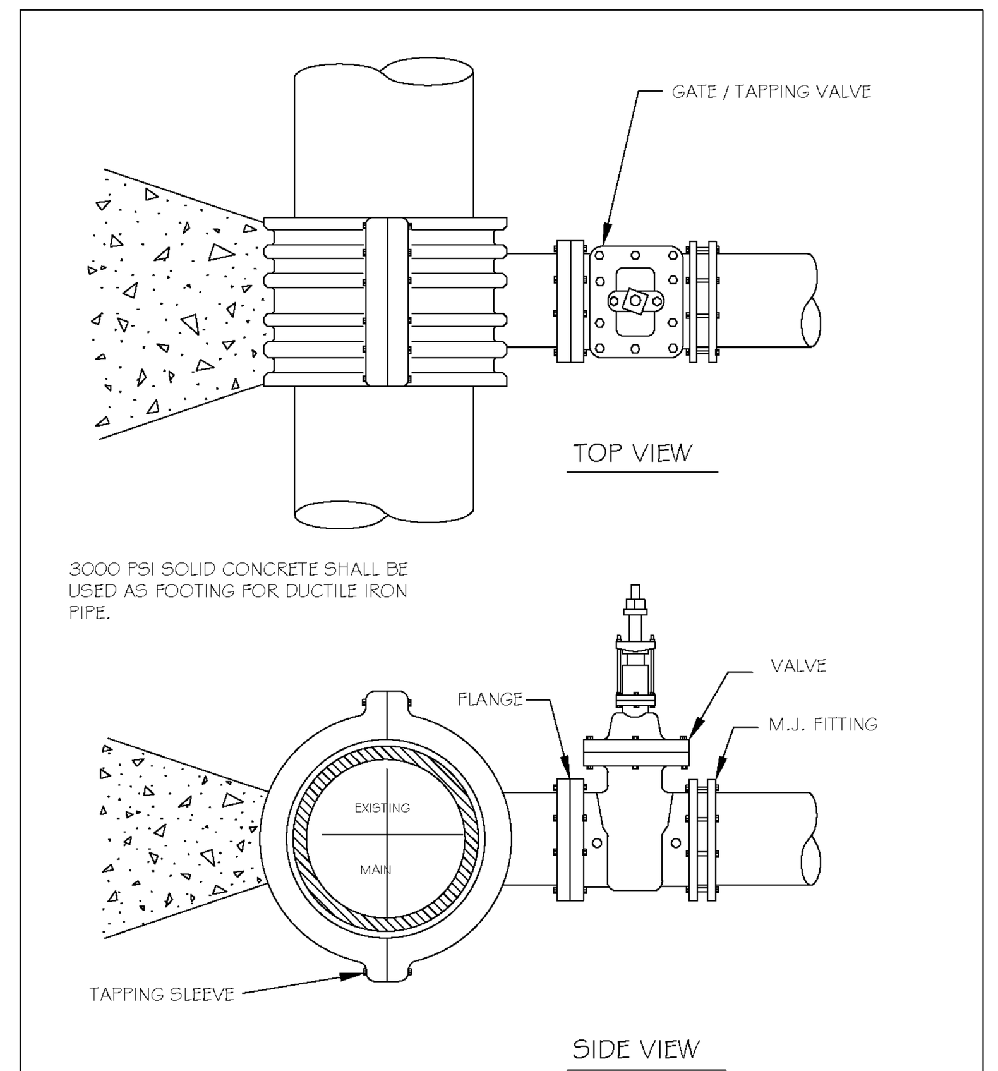
CITY OF RALEIGH
THRUST BLOCKING DESIGN QUANTITY TABLE
W-11



CITY OF RALEIGH
STANDARD VERTICAL BEND
W-12



CITY OF RALEIGH
W-13



NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
2. SEE STANDARD REACTION BLOCK TABLES, W-10 AND W-11 FOR AREA OF CONCRETE REQUIRED.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
4" - 24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY
W-14

NORTH CAROLINA PROFESSIONAL SEAL 036908 ENGINEER MARY D. BIZZELL
06/23/21

BNK
BASS, NIXON & KENNEDY, INC. CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

DETAILS

JOB NO. 03-19157 | DATE PROGRESS | DRAWN BY MRM | SCALE: N.T.S. | CHK BY: MDB

SHEET C5.4

NOT RELEASED FOR CONSTRUCTION OR BID SOLICITATION

TOWN OF ROLESVILLE PROJECT NO.

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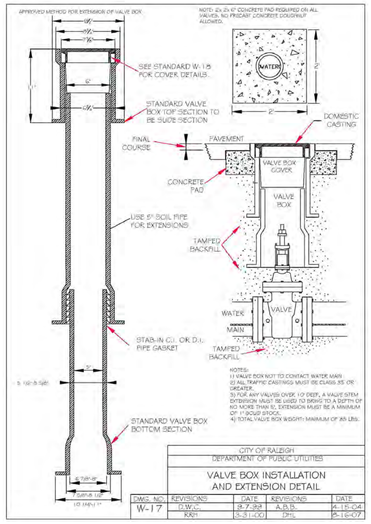
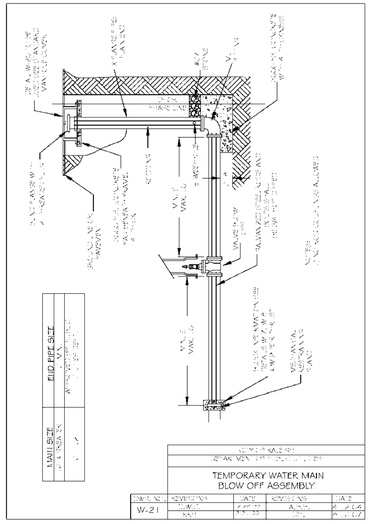
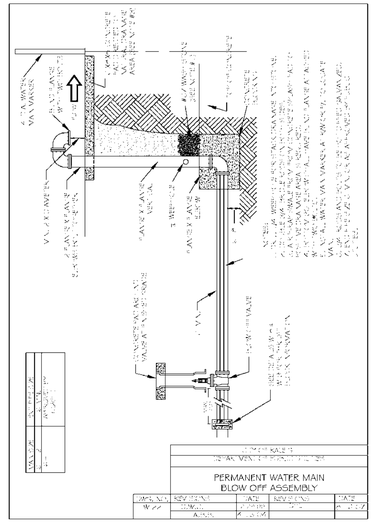
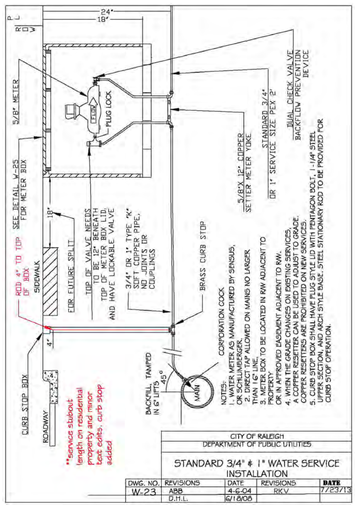
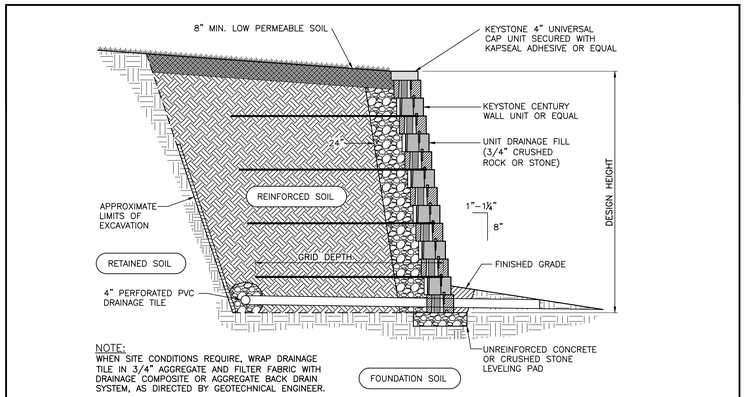




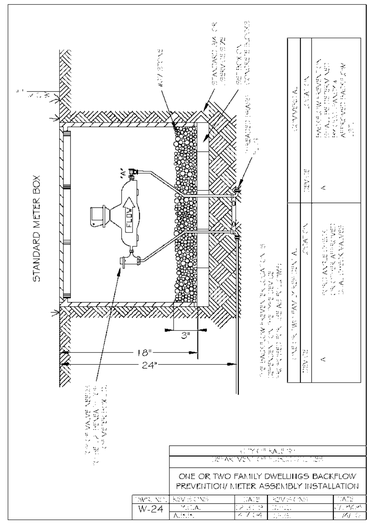


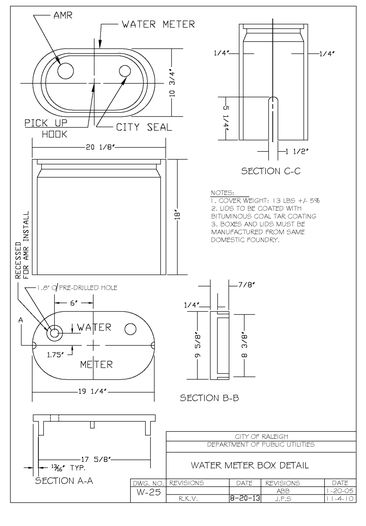


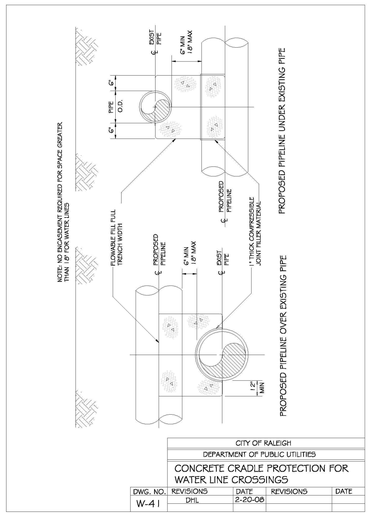


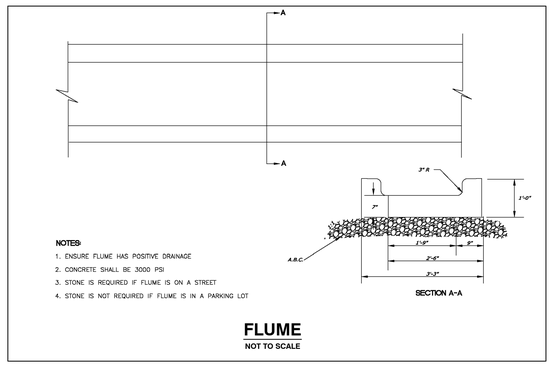
TYPICAL BLOCK WALL SECTION

CENTURY WALL UNIT – 1" SETBACK



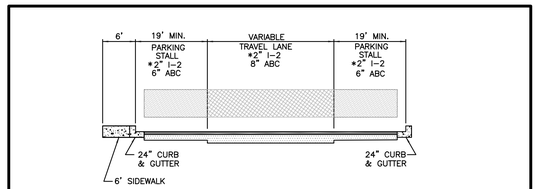






FLUME

NOT TO SCALE



PROPOSED PARKING & TRAVEL LANE SECTION

BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

BNK

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

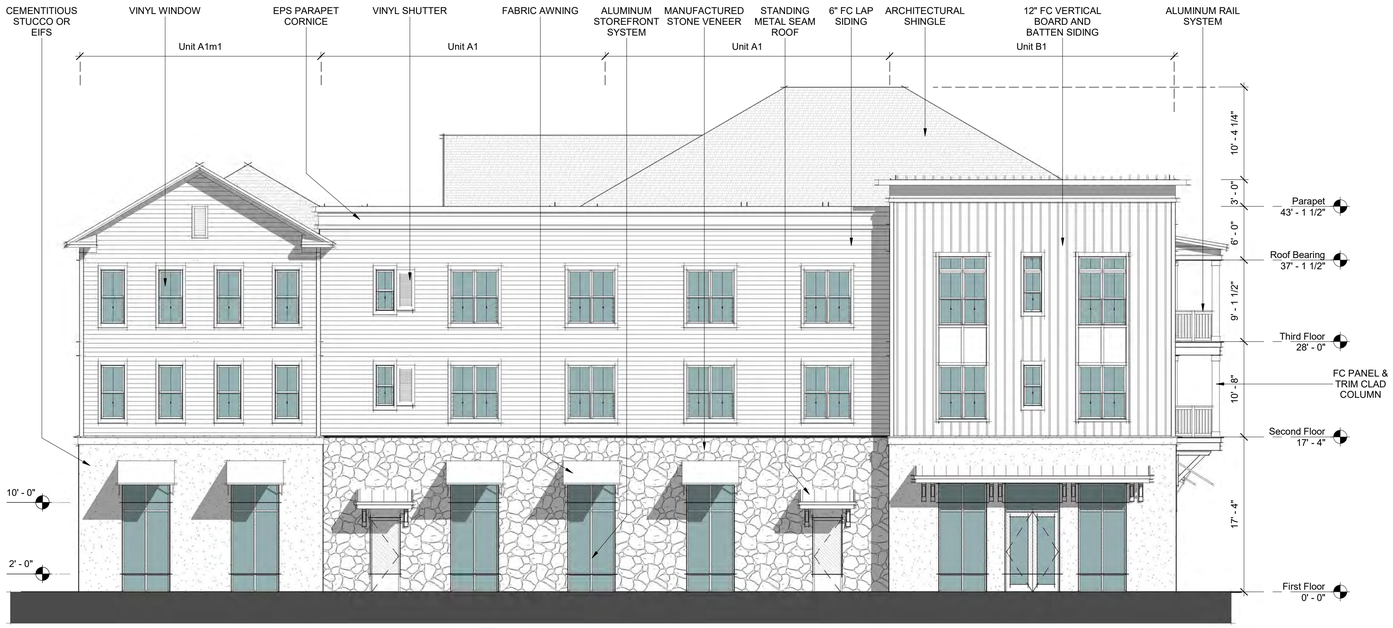
JOB NO. 03-19157 | DATE | PROGRESS | DRAWN BY MRM | CHK BY: MDB | SCALE: N.T.S.

DETAILS

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C5.5

TOWN OF ROLESVILLE PROJECT NO.



TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 983 SF
REQ'D AREA OF TRANSPARENCY: 983 SF x 0.4 = 394 SF

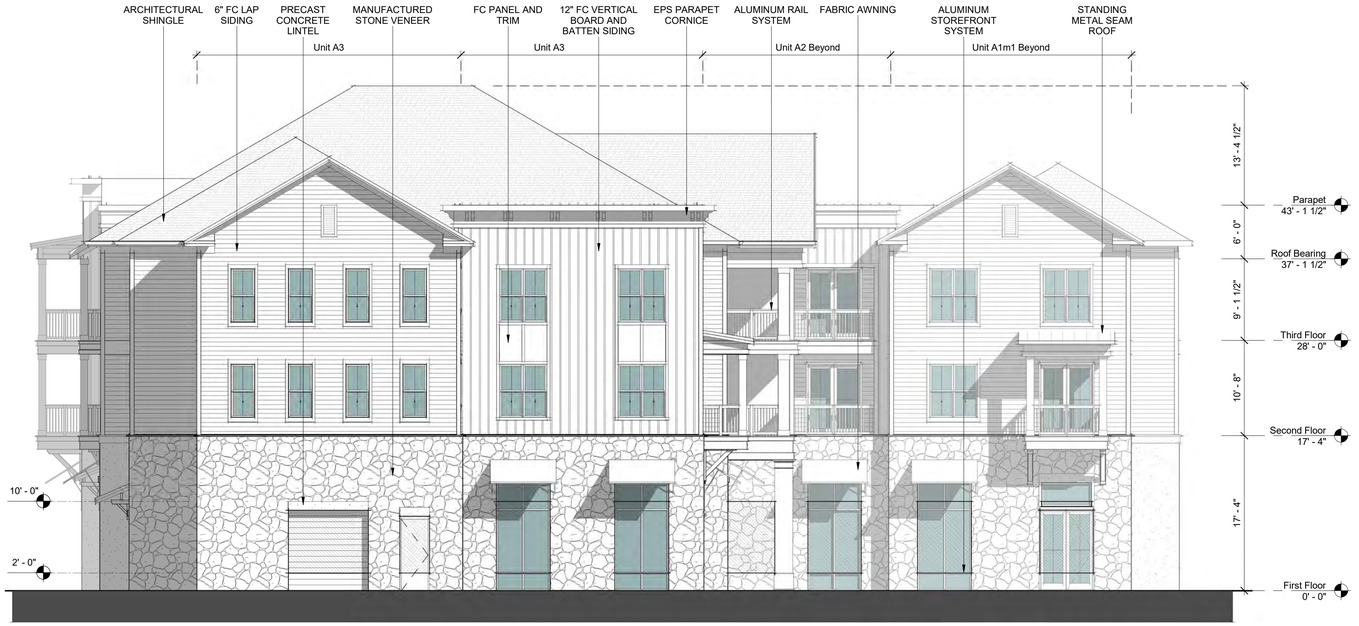
AREA OF TRANSPARENCY: **390 SF 40%**

Section 7.4: - Town Center Overlay District

7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 2 - EAST ELEVATION 1

1/8" = 1'-0"



TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 836 SF
REQ'D AREA OF TRANSPARENCY: 836 SF x 0.4 = 334 SF

AREA OF TRANSPARENCY: **363 SF 43%**

BLDG 2 - WEST ELEVATION 2

1/8" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 2 A2.21

1/8" = 1'-0" 019032 | 10.16.2020

TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 1,667 SF
REQ'D AREA OF TRANSPARENCY: 1,667 SF x 0.4 = 667 SF

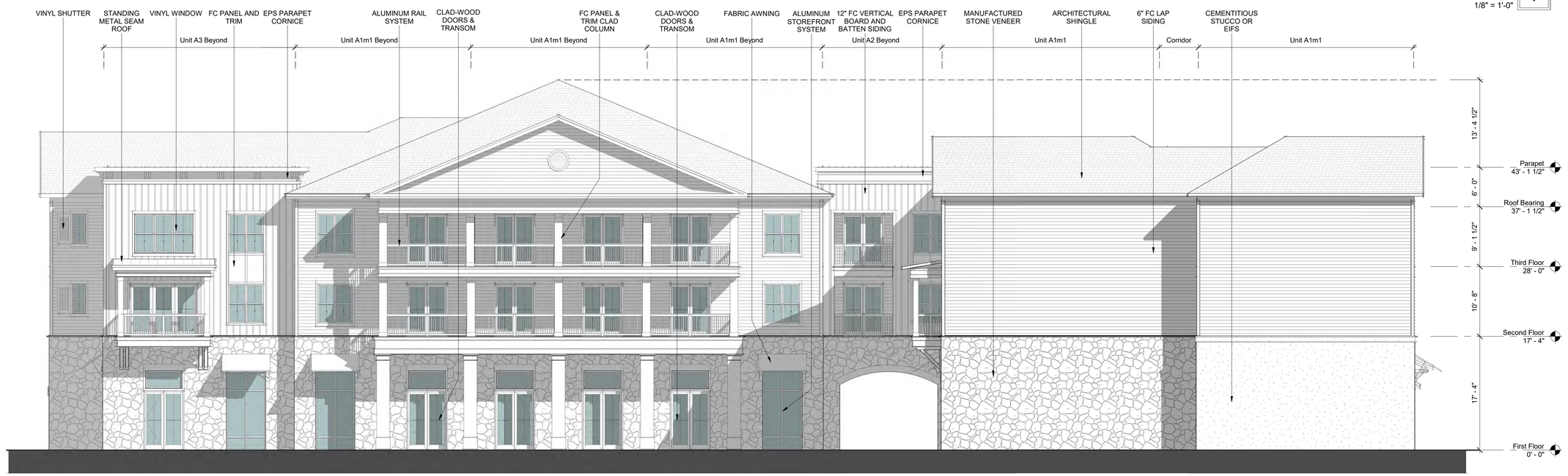
AREA OF TRANSPARENCY: **685 SF 41%**

Section 7.4: - Town Center Overlay District

7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 2 - NORTH ELEVATION 1

1/8" = 1'-0"



BLDG 2 - SOUTH ELEVATION 2

1/8" = 1'-0"

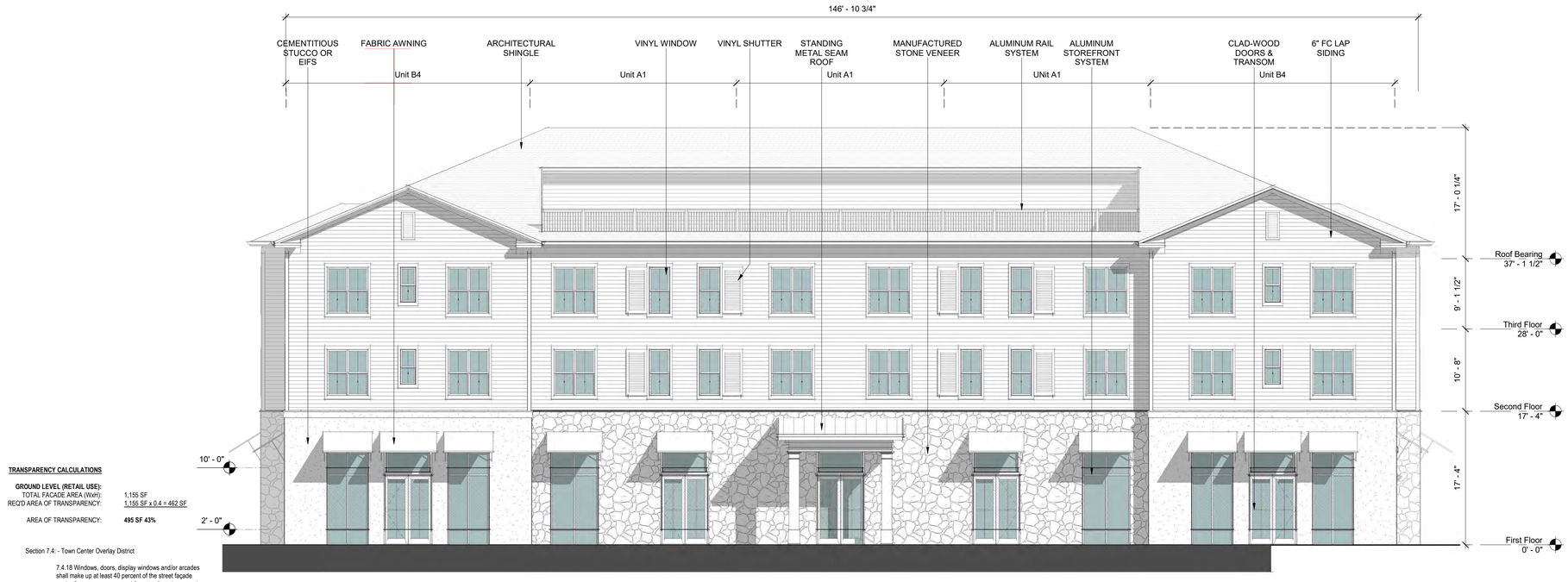
CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 2 A2.22

1/8" = 1'-0" 019032 | 10.16.2020



TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 1,155 SF
REQ'D AREA OF TRANSPARENCY: 1,155 SF x 0.4 = 462 SF

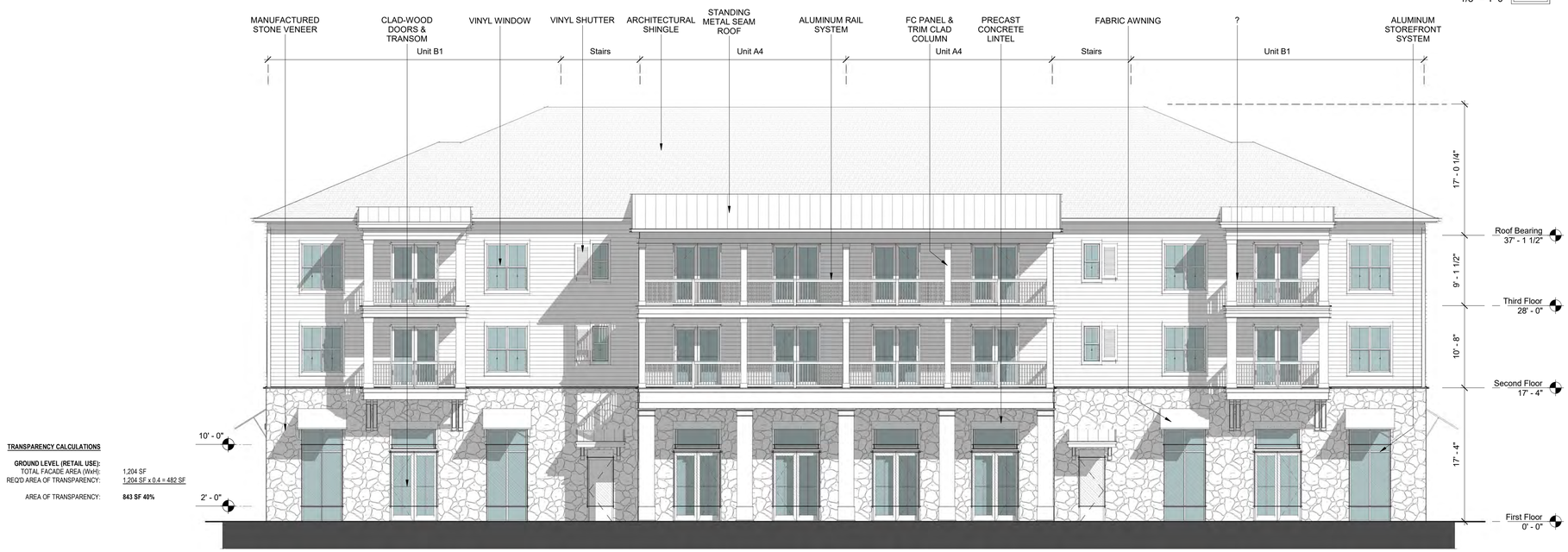
AREA OF TRANSPARENCY: **495 SF 43%**

Section 7.4: - Town Center Overlay District

7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 3 - NORTH ELEVATION 1

1/8" = 1'-0"



TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 1,204 SF
REQ'D AREA OF TRANSPARENCY: 1,204 SF x 0.4 = 482 SF

AREA OF TRANSPARENCY: **843 SF 40%**

BLDG 3 - SOUTH ELEVATION 2

1/8" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 3 A2.31

1/8" = 1'-0" 019032 | 10.16.2020

TRANSPARENCY CALCULATIONS

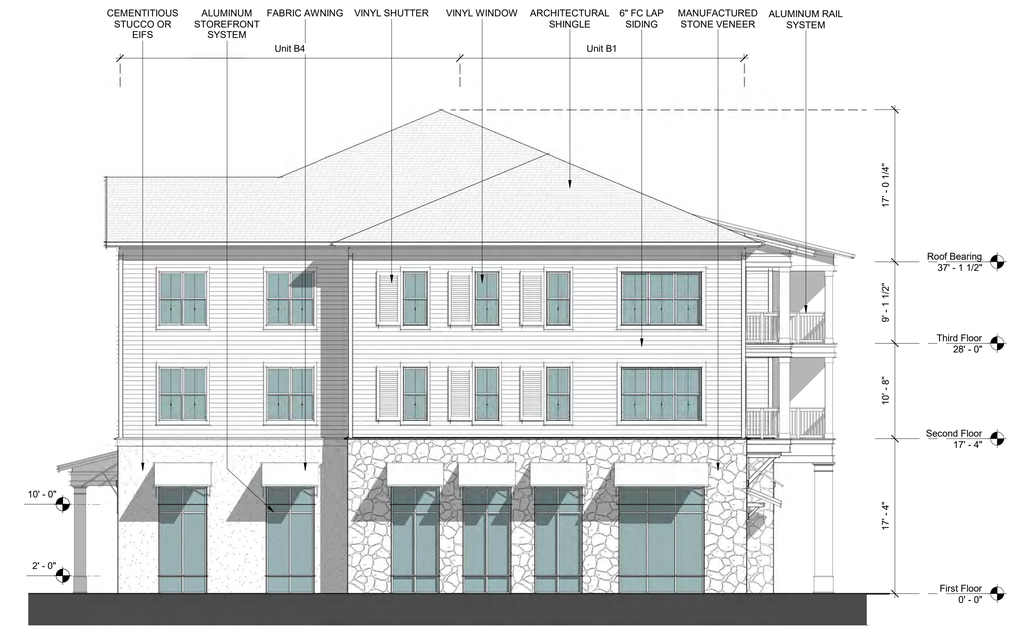
GROUND LEVEL (RETAIL USE):	
TOTAL FACADE AREA (WxH):	563 SF
REQ'D AREA OF TRANSPARENCY:	563 SF x 0.4 = 225 SF
AREA OF TRANSPARENCY:	**289 SF 51%**

Section 7.4: - Town Center Overlay District

7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 3 - EAST ELEVATION 1

1/8" = 1'-0"



TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):	
TOTAL FACADE AREA (WxH):	563 SF
REQ'D AREA OF TRANSPARENCY:	563 SF x 0.4 = 225 SF
AREA OF TRANSPARENCY:	**289 SF 51%**

BLDG 3 - WEST ELEVATION 2

1/8" = 1'-0"

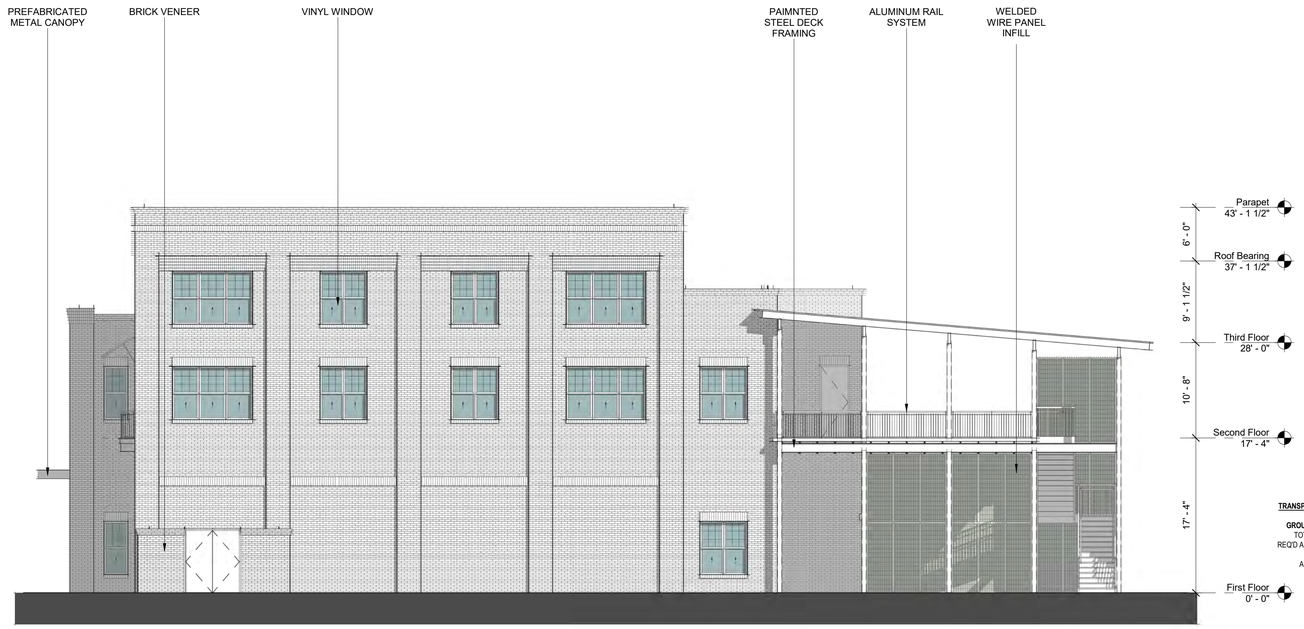
CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 3 A2.32

1/8" = 1'-0" 019032 | 10.16.2020

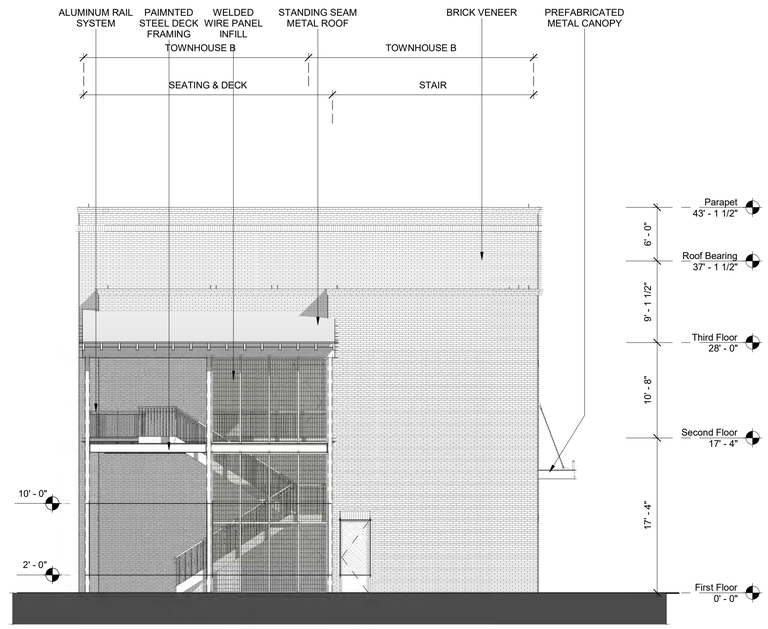


TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 411 SF
REQ'D AREA OF TRANSPARENCY: 411 SF x 0.4 = 164 SF
AREA OF TRANSPARENCY: **229 SF 56%**

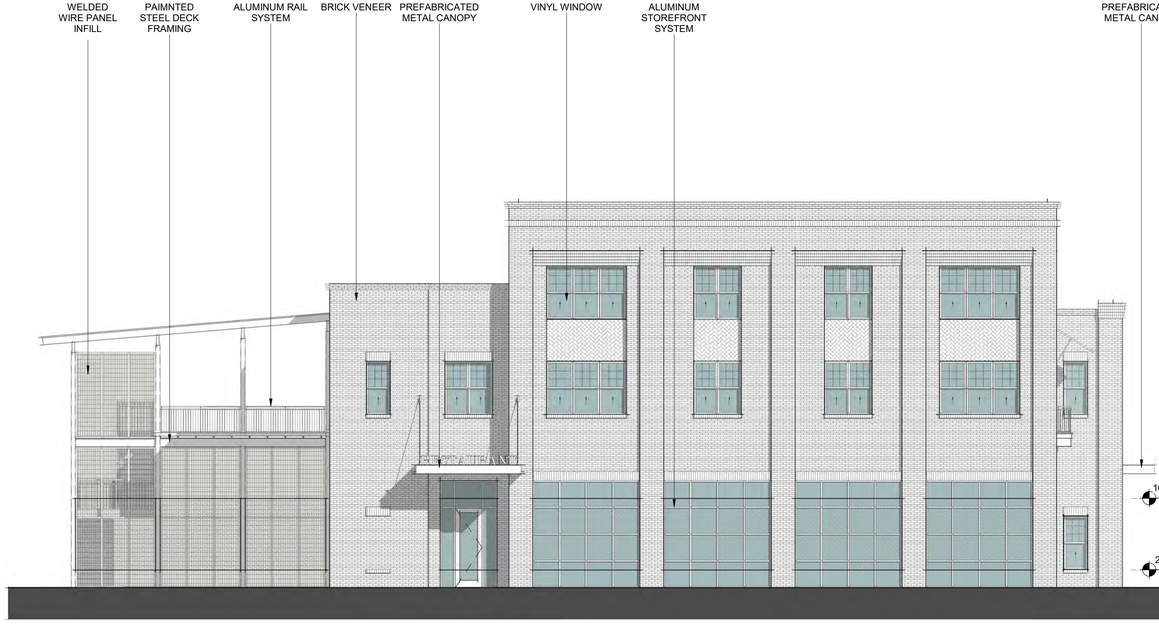
BLDG 5 - WEST ELEVATION 4

1/8" = 1'-0"



BLDG 5 - SOUTH ELEVATION 2

1/8" = 1'-0"



TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 941 SF
REQ'D AREA OF TRANSPARENCY: 941 SF x 0.4 = 376 SF
AREA OF TRANSPARENCY: **667 SF 71%**

Section 7.4: - Town Center Overlay District

7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 5 - EAST ELEVATION 3

1/8" = 1'-0"

TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 411 SF
REQ'D AREA OF TRANSPARENCY: 411 SF x 0.4 = 164 SF
AREA OF TRANSPARENCY: **203 SF 49%**

BLDG 5 - NORTH ELEVATION 1

1/8" = 1'-0"

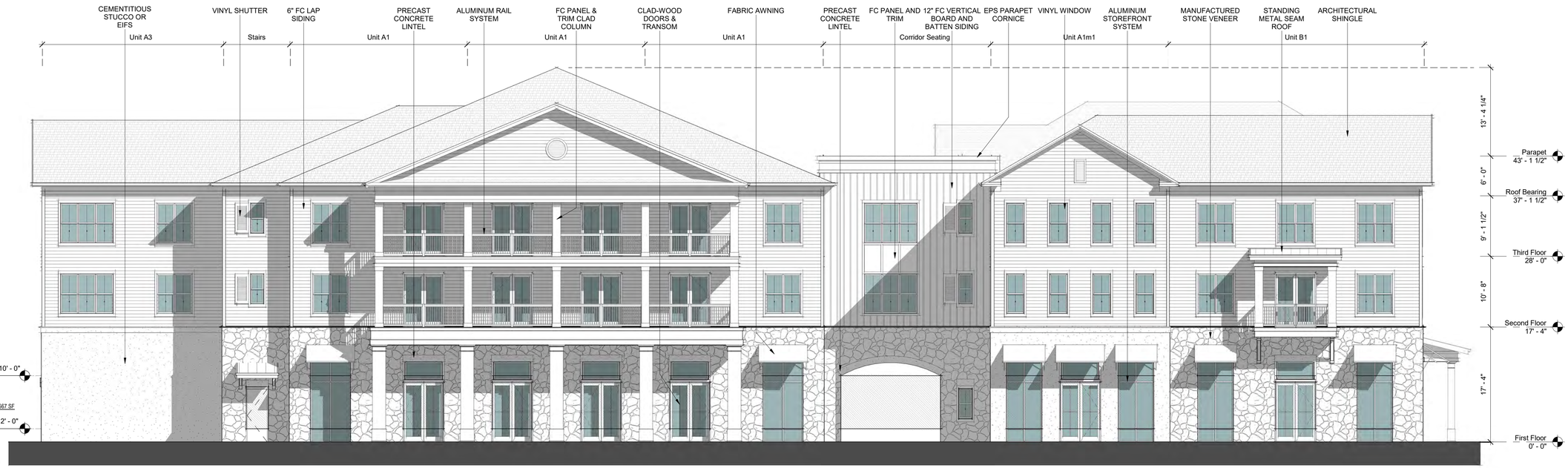
CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 5 A2.51

1/8" = 1'-0" 019032 | 10.16.2020



TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 1,667 SF
REQ'D AREA OF TRANSPARENCY: 1,667 SF x 0.4 = 667 SF

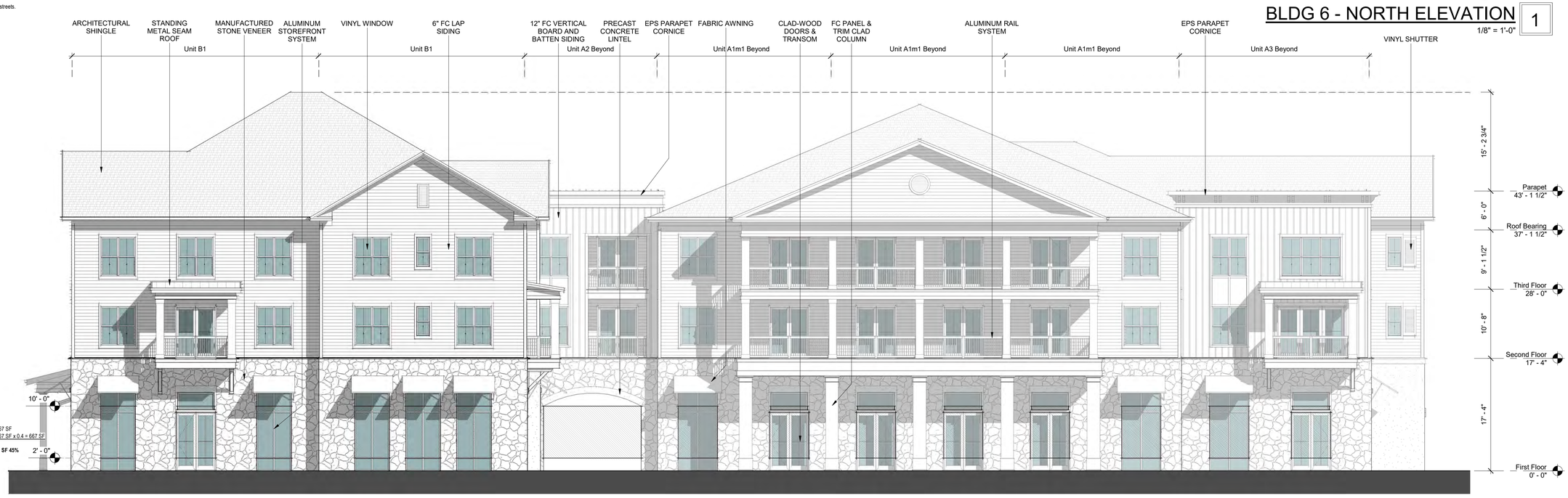
AREA OF TRANSPARENCY: **688 SF 41%**

Section 7.4: - Town Center Overlay District

7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 6 - NORTH ELEVATION 1

1/8" = 1'-0"



TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 1,667 SF
REQ'D AREA OF TRANSPARENCY: 1,667 SF x 0.4 = 667 SF

AREA OF TRANSPARENCY: **749 SF 45%**

BLDG 6 - SOUTH ELEVATION 2

1/8" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 6 A2.61

1/8" = 1'-0" 019032 | 10.16.2020

TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 1,229 SF
REQ'D AREA OF TRANSPARENCY: 1,229 SF x 0.4 = 492 SF

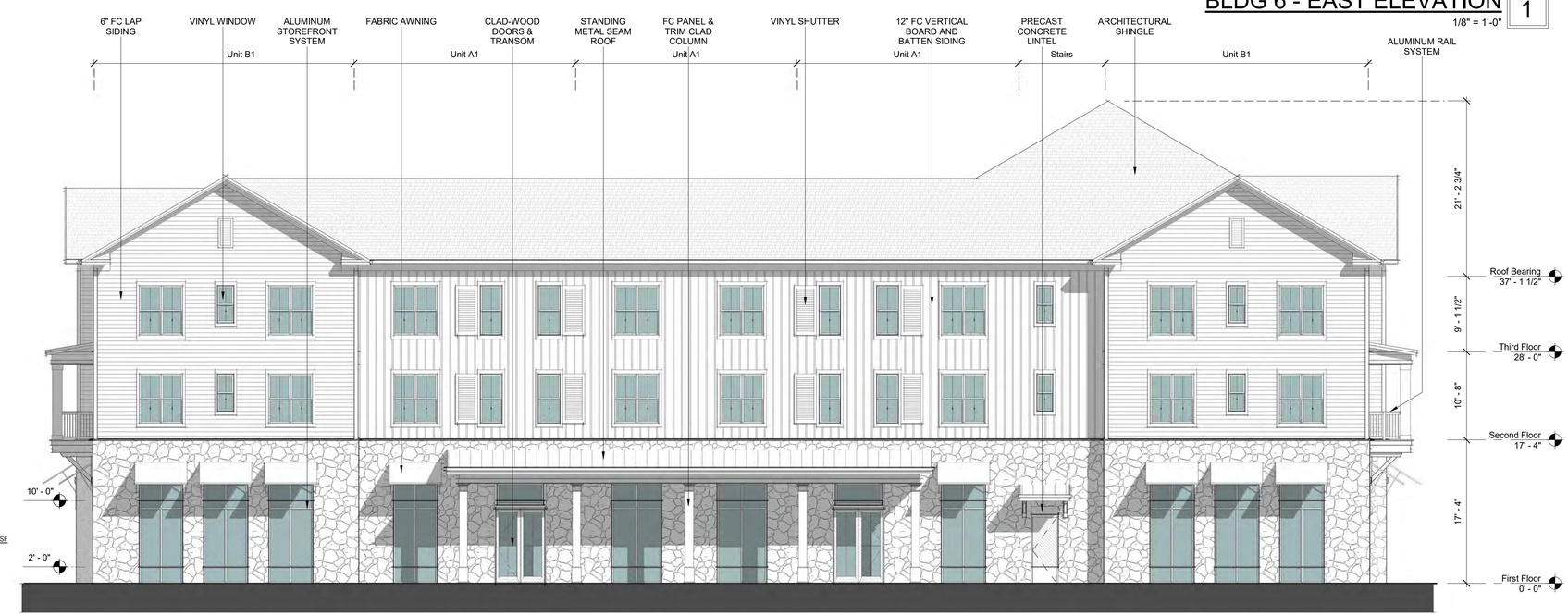
AREA OF TRANSPARENCY: **490 SF 40%**

Section 7.4: - Town Center Overlay District

7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 6 - EAST ELEVATION 1

1/8" = 1'-0"



TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 1,236 SF
REQ'D AREA OF TRANSPARENCY: 1,236 SF x 0.4 = 494 SF

AREA OF TRANSPARENCY: **573 SF 46%**

BLDG 6 - WEST ELEVATION 2

1/8" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 6 A2.62

1/8" = 1'-0" 019032 | 10.16.2020

BLDG 1 & 7 - REAR ELEVATION 2

1/8" = 1'-0"

BLDG 1 & 7 - FRONT ELEVATION 1

1/8" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDGS 1 & 7 A2.71

1/8" = 1'-0" 019032 | 10.16.2020

BLDG 1 & 7 - LEFT SIDE ELEVATION 2

1/8" = 1'-0"

BLDG 1 & 7 - RIGHT SIDE ELEVATION 1

1/8" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDGS 1 & 7 A2.72

1/8" = 1'-0" 019032 | 10.16.2020

BLDG 8 - RIGHT SIDE ELEVATION 4

1/8" = 1'-0"

BLDG 8 - REAR ELEVATION 2

1/8" = 1'-0"

BLDG 8 - LEFT SIDE ELEVATION 3

1/8" = 1'-0"

BLDG 8 - FRONT ELEVATION 1

1/8" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 8 A2.81

1/8" = 1'-0" 019032 | 10.16.2020

TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):

TOTAL FACADE AREA (Wxh):	983 SF
REQ'D AREA OF TRANSPARENCY:	983 SF x 0.4 = 394 SF
AREA OF TRANSPARENCY:	**390 SF 40%**

Section 7.4: - Town Center Overlay District

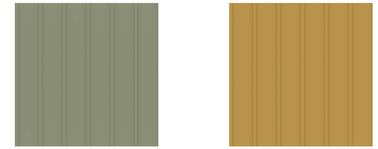
7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 2 - EAST ELEVATION 1

1/8" = 1'-0"

BLDG 2 - WEST ELEVATION 2

1/8" = 1'-0"



FIBER CEMENT - BOARD & BATTEN
SW9128 - GREEN ONYX

FIBER CEMENT - BOARD & BATTEN
SW6395 - ALCHEMY

FIBER CEMENT SIDING
SW2739 - CHARCOAL BLUE

FIBER CEMENT SIDING
SW2803 - ROCKWOOD TERRA COTTA

FIBER CEMENT SIDING
SW8917 - SHELL WHITE

FIBER CEMENT SIDING
SW7064 - PASSIVE

FIBER CEMENT - TRIM/CORNICES
SW7005 - PURE WHITE

EIFS FINISH
SW6203 - SPARE WHITE

ARRISCRAFT WATERTABLE
GEORGIA RENAISSANCE - MONTECITO

CORONADO STONE VENEER
TUSCAN VILLA - PRAIRIE MOSS

MATERIAL SWATCHES

1" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 2 **A.20**

As indicated | 019032 | 05.25.21

TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 1,667 SF
REQ'D AREA OF TRANSPARENCY: 1,667 SF x 0.4 = 667 SF

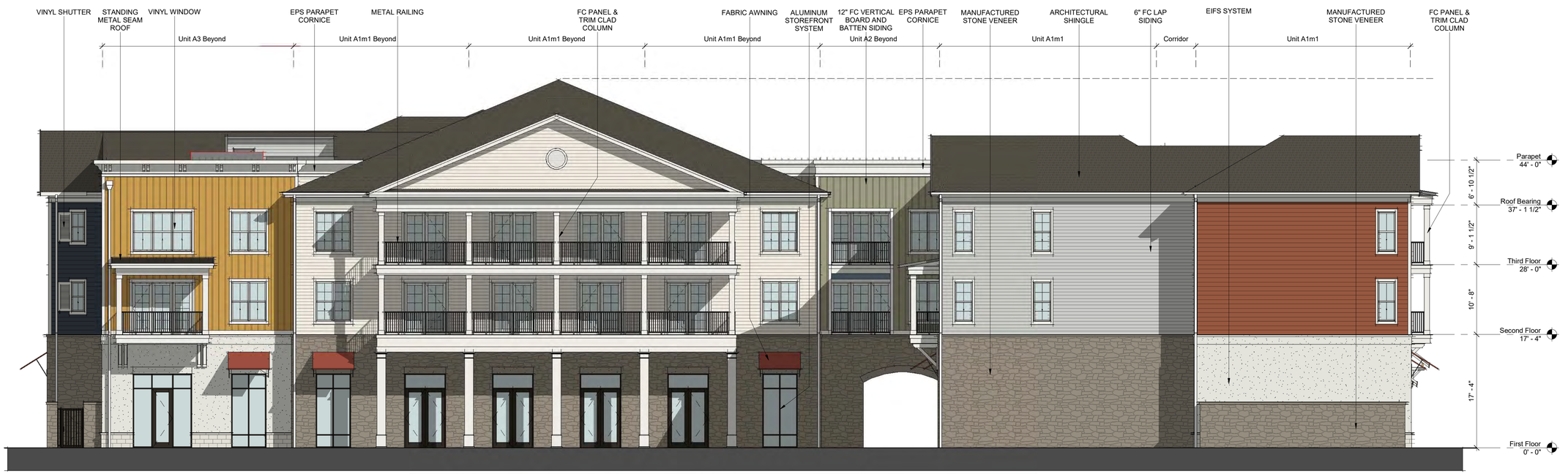
AREA OF TRANSPARENCY: **721 SF 43%**

Section 7.4: - Town Center Overlay District

7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 2 - NORTH ELEVATION 1

1/8" = 1'-0"



BLDG 2 - SOUTH ELEVATION 2

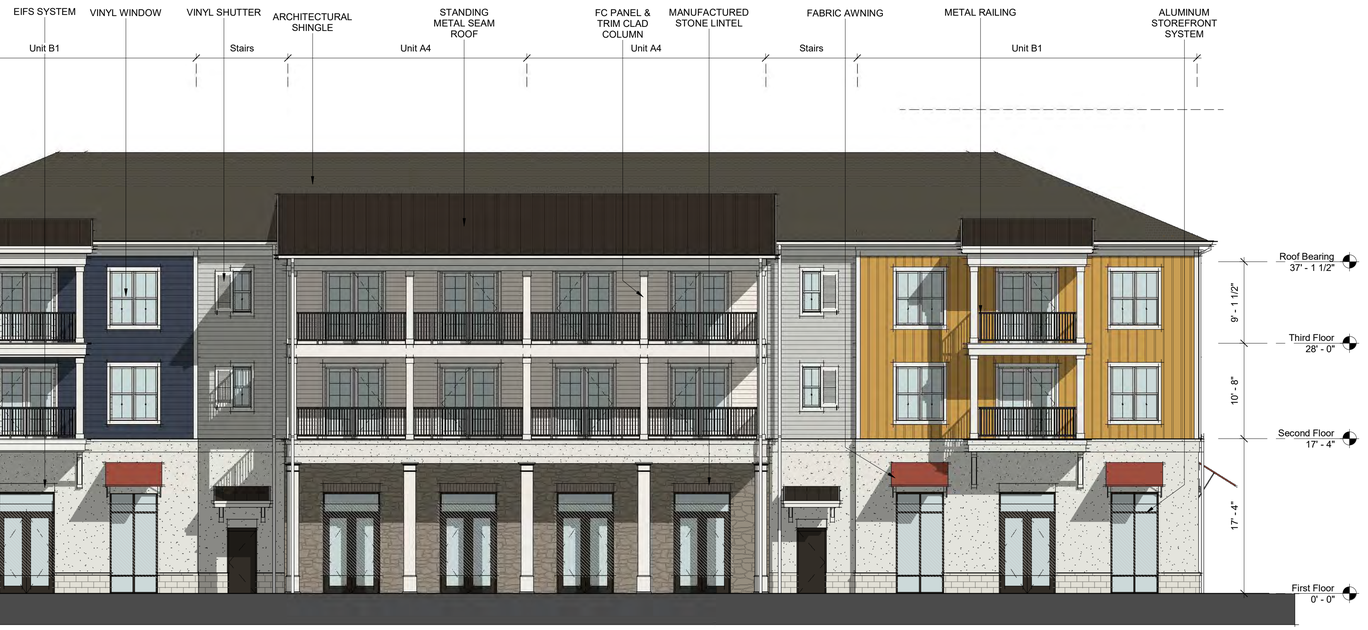
1/8" = 1'-0"

COBBLESTONE VILLAGE
ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 2 **A.21**
1/8" = 1'-0" | 019032 | 05.25.21

BLDG 3 - NORTH ELEVATION 1

1/8" = 1'-0"



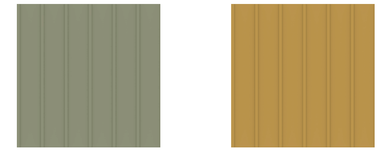
TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):

TOTAL FACADE AREA (WxH):	1,203 SF
REQ'D AREA OF TRANSPARENCY:	1,203 SF x 0.4 = 481 SF
AREA OF TRANSPARENCY:	**472 SF 40%**

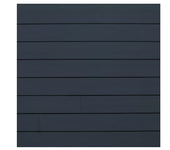
BLDG 3 - SOUTH ELEVATION 2

1/8" = 1'-0"



FIBER CEMENT - BOARD & BATTEN
SW9128 - GREEN ONYX

FIBER CEMENT - BOARD & BATTEN
SW6395 - ALCHEMY



FIBER CEMENT SIDING
SW2739 - CHARCOAL BLUE

FIBER CEMENT SIDING
SW2803 - ROCKWOOD TERRA COTTA

FIBER CEMENT SIDING
SW8917 - SHELL WHITE

FIBER CEMENT SIDING
SW7064 - PASSIVE

FIBER CEMENT - TRIM/CORNICES
SW7005 - PURE WHITE

EIFS FINISH
SW6203 - SPARE WHITE

ARRISCRAFT WATERTABLE
GEORGIA RENAISSANCE - MONTECITO

CORONADO STONE VENEER
TUSCAN VILLA - PRAIRIE MOSS

MATERIAL SWATCHES

1" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 3 A.22

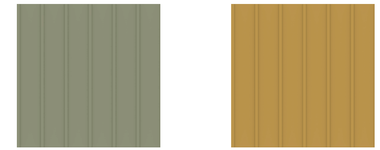
As indicated | 019032 | 05.25.21

BLDG 3 - EAST ELEVATION 1

1/8" = 1'-0"

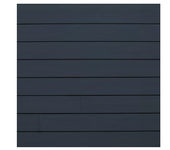
BLDG 3 - WEST ELEVATION 2

1/8" = 1'-0"



FIBER CEMENT - BOARD & BATTEN
SW9128 - GREEN ONYX

FIBER CEMENT - BOARD & BATTEN
SW6395 - ALCHEMY



FIBER CEMENT SIDING
SW2739 - CHARCOAL BLUE

FIBER CEMENT SIDING
SW2803 - ROCKWOOD TERRA COTTA

FIBER CEMENT SIDING
SW8917 - SHELL WHITE

FIBER CEMENT SIDING
SW7064 - PASSIVE

FIBER CEMENT - TRIM/CORNICES
SW7005 - PURE WHITE

EIFS FINISH
SW6203 - SPARE WHITE

ARRISCRAFT WATERTABLE
GEORGIA RENAISSANCE - MONTECITO

CORONADO STONE VENEER
TUSCAN VILLA - PRAIRIE MOSS

MATERIAL SWATCHES

1" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

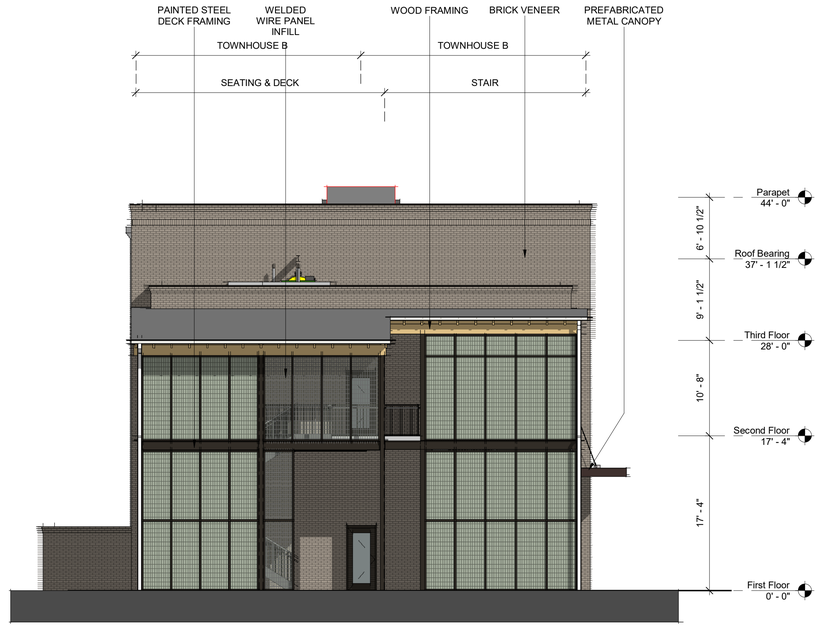
ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 3 **A.23**

As indicated | 019032 | 05.25.21

BLDG 5 - WEST ELEVATION 4

1/8" = 1'-0"



BLDG 5 - SOUTH ELEVATION 2

1/8" = 1'-0"

BLDG 5 - EAST ELEVATION 3

1/8" = 1'-0"

TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 411 SF
REQ'D AREA OF TRANSPARENCY: 411 SF x 0.4 = 164 SF

AREA OF TRANSPARENCY: **203 SF 49%**

Section 7.4: - Town Center Overlay District

7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 5 - NORTH ELEVATION 1

1/8" = 1'-0"

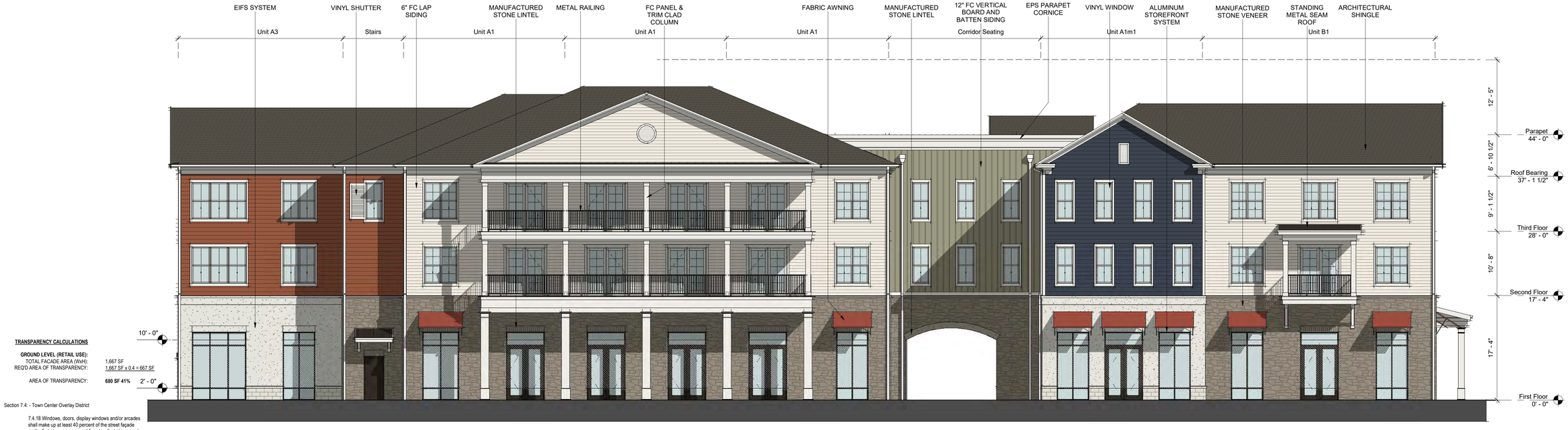
CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 5 A.24

1/8" = 1'-0" | 019032 | 05.25.21



TRANSPARENCY CALCULATIONS

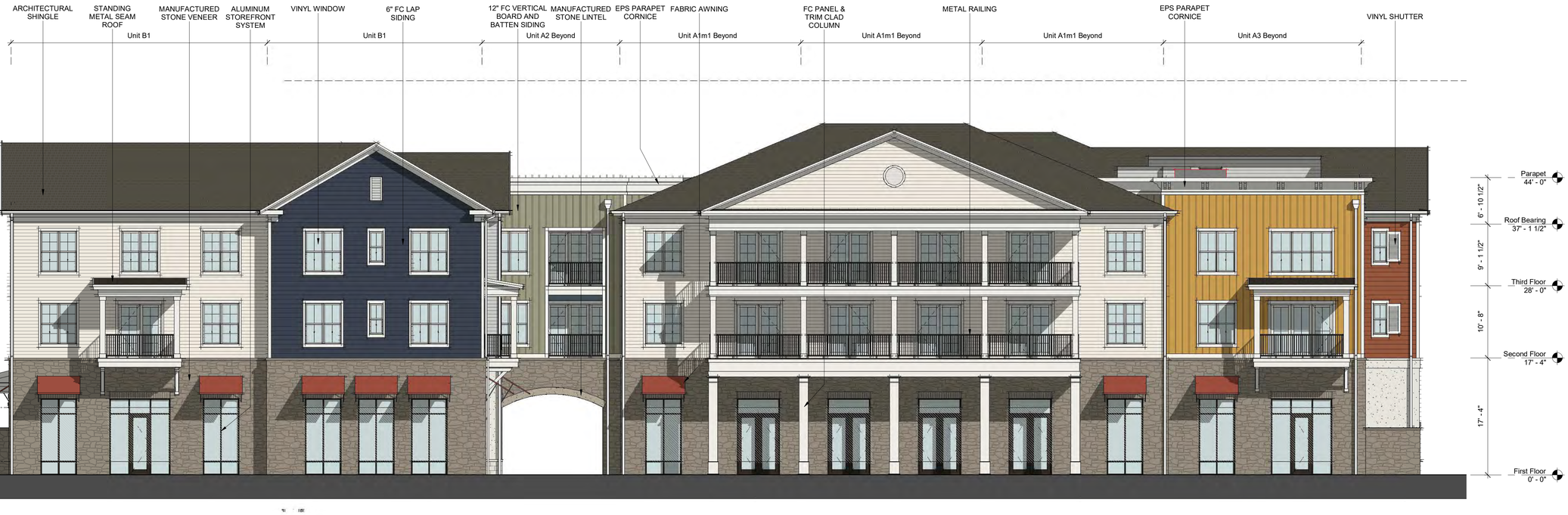
GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 1,667 SF
REQ'D AREA OF TRANSPARENCY: 1,667 SF x 0.4 = 667 SF
AREA OF TRANSPARENCY: **680 SF 41%**

Section 7.4: - Town Center Overlay District

7.4.18 Windows, doors, display windows and/or arcades shall make up at least 40 percent of the street façade on the first story as measured from two feet above grade to ten feet above grade.
Blank walls are not permitted adjacent to streets.

BLDG 6 - NORTH ELEVATION 1

1/8" = 1'-0"



TRANSPARENCY CALCULATIONS

GROUND LEVEL (RETAIL USE):
TOTAL FACADE AREA (WxH): 1,667 SF
REQ'D AREA OF TRANSPARENCY: 1,667 SF x 0.4 = 667 SF
AREA OF TRANSPARENCY: **688 SF 41%**

BLDG 6 - SOUTH ELEVATION 2

1/8" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 6 A.25

1/8" = 1'-0" | 019032 | 05.25.21

BLDG 6 - EAST ELEVATION 1

1/8" = 1'-0"

BLDG 6 - WEST ELEVATION 2

1/8" = 1'-0"

FIBER CEMENT - BOARD & BATTEN
SW9128 - GREEN ONYX

FIBER CEMENT - BOARD & BATTEN
SW6395 - ALCHEMY

FIBER CEMENT SIDING
SW2739 - CHARCOAL BLUE

FIBER CEMENT SIDING
SW2803 - ROCKWOOD TERRA COTTA

FIBER CEMENT SIDING
SW8917 - SHELL WHITE

FIBER CEMENT SIDING
SW7064 - PASSIVE

FIBER CEMENT - TRIM/CORNICES
SW7005 - PURE WHITE

EIFS FINISH
SW6203 - SPARE WHITE

ARRISCRAFT WATERTABLE
GEORGIA RENAISSANCE - MONTECITO

CORONADO STONE VENEER
TUSCAN VILLA - PRAIRIE MOSS

MATERIAL SWATCHES

1" = 1'-0"

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 6 **A.26**

As indicated | 019032 | 05.25.21

BLDG 1 & 7 - FRONT ELEVATION 1

1/8" = 1'-0"

BLDG 1 & 7 - REAR ELEVATION 2

1/8" = 1'-0"

MATERIAL SWATCHES - APTS

FIBER CEMENT - BOARD & BATTEN
SW2739 - CHARCOAL BLUE

FIBER CEMENT - BOARD & BATTEN
SW9128 - GREEN ONYX

FIBER CEMENT - TRIM/ CORNICES/ PANELS
SW7005 - PURE WHITE

FIBER CEMENT - 6" SIDING
SW7064 - PASSIVE

CORONADO STONE VENEER
TUSCAN VILLA - PRAIRIE MOSS

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDGS 1&7 **A.27**

As indicated | 019032 | 05.25.21

BLDG 1 & 7 - LEFT SIDE ELEVATION 2

1/8" = 1'-0"

BLDG 1 & 7 - RIGHT SIDE ELEVATION 1

1/8" = 1'-0"

MATERIAL SWATCHES - APTS

FIBER CEMENT - BOARD & BATTEN
SW2739 - CHARCOAL BLUE

FIBER CEMENT - BOARD & BATTEN
SW9128 - GREEN ONYX

FIBER CEMENT - TRIM/ CORNICES/ PANELS
SW7005 - PURE WHITE

FIBER CEMENT - 6" SIDING
SW7064 - PASSIVE

CORONADO STONE VENEER
TUSCAN VILLA - PRAIRIE MOSS

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDGS 1&7 **A.28**

As indicated | 019032 | 05.25.21

BLDG 8 - RIGHT SIDE ELEVATION 4

1/8" = 1'-0"

BLDG 8 - REAR ELEVATION 2

1/8" = 1'-0"

BLDG 8 - LEFT SIDE ELEVATION 3

1/8" = 1'-0"

BLDG 8 - FRONT ELEVATION 1

1/8" = 1'-0"

MATERIAL SWATCHES - APTS

FIBER CEMENT - BOARD & BATTEN
SW2739 - CHARCOAL BLUE

FIBER CEMENT - BOARD & BATTEN
SW9128 - GREEN ONYX

FIBER CEMENT - TRIM/ CORNICES/ PANELS
SW7005 - PURE WHITE

FIBER CEMENT - 6" SIDING
SW7064 - PASSIVE

CORONADO STONE VENEER
TUSCAN VILLA - PRAIRIE MOSS

CLINE DESIGN

COBBLESTONE VILLAGE

ROLESVILLE, NORTH CAROLINA

EXTERIOR ELEVATIONS - BLDG 8 **A.29**

As indicated | 019032 | 05.25.21

RAMEY KEMP ASSOCIATES
Moving forward.

Cobblestone Crossing Mixed - Use

Traffic Impact Analysis

Rolesville, North Carolina

RKA

rameykemp.com

Transportation
Consulting
that moves us
forward.

TRAFFIC IMPACT ANALYSIS

FOR

COBBLESTONE CROSSING MIXED-USE

LOCATED

IN

ROLESVILLE, NORTH CAROLINA

Prepared For:
Town of Rolesville
502 Southtown Circle
Rolesville, NC 27571

3-15-2021

Prepared By:
Ramey Kemp & Associates, Inc.
5808 Faringdon Place, Suite 100
Raleigh, NC 27609
License #C-0910

MARCH 2021

RKA Project No. 20498

Prepared By: TF

Reviewed By: MK

TRAFFIC IMPACT ANALYSIS
COBBLESTONE CROSSING MIXED-USE
ROLESVILLE, NORTH CAROLINA

EXECUTIVE SUMMARY

1. Development Overview

A Traffic Impact Analysis (TIA) was conducted for the proposed Cobblestone Crossing Mixed-Use development in accordance with the North Carolina Department of Transportation (NCDOT) capacity analysis guidelines. The proposed development is to be located in the northwest quadrant of the intersection of Main Street and Young Street in Rolesville, North Carolina. The proposed development is expected to consist of 180 apartments, 18,200 square feet (sq. ft.) of municipal flex space, and 50,000 sq. ft. of retail space and is estimated to be built out in 2023. Site access is proposed via one (1) full movement site driveway on Main Street and one (1) right-in/right-out site driveway on Young Street.

2. Existing Traffic Conditions

The study area for the TIA was determined through coordination with the Town and NCDOT and consists of the following existing intersections:

- Main Street and Young Street
- Main Street and Rogers Road / Redford Place Drive
- Main Street and Burlington Mills Road
- Young Street and US 401 Bypass
- Young Street and Granite Falls Boulevard

Due to the COVID-19 pandemic, previously conducted turning movement counts were utilized, where available, to determine existing peak hour traffic volumes. Peak hour turning movement counts were conducted at the following study intersection during the weekday AM and PM peak hours at the listed dates:

- Main Street and Young Street – May 22, 2018
- Main Street and Rogers Road /Redford Place Drive – September 10, 2019
- Young Street and US 401 Bypass – January 29, 2019

An annual growth rate of 3% was applied to the turning movement counts at these three (3) intersections from the year they were counted to the existing 2020 analysis year.

Peak hour turning movement counts were conducted by Quality Counts, LLC at all study intersections during the weekday AM (7:00 – 9:00AM) and PM (4:00 – 6:00PM) peak hours in December 2020. Based on coordination with NCDOT and Town staff at the TIA scoping meeting, previously collected traffic counts were grown to 2020 using a 3% annual growth rate and then compared to the December 2020 traffic counts to determine an adjustment factor for the two (2) remaining study intersections to account for the changes in traffic patterns due to COVID-19. This comparison indicated that the December 2020 traffic counts at the three (3) intersections are lower in AM peak hour with negligible differences in the PM peak hour than what would be estimated in conditions not impacted by COVID-19 closures. Therefore, the adjustment factor was calculated to be 58% for the weekday AM peak hour with no adjustment in the PM peak hour. This adjustment factor was applied at the two (2) remaining study intersections where no historic count data was available.

3. Site Trip Generation

The proposed development is assumed to consist of 180 apartments, 18,200 sq. ft. of municipal flex space, and 50,000 sq. ft. of retail space. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE Trip Generation Manual, 10th Edition. Table E-1 provides a summary of the trip generation potential for the site.

Table E-1: Site Trip Generation

LAND USE (ITE Code)	INTENSITY	DAILY TRIPS (VPD)	WEEKDAY AM PEAK HOUR (VPH)		WEEKDAY PM PEAK HOUR (VPH)	
			Enter	Exit	Enter	Exit
Multifamily Housing (Low-Rise) (220)	180 Units	1,320	19	64	63	37
Municipal Flex Space (495)	18,200 sq. ft.	530	21	11	20	22
Shopping Center (820)	50,000 sq. ft.	3,760	110	67	156	169
Total Trips		**5,610**	**150**	**142**	**239**	**228**
*Internal Capture (18% PM)**			-	-	-39	-37
Total External Trips			**150**	**142**	**200**	**191**
Pass-By Trips: Shopping Center (34% PM)			-	-	-45	-45
Total Primary Trips			**150**	**142**	**155**	**146**

*Utilizing methodology contained in the NCHRP Report 684.

4. Future Traffic Conditions

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 3% would be used to generate projected (2023) weekday AM and PM peak hour traffic volumes. The following approved adjacent developments were identified to be considered under future traffic conditions:

- Redford Place
- Jones Dairy Road Residential
- Townhome Development north of proposed Cobblestone Crossing

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- Existing (2020) Traffic Conditions
- No-Build (2023) Traffic Conditions
- Build (2023) Traffic Conditions

Based on coordination with the Town and NCDOT, it was determined that the roadway improvements associated with the NCDOT State Transportation Improvement Program (STIP) U-6241 (Main Street Improvements) should be considered in this study. STIP U-6241 is expected to realign Burlington Mills Road and install a traffic signal at the relocated intersection on Main Street. STIP U-6241 is also expected to provide improvements to the pedestrian and bike facilities along Main Street and add a concrete median along Main Street west of Rogers Road. These improvements associated with STIP U-6241 will alter the existing lane configurations at the study intersections along Main Street.

The Town's goal and long-term vision for the intersection of Main Street and Young Street is to be a town center, safe for pedestrians and bicyclists. As a result, exclusive turn lanes at the intersection of Main Street & Young Street are expected to be removed to provide improved pedestrian facilities (sidewalk, signalized push-button pedestals, shortened pedestrian crossing lengths for all legs of this intersection, etc.) to make this a walkable, pedestrian friendly area. Modified lane configurations and signal phasing were considered at this intersection to provide acceptable traffic operations while maintaining the long-term vision of this intersection. It should be noted that signal timings along the Main Street corridor were optimized under no-build (2023) traffic conditions due to the improvements associated with STIP U-6241. These optimized signal timings were held constant under build (2023) traffic conditions to evaluate the proportional impacts the proposed site traffic is expected to have at this intersection.

5. Capacity Analysis Summary

The analysis considered weekday AM and PM peak hour traffic for existing (2020), no-build (2023), and build (2023) conditions. Refer to Table E-2 on the following page for the capacity analysis summary performed at each study intersection.

Table E-2: Capacity Analysis Summary

Intersection	Approach	Existing (2020) Conditions		No-Build (2023) Conditions		Build (2023) Conditions	
		AM	PM	AM	PM	AM	PM
Main Street and Young Street	EB	B	A	C	D	D	D
	WB	D	B	D	D	D	E
	NB	B	D	D	E	D	E
	SB	C	D	D	D	D	D
	Overall	C (21)	C (24)	D (43)	D (46)	D (47)	D (53)
Main Street and Rogers Road / Redford Place Drive	EB	B	C	C	B	D	C
	WB	C	C	D	B	D	C
	NB	D	D	F	D	F	D
	SB	C	C	F	E	F	E
	Overall	C (25)	C (29)	D (50)	C (31)	E (64)	D (36)
Main Street and Burlington Mills Road	EB	B	A	C	B	C	B
	WB	B	A	C	B	C	B
	NB	-	-	E	D	E	D
	SB	D	D	F	E	F	E
	Overall	B (18)	B (16)	C (31)	C (20)	C (32)	C (22)
Young Street and US 401 Bypass	WB	B	A	B	A	B	A
	NB*	B	B	B	B	B	B
	SB	C	B	C	B	C	B
	Overall	B (14)	A (8)	B (18)	A (10)	B (19)	A (10)
	EB	A	A	A	A	A	A
	NB	B	B	B	B	B	B
	SB**	A	B	A	B	A	B
	Overall	A (7)	A (9)	A (7)	A (10)	A (7)	A (10)
Young Street and Granite Falls Boulevard	EB	D[2]	C[2]	F[2]	F[2]	F[2]	F[2]
	WB	C[2]	C[2]	F[2]	D[2]	F[2]	E[2]
	NB	A[1]	A[1]	B[1]	A[1]	B[1]	A[1]
	SB	A[1]	A[1]	A[1]	A[1]	A1	A[1]
Main Street and Site Drive 1	EB	-	-	-	-	B[1]	A[1]
	WB	-	-	-	-	-	-
	SB	-	-	-	-	F[2]	F[2]
Young Street and Site Drive 2	EB	-	-	-	-	B[2]	B[2]
	NB	-	-	-	-	-	-
	SB	-	-	-	-	-	-

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

* Synchro analyzed the EB left-turns as NB through movements due to the nature of the superstreet and synchro limitations.

** Synchro analyzed the WB left-turns as SB through movements due to the nature of the superstreet and synchro limitations.

6. Recommendations

Based on the findings of this study, specific geometric and traffic control improvements have been identified at study intersections. The improvements are summarized below and are illustrated in Figure E-1.

Improvements by STIP U-6241

STIP U-6241 is expected to realign Burlington Mills Road and install a traffic signal at the relocated intersection on Main Street. STIP U-6241 is also expected to provide improvements to the pedestrian and bike facilities along Main Street and add a concrete median island along Main Street west of Rogers Road. These improvements associated with STIP U-6241 will alter the existing lane configurations at the study intersections along Main Street.

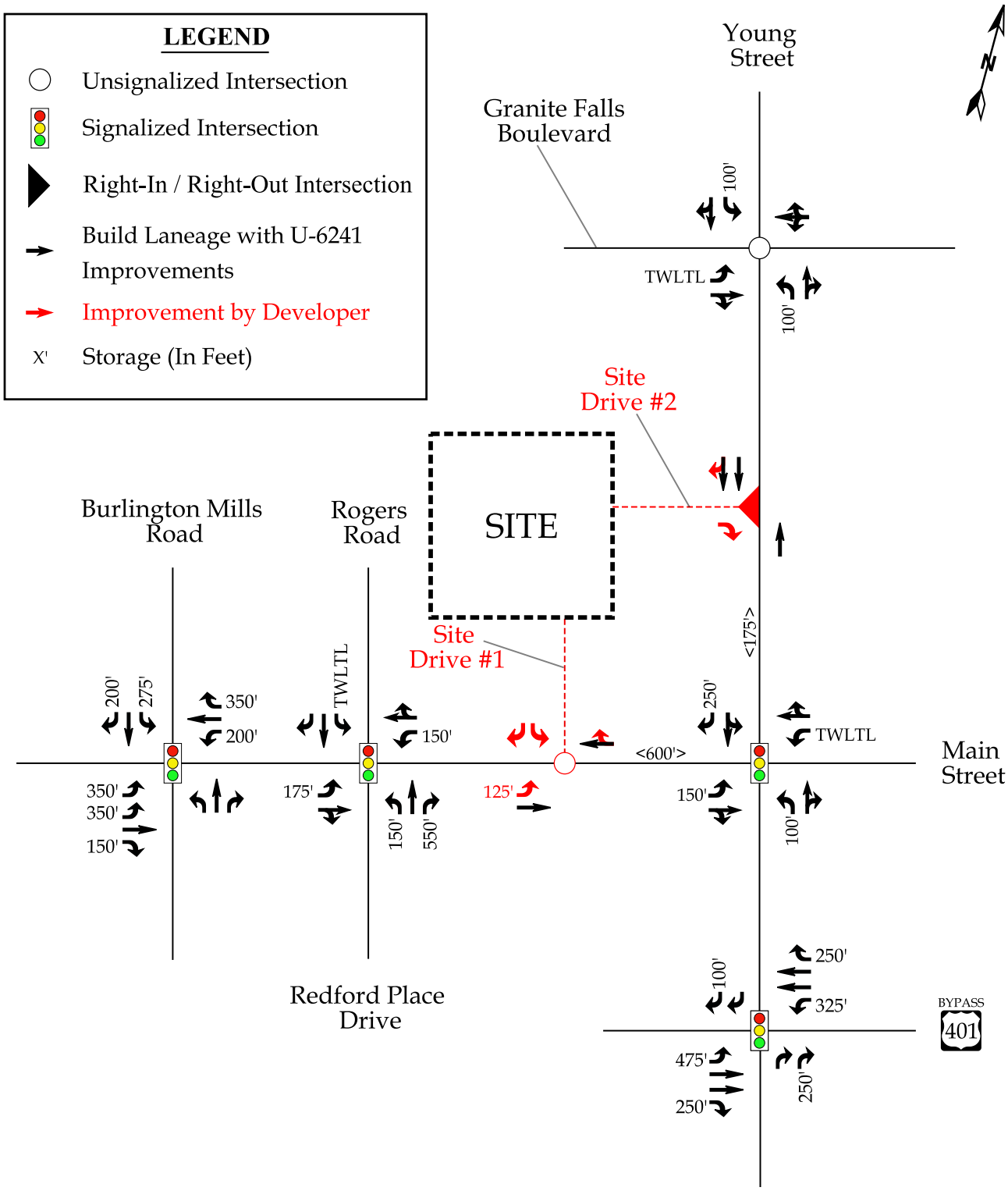
Recommended Improvements by Developer

Main Street and Site Drive 1

- Construct the southbound approach with one ingress and two egress lanes.
- Provide stop control for the southbound approach.
- Install an eastbound left-turn lane with at least 125 feet of storage and appropriate decel and taper.

Young Street and Site Drive 2

- Construct the eastbound approach with one ingress and egress lane.
- Provide stop control for the eastbound approach.



Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Recommended Lane Configurations Scale: Not to Scale | Figure E-1

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TECHNICAL APPENDIX

TRAFFIC IMPACT ANALYSIS
COBBLESTONE CROSSING MIXED-USE
ROLESVILLE, NORTH CAROLINA

1. INTRODUCTION

The contents of this report present the findings of the Traffic Impact Analysis (TIA) conducted for the proposed Cobblestone Crossing Mixed-Use development to be located in the northwest quadrant of the intersection of Main Street and Young Street in Rolesville, North Carolina. The purpose of this study is to determine the potential impacts to the surrounding transportation system created by traffic generated by the proposed development, as well as recommend improvements to mitigate the impacts.

The proposed development, anticipated to be completed in 2023, is assumed to consist of the following uses:

- 180 apartments
- 18,200 square feet (sq. ft.) of municipal flex space
- 50,000 sq. ft. of retail space

The study analyzes traffic conditions during the weekday AM and PM peak hours for the following scenarios:

- Existing (2020) Traffic Conditions
- No-Build (2023) Traffic Conditions
- Build (2023) Traffic Conditions

1.1. Site Location and Study Area

The proposed development is located in the northwest quadrant of the intersection of Main Street and Young Street in Rolesville, North Carolina. Refer to Figure 1 for the site location map.

The study area for the TIA was determined through coordination with the North Carolina Department of Transportation (NCDOT) and the Town of Rolesville (Town) and consists of the following existing intersections:

- Main Street and Young Street
- Main Street and Rogers Road / Redford Place Drive
- Main Street and Burlington Mills Road
- Young Street and US 401 Bypass
- Young Street and Granite Falls Boulevard

Refer to Appendix A for the approved scoping documentation.

1.2. Proposed Land Use and Site Access

The site is expected to be located in the northwest quadrant of the intersection of Main Street and Young Street. The proposed development, anticipated to be completed in 2023, is assumed to consist of the following uses:

- 180 apartments
- 18,200 sq. ft. of municipal flex space
- 50,000 sq. ft. of retail space

Site access is proposed via one (1) full movement site driveway on Main Street and one (1) right-in/right-out site driveway on Young Street. Refer to Figure 2 for a copy of the preliminary site plan.

1.3. Adjacent Land Uses

The proposed development is located in an area consisting primarily of commercial and residential development.

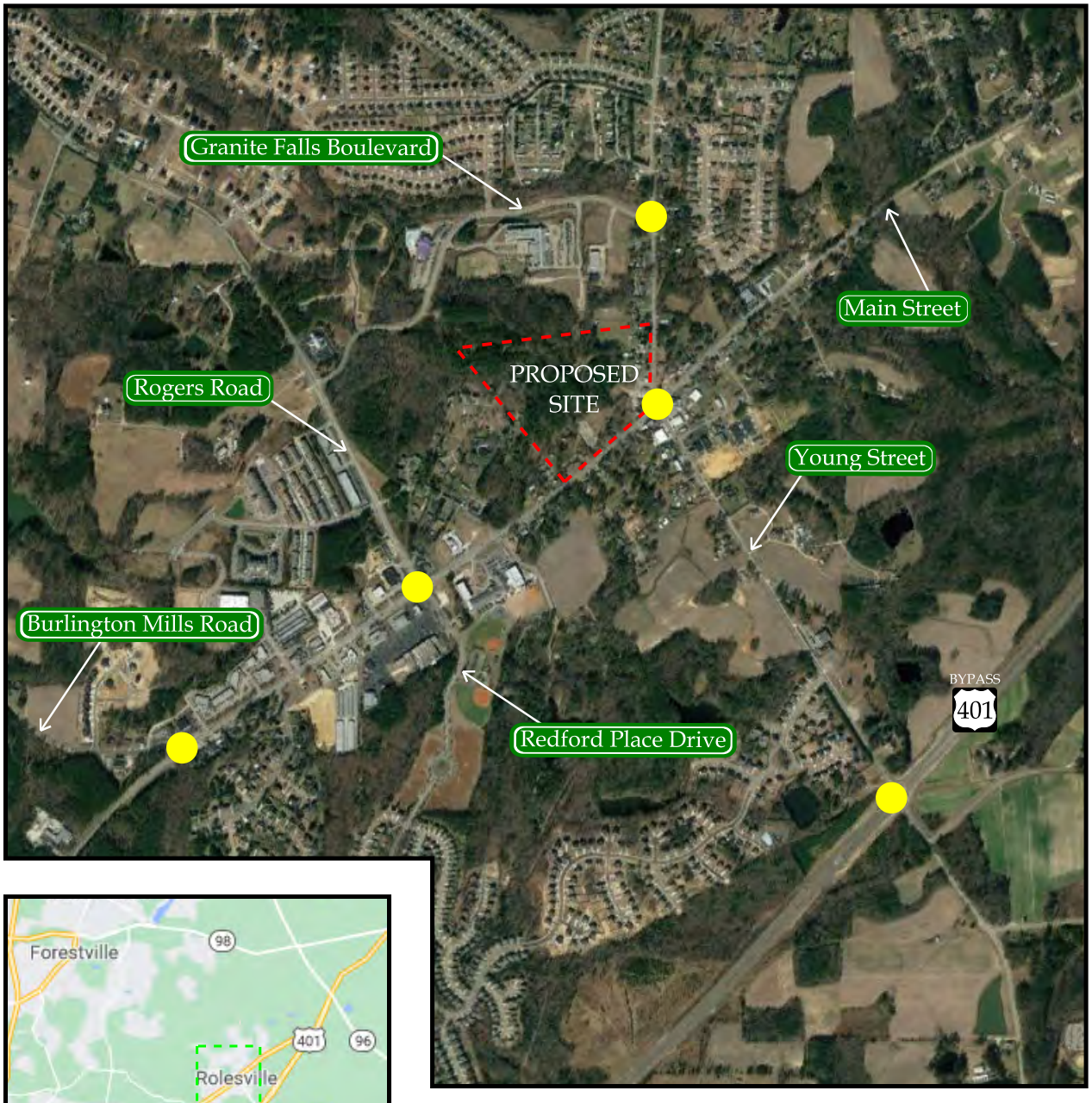
1.4. Existing Roadways

Existing lane configurations (number of traffic lanes on each intersection approach), lane widths, storage capacities, and other intersection and roadway information within the study area are shown in Figure 3. Table 1 provides a summary of this information, as well.

Table 1: Existing Roadway Inventory

Road Name	Route Number	Typical Cross Section	Speed Limit	Maintained By	2019 AADT (vpd)
Main Street	US 401 Business	3-lane divided by TWLTL	35 mph	NCDOT	14,000
Young Street	SR 1003 / SR 1945	Varies; 2-lane undivided & 3-lane divided by TWLTL	35 mph	NCDOT	8,600
US 401 Bypass		4-lane divided	55 mph	NCDOT	17,500
Rogers Road	SR 2052	5-lane divided by TWLTL	45 mph	NCDOT	9,000
Redford Place Drive	N/A	3-lane divided by TWLTL	25 mph	Town	5,620*
Burlington Mills Road	SR 2051	2-lane undivided	35 mph	NCDOT	4,500
Granite Falls Boulevard	N/A	3-lane divided by TWLTL	35 mph	Town	1,570*

*ADT based on the existing (2020) peak hour traffic volumes and assuming the weekday PM peak hour volume is 10% of the average daily traffic.

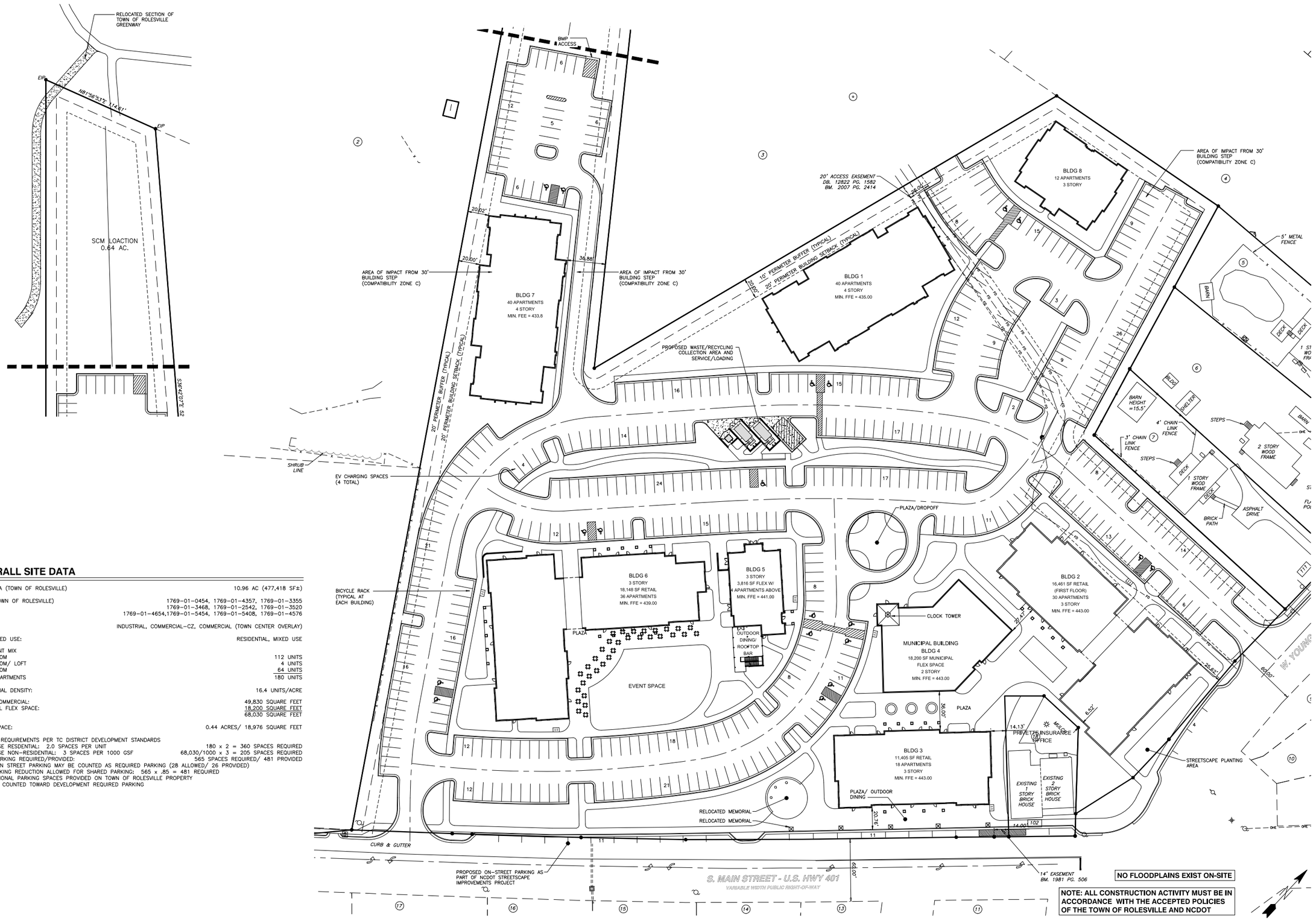


N

LEGEND

- Proposed Site Location
- Study Intersection
- Study Area

Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Site Location Map
		Scale: Not to Scale | Figure 1



OVERALL SITE DATA

SITE AREA (TOWN OF ROLESVILLE)	10.96 AC (477,418 SF±)
P.I.N. (TOWN OF ROLESVILLE)	1769-01-0454, 1769-01-4357, 1769-01-3355 1769-01-3468, 1769-01-2542, 1769-01-3520 1769-01-4654,1769-01-5454, 1769-01-5408, 1769-01-4576
ZONED:	INDUSTRIAL, COMMERCIAL-CZ, COMMERCIAL (TOWN CENTER OVERLAY)
PROPSOSED USE:	RESIDENTIAL, MIXED USE
APARTMENT MIX	
1 BEDROOM	112 UNITS
1 BEDROOM/ LOFT	4 UNITS
2 BEDROOM	64 UNITS
TOTAL APARTMENTS	180 UNITS
RESIDENTIAL DENSITY:	16.4 UNITS/ACRE
RETAIL/COMMERCIAL:	49,830 SQUARE FEET
MUNICIPAL FLEX SPACE:	18,200 SQUARE FEET
TOTAL:	68,030 SQUARE FEET
EVENT SPACE:	0.44 ACRES/ 18,976 SQUARE FEET

PARKING REQUIREMENTS PER TC DISTRICT DEVELOPMENT STANDARDS
MIXED USE RESDENTIAL: 2.0 SPACES PER UNIT 180 x 2 = 360 SPACES REQUIRED
MIXED USE NON-RESIDENTIAL: 3 SPACES PER 1000 GSF 68,030/1000 x 3 = 205 SPACES REQUIRED
TOTAL PARKING REQUIRED/PROVIDED: 565 SPACES REQUIRED/ 481 PROVIDED
5% OF ON STREET PARKING MAY BE COUNTED AS REQUIRED PARKING (28 ALLOWED/ 26 PROVIDED)
15% PARKING REDUCTION ALLOWED FOR SHARED PARKING: 565 x .85 = 481 REQUIRED
58 ADDITIONAL PARKING SPACES PROVIDED ON TOWN OF ROLESVILLE PROPERTY
AND NOT COUNTED TOWARD DEVELOPMENT REQUIRED PARKING

BNK
BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
TELEPHONE: (919)851-4422 FAX: (919)851-8968
CERTIFICATION NUMBERS: NCBELS (C-0110); NCBOLA (C-0267)

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

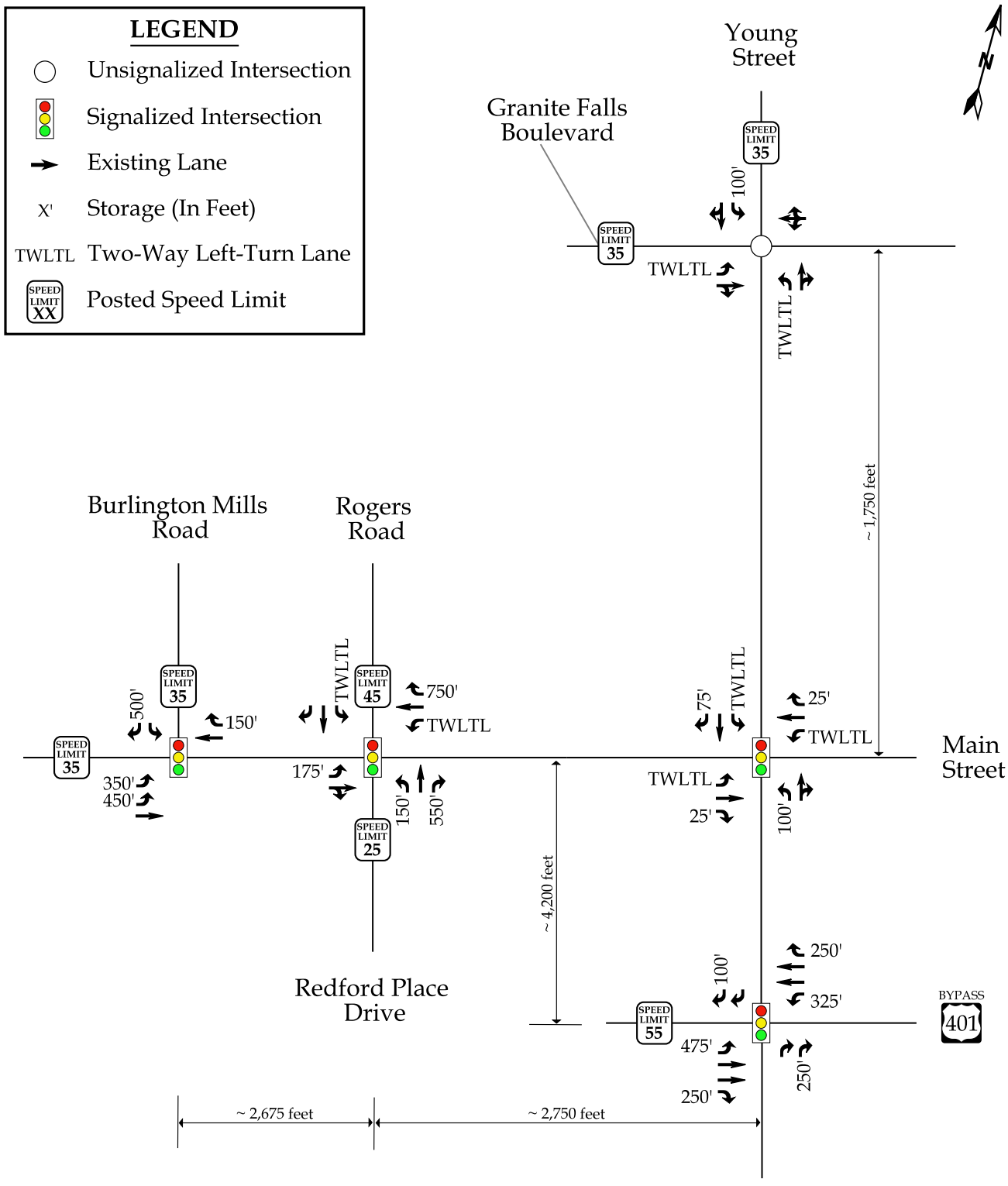
03-19157 JOB NO. | PROGRESS DATE | RAB DRAWN BY | CHK BY: MDB

SITE PLAN
SCALE: 1" = 40'

COBBLESTONE VILLAGE
MIXED USE DEVELOPMENT
TOWN OF ROLESVILLE, WAKE COUNTY, NORTH CAROLINA

SHEET C1.1

TOWN OF ROLESVILLE PROJECT NO. SUB-S-66-2018



Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Existing Lane Configurations
		Scale: Not to Scale | Figure 3

2. EXISTING (2020) PEAK HOUR CONDITIONS

2.1. Existing (2020) Peak Hour Traffic

Due to the COVID-19 pandemic, previously conducted turning movement counts were utilized, where available, to determine existing (2020) peak hour traffic volumes. Peak hour turning movement counts were conducted at the following study intersections during the weekday AM and PM peak hours at the listed dates:

- Main Street and Young Street – May 22, 2018
- Main Street and Rogers Road / Redford Place Drive – September 10, 2019
- Young Street and US 401 Bypass - January 29, 2019

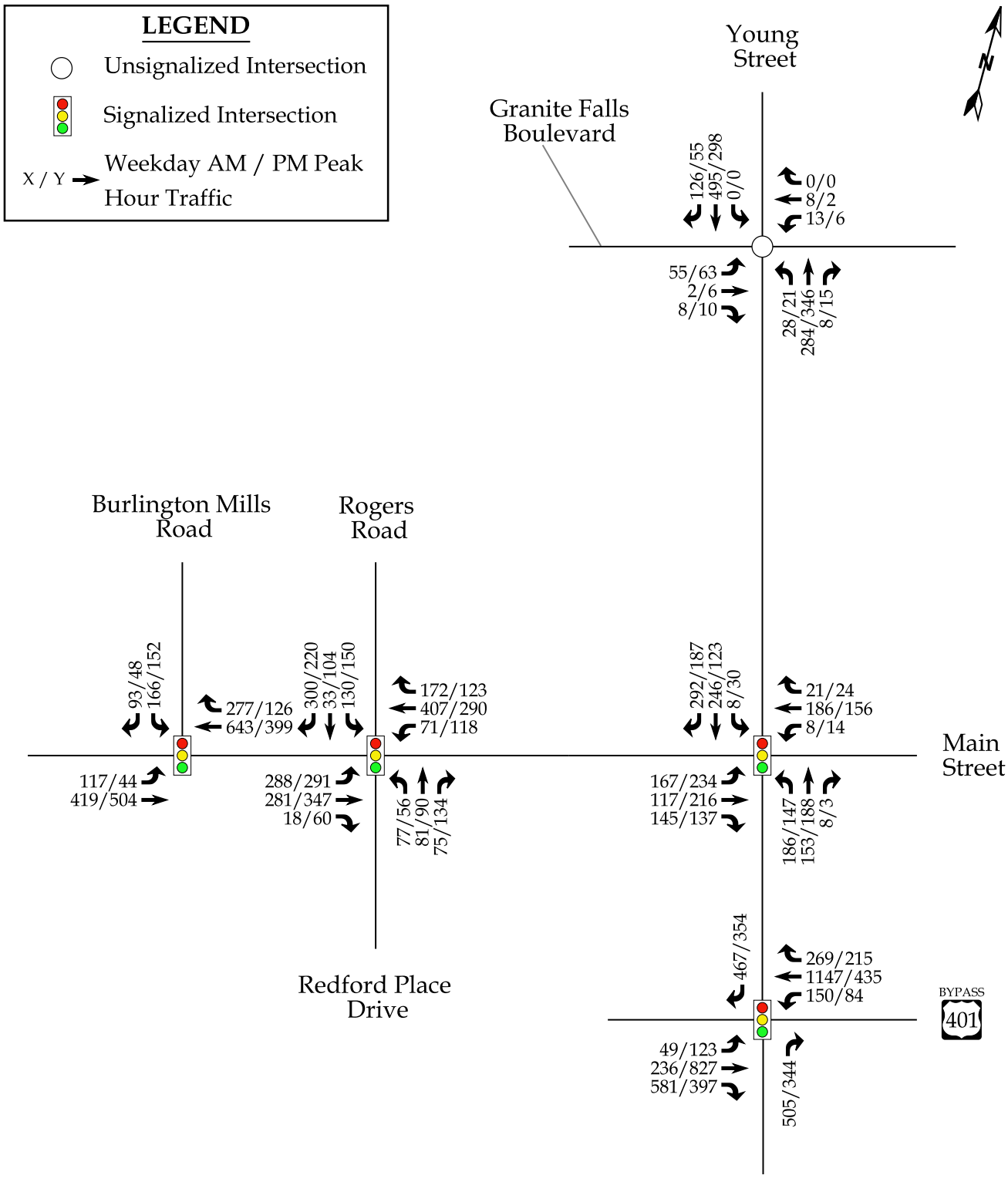
An annual growth rate of 3% was applied to the turning movement counts at these three (3) intersections from the year they were counted to the existing 2020 analysis year.

Peak hour turning movement counts were conducted by Quality Counts, LLC at all study intersections during the weekday AM (7:00 – 9:00AM) and PM (4:00 – 6:00PM) peak hours in December 2020. Based on coordination with NCDOT and Town staff at the TIA scoping meeting, previously collected traffic counts were grown to 2020 using a 3% annual growth rate and then compared to the December 2020 traffic counts to determine an adjustment factor for the two (2) remaining study intersections to account for the changes in traffic patterns due to COVID-19. This comparison indicated that the December 2020 traffic counts at the three (3) intersections are lower in AM peak hour with negligible differences in the PM peak hour than what would be estimated in conditions not impacted by COVID-19 closures. Therefore, the adjustment factor was calculated to be 58% for the weekday AM peak hour with no adjustment in the PM peak hour. This adjustment factor was applied at the two (2) remaining study intersections where no historic count data was available.

Refer to Figure 4 for existing (2020) weekday AM and PM peak hour traffic volumes. A copy of the count data is located in Appendix B of this report.

2.2. Analysis of Existing (2020) Peak Hour Traffic

The existing (2020) weekday AM and PM peak hour traffic volumes were analyzed to determine the current levels of service at the study intersections under existing roadway conditions. Signal information was obtained from NCDOT and is included in Appendix C. The results of the analysis are presented in Section 7 of this report.



Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Existing (2020) Peak Hour Traffic
		Scale: Not to Scale | Figure 4

3. NO-BUILD (2023) PEAK HOUR CONDITIONS

In order to account for growth of traffic and subsequent traffic conditions at a future year, no-build traffic projections are needed. No-build traffic is the component of traffic due to the growth of the community and surrounding area that is anticipated to occur regardless of whether or not the proposed development is constructed. No-build traffic is comprised of existing traffic growth within the study area and additional traffic created as a result of adjacent approved developments.

3.1. Ambient Traffic Growth

Through coordination with the Town and NCDOT, it was determined that an annual growth rate of 3% would be used to generate projected (2023) peak hour traffic volumes. Refer to Figure 5 for projected (2023) weekday AM and PM peak hour traffic volumes.

3.2. Adjacent Development Traffic

Through coordination with the Town and NCDOT, the following adjacent developments were identified to be included as approved adjacent developments in this study:

- Redford Place
- Jones Dairy Road Residential
- Townhome Development north of proposed Cobblestone Crossing

Table 2 provides a summary of the adjacent developments. Additional adjacent development information can be found in Appendix D.

Table 2: Adjacent Development Information

Development Name	Location	Build-Out Year	Land Use / Intensity	TIA Performed
Redford Place	East of Redford Place Drive, South of US 401 Business (Main Street)	2023	13,000 sq. ft. medical office 6,500 sq. ft. retail	October 2019 by Stantec
Jones Dairy Road Residential	Along Jones Dairy Road and Averette Road	2024	250 townhomes 600 single-family homes	October 2018 by RKA
Townhome Development	North of Main Street, south of Scarboro Street	2023	60 townhomes	N/A

Through coordination with Town staff, the townhome development located north of the proposed site will have 54 – 57 townhomes constructed within the same timeframe as Cobblestone Crossing. The TIA considers 60 townhomes as the build intensity for analysis purposes, to be conservative.

The TIA for the Redford Place development considered two land use scenarios. The land use scenario that yielded the higher trip generation potential for the Redford Place development was utilized for analysis purposes, to be conservative.

3.3. Future Roadway Improvements

Based on coordination with the Town and NCDOT, it was determined that the roadway improvements associated with the NCDOT State Transportation Improvement Program (STIP) U-6241 (Main Street Improvements) should be considered in this study. STIP U-6241 is expected to realign Burlington Mills Road and install a traffic signal at the relocated intersection on Main Street. STIP U-6241 is also expected to provide improvements to the pedestrian and bike facilities along Main Street and add a concrete median along Main Street west of Rogers Road. These improvements associated with STIP U-6241 will alter the existing lane configurations at the study intersections along Main Street. Refer to Appendix E for a copy of the latest STIP U-6241 pavement marking plans.

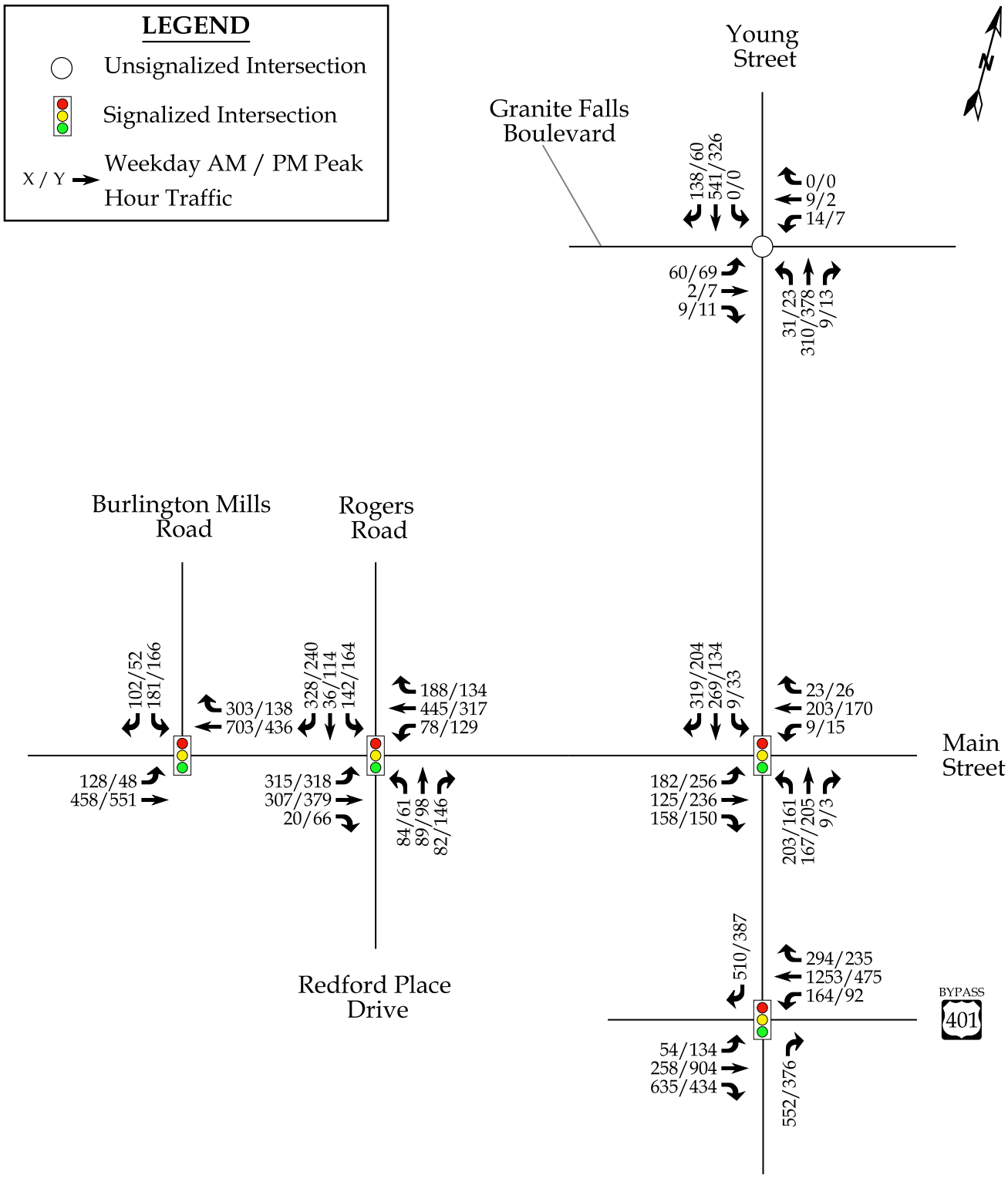
3.4. No-Build (2023) Peak Hour Traffic

The no-build (2023) peak hour traffic volumes were determined by projecting the existing (2020) peak hour traffic to the year 2023 and adding the adjacent development trips. Refer to Figure 7 for an illustration of the no-build (2023) weekday AM and PM peak hour traffic volumes at the study intersections.

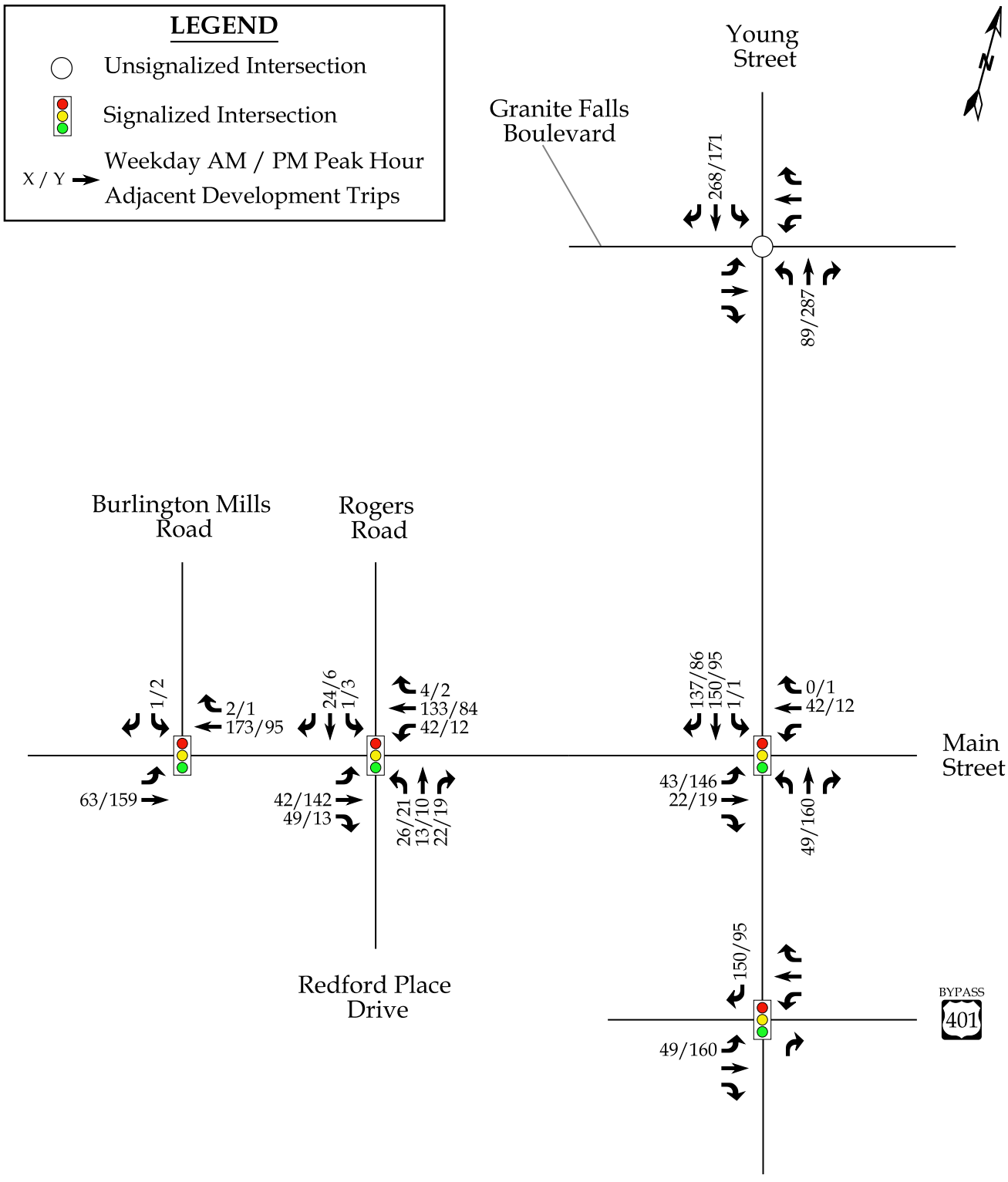
3.5. Analysis of No-Build (2023) Peak Hour Traffic

The no-build (2023) weekday AM and PM peak hour traffic volumes were analyzed with future geometric roadway conditions and traffic control to determine the levels of service at the study intersections. The analysis results are presented in Section 7 of this report.

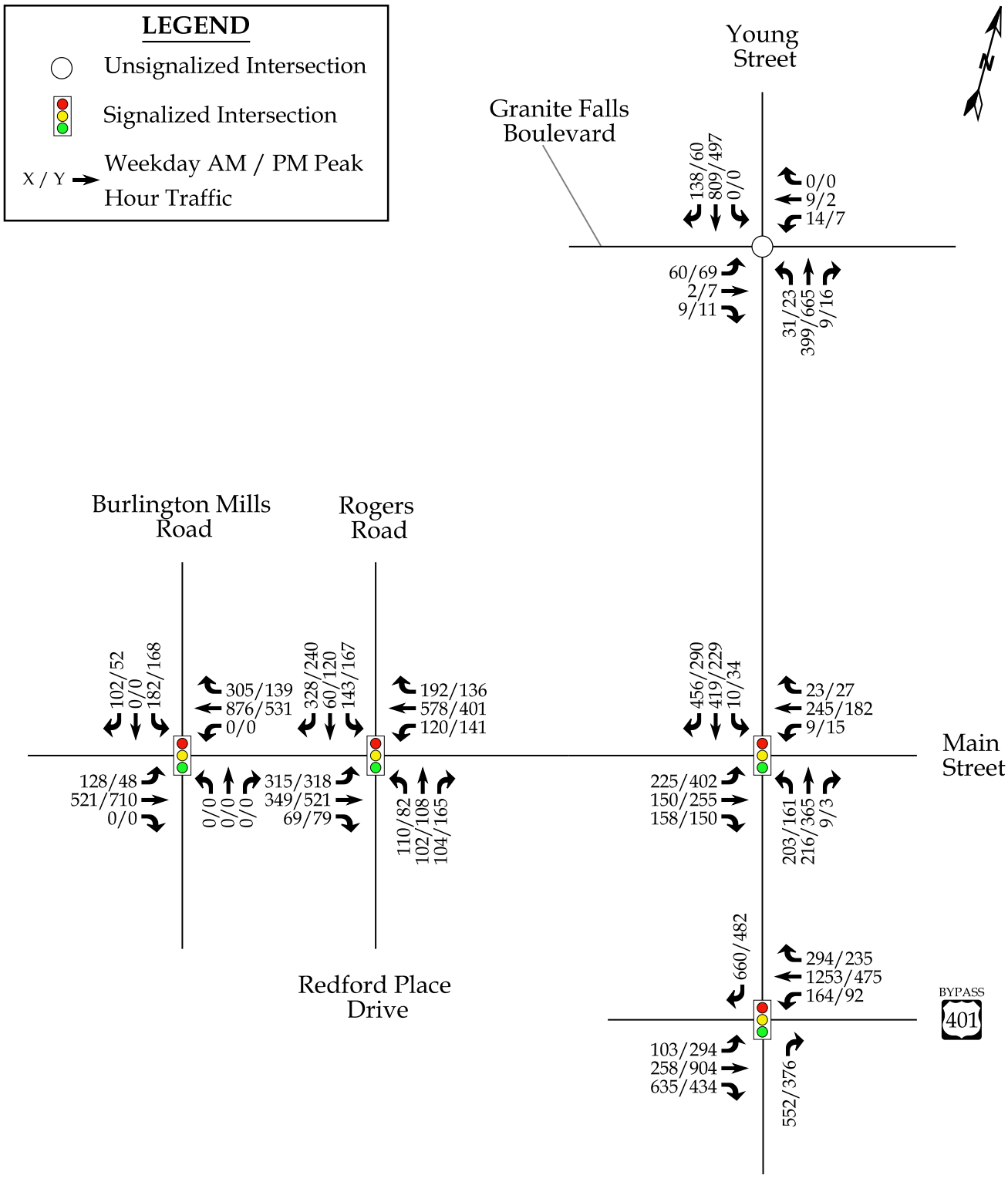
As previously discussed in Section 3.3 of this report, STIP U-6241 is expected to provide improvements to the pedestrian and bike facilities along Main Street. The Town's goal and long-term vision for the intersection of Main Street and Young Street is to be a town center, safe for pedestrians and bicyclists. As a result, exclusive turn lanes at the intersection of Main Street & Young Street are expected to be removed to provide improved pedestrian facilities (sidewalk, signalized push-button pedestals, shortened pedestrian crossing lengths for all legs of this intersection, etc.) to make this a walkable, pedestrian friendly area. Modified lane configurations and signal phasing were considered at this intersection to provide acceptable traffic operations while maintaining the long-term vision of this intersection. It should be noted that signal timings along the Main Street corridor were optimized under no-build (2023) traffic conditions due to the improvements associated with STIP U-6241.



Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Projected (2023) Peak Hour Traffic
		Scale: Not to Scale | Figure 5



Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Peak Hour Adjacent Developement Trips Scale: Not to Scale | Figure 6



Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	No-Build (2023) Peak Hour Traffic Scale: Not to Scale | Figure 7

4. SITE TRIP GENERATION AND DISTRIBUTION

4.1. Trip Generation

The proposed development is assumed to consist of 180 apartments, 18,200 sq. ft. of municipal flex space, and 50,000 sq. ft. of retail space. Average weekday daily, AM peak hour, and PM peak hour trips for the proposed development were estimated using methodology contained within the ITE *Trip Generation Manual*, 10th Edition. Table 3 provides a summary of the trip generation potential for the site.

Table 3: Trip Generation Summary

Land Use (ITE Code)	Intensity	Daily Traffic (vpd)	Weekday AM Peak Hour Trips (vph)		Weekday PM Peak Hour Trips (vph)	
			Enter	Exit	Enter	Exit
Multifamily Housing (Low-Rise) (220)	180 Units	1,320	19	64	63	37
Municipal Flex Space (495)	18,200 sq. ft.	530	21	11	20	22
Shopping Center (820)	50,000 sq. ft.	3,760	110	67	156	169
Total Trips		**5,610**	**150**	**142**	**239**	**228**
*Internal Capture (18% PM)**			-	-	*-39*	*-37*
Total External Trips			**150**	**142**	**200**	**191**
Pass-By Trips: Shopping Center (34% PM)			-	-	*-45*	*-45*
Total Primary Trips			**150**	**142**	**155**	**146**

*Utilizing methodology contained in the NCHRP Report 684.

It is estimated that the proposed development will generate approximately 5,610 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 292 trips (150 entering and 142 exiting) will occur during the weekday AM peak hour and 467 trips (239 entering and 228 exiting) will occur during the weekday PM peak hour.

Internal capture of trips between the retail and residential uses was considered in this study. Internal capture is the consideration for trips that will be made within the site between different

land uses, so the vehicle technically never leaves the internal site but can still be considered as a trip to that specific land use. Based on NCHRP Report 684 methodology, a weekday PM peak hour internal capture of 18% was applied to the trips generated from the residential and retail uses only. The internal capture reductions are expected to account for approximately 76 trips (39 entering and 37 exiting) during the weekday PM peak hour. Refer to Appendix F for the NCHRP internal capture reports.

Pass-by trips were also taken into consideration in this study. Pass-by trips are made by the traffic already using the adjacent roadway, entering the site as an intermediate stop on their way to another destination. Pass-by percentages are applied to site trips after adjustments for internal capture. Pass-by trips are expected to account for approximately 90 trips (45 entering and 45 exiting) during the weekday PM peak hour. It should be noted that the pass-by trips were balanced, as it is likely that these trips would enter and exit in the same hour.

The total primary site trips are the calculated site trips after the reduction for internal capture and pass-by trips. Primary site trips are expected to generate approximately 292 trips (150 entering and 142 exiting) during the weekday AM peak hour and 301 trips (155 entering and 146 exiting) during the weekday PM peak hour.

4.2. Site Trip Distribution and Assignment

Trip distribution percentages used in assigning site traffic for this development were estimated based on a combination of existing traffic patterns, population centers adjacent to the study area, and engineering judgment.

It is estimated that the residential site trips will be regionally distributed as follows:

- 35% to/from the west via Main Street
- 5% to/from the east via Main Street
- 25% to/from the west via US 401 Bypass
- 15% to/from the north via Rogers Road
- 10% to/from the north via Burlington Mills Road
- 10% to/from the north via Young Street

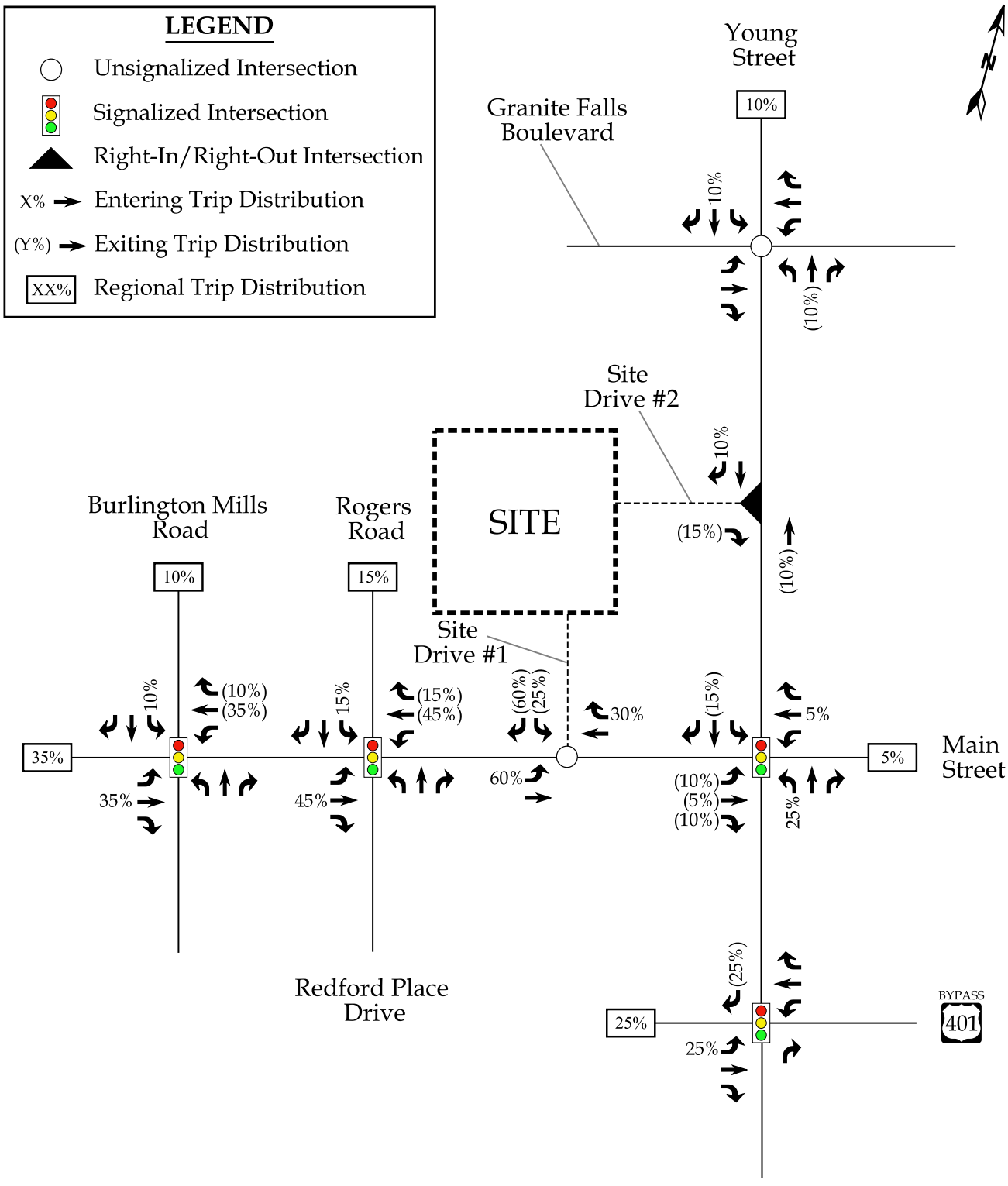
It is estimated that the retail/commercial site trips will be regionally distributed as follows:

- 15% to/from the west via Main Street
- 5% to/from the east via Main Street
- 30% to/from the north via Rogers Road
- 5% to/from the south via Redford Place Drive
- 5% to/from the north via Burlington Mills Road
- 30% to/from the north via Young Street
- 5% to/from residential areas along Young Street
- 5% to/from the west via Granite Falls Boulevard

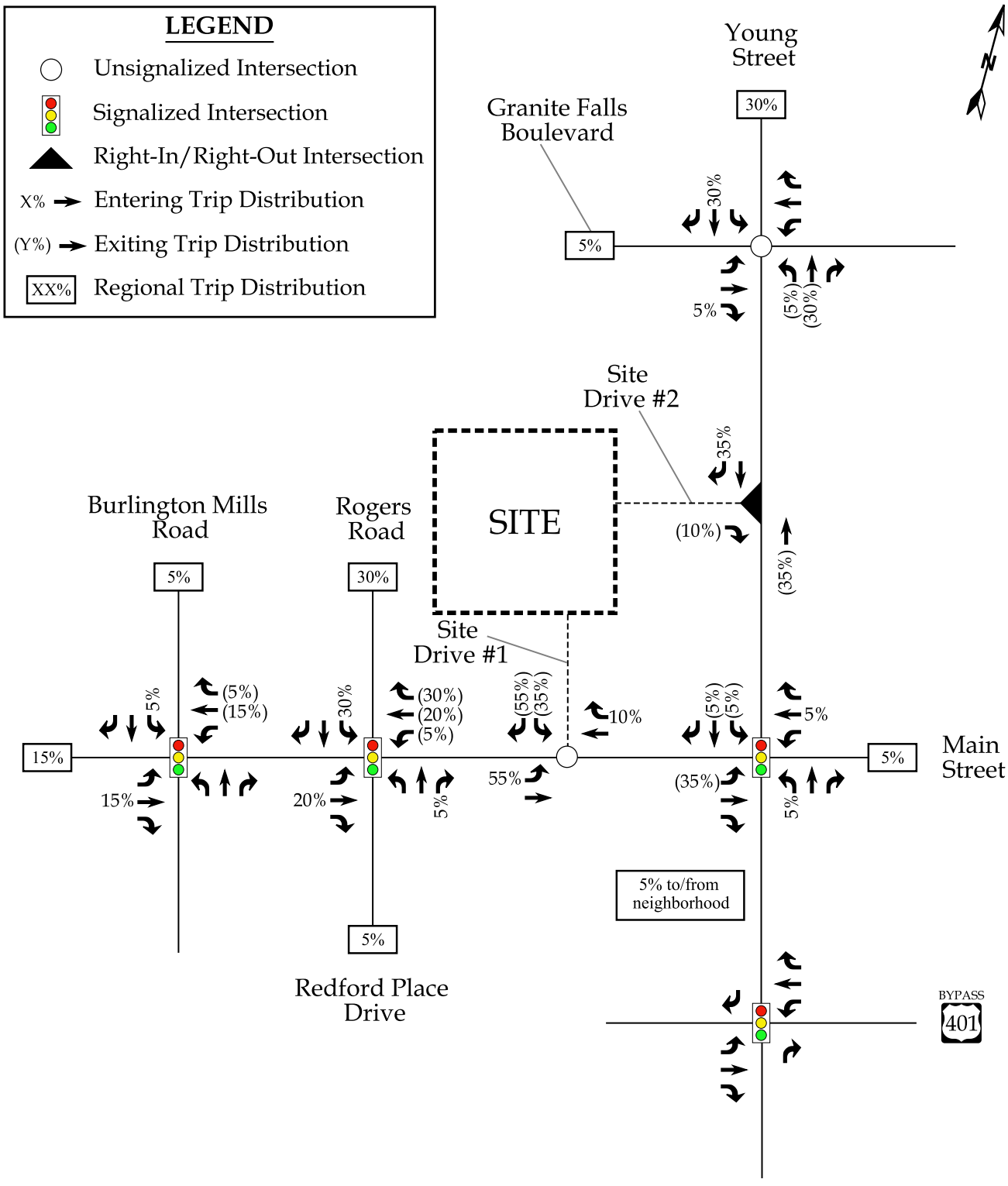
The residential site trip distribution is shown in Figure 8A, the retail/commercial site trip distribution is shown in Figure 8B. Refer to Figure 9A for the residential site trip assignment, and Figure 9B for the retail/commercial site trip assignment.

The pass-by site trips were distributed based on existing traffic patterns with consideration given to the proposed driveway access and site layout. Refer to Figure 10 for the pass-by site trip distribution. Pass-by site trips are shown in Figure 11.

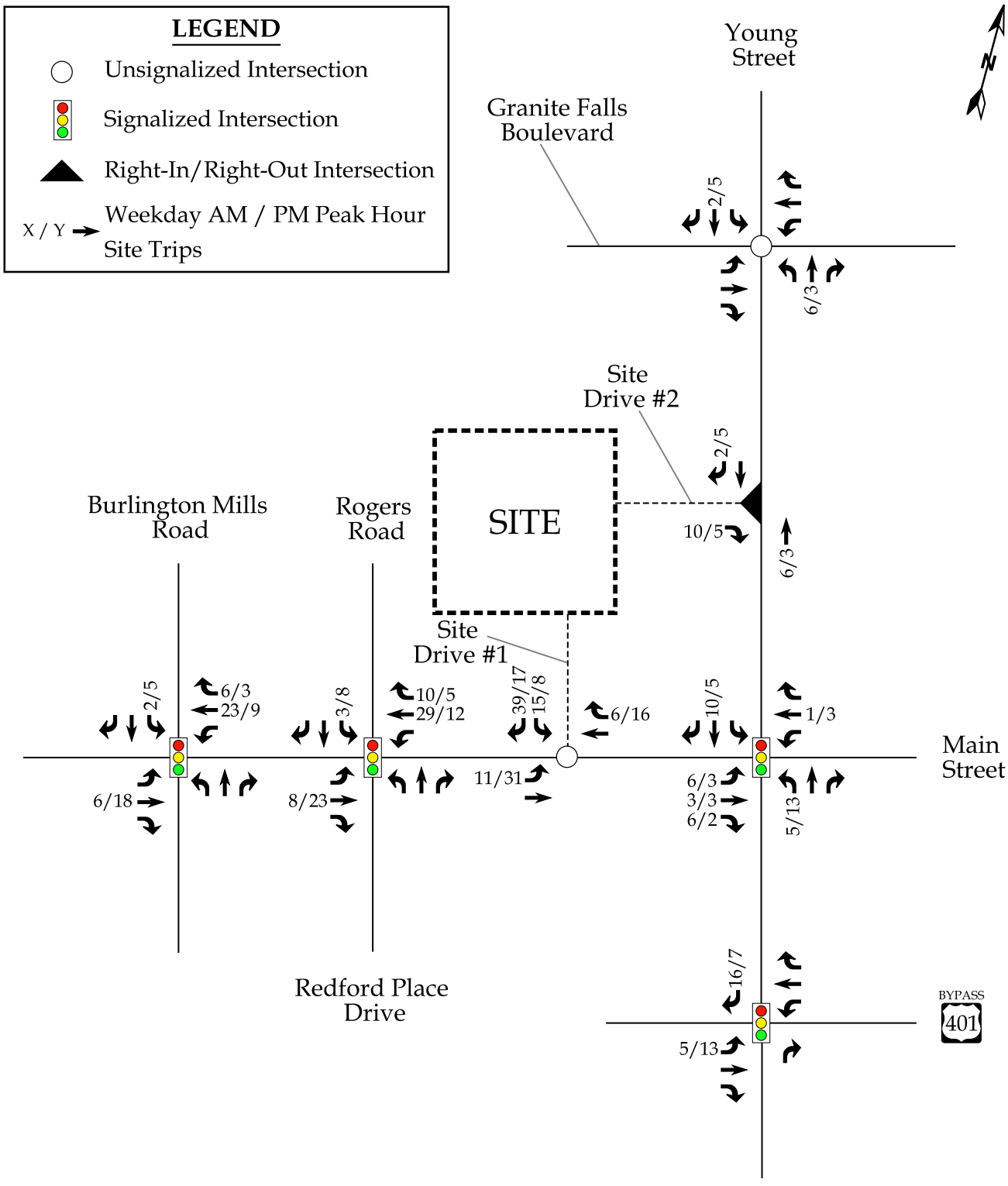
The total site trips were determined by adding the primary site trips and the pass-by site trips. Refer to Figure 12 for the total peak hour site trips at the study intersections.



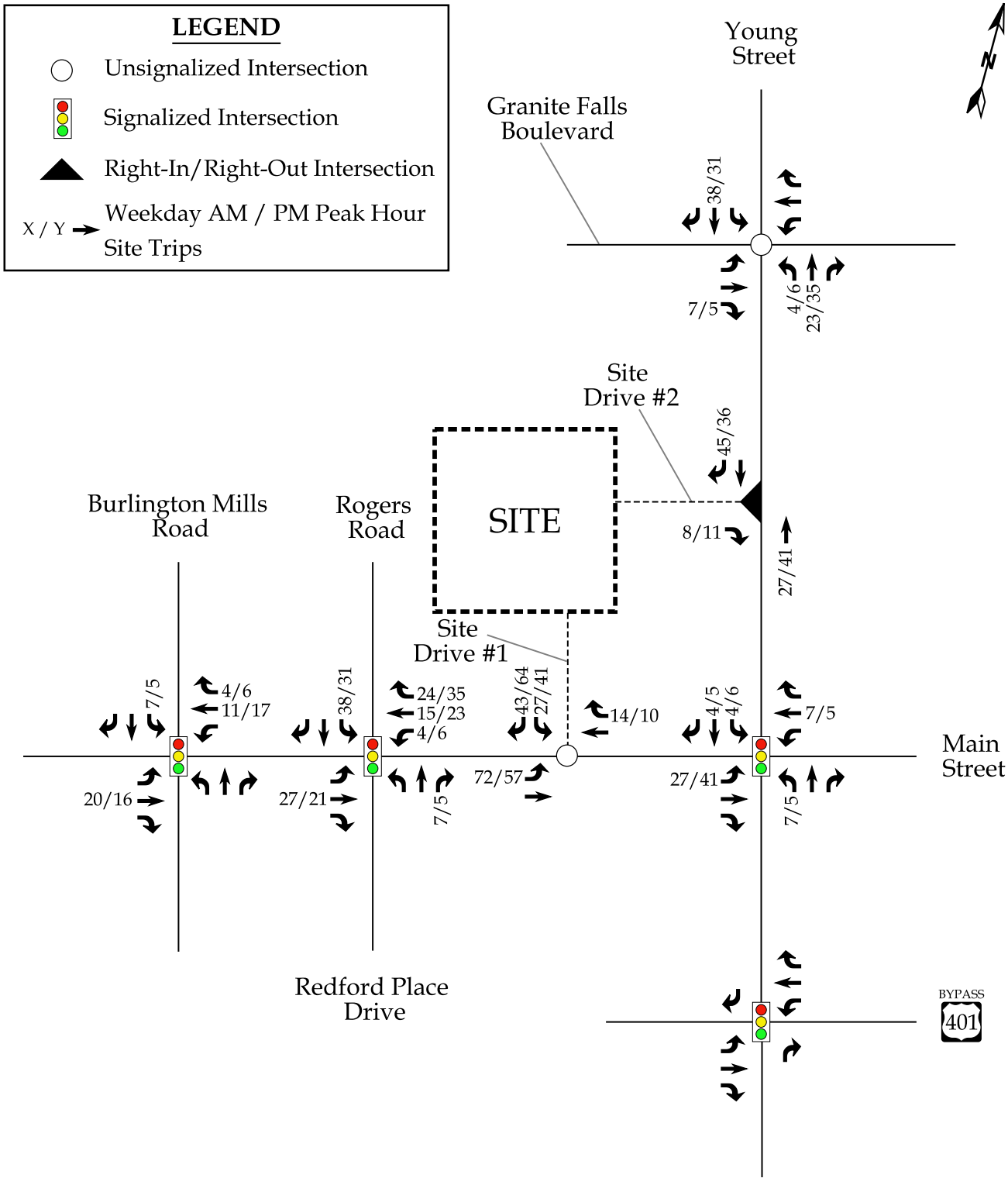
Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Residential Site Trip Distribution
		Scale: Not to Scale | Figure 8a



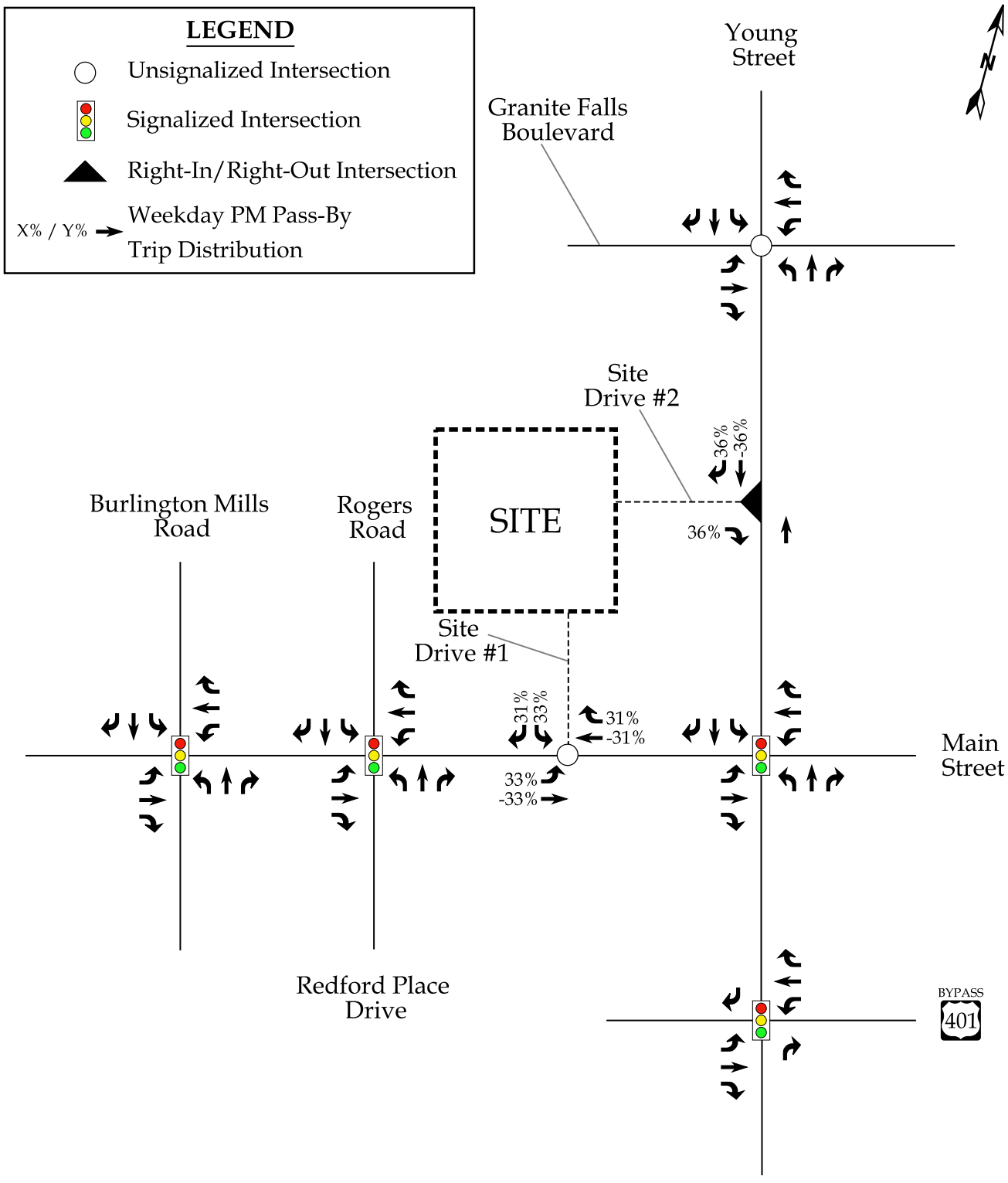
Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Retail/Commercial Site Trip Distribution Scale: Not to Scale | Figure 8b



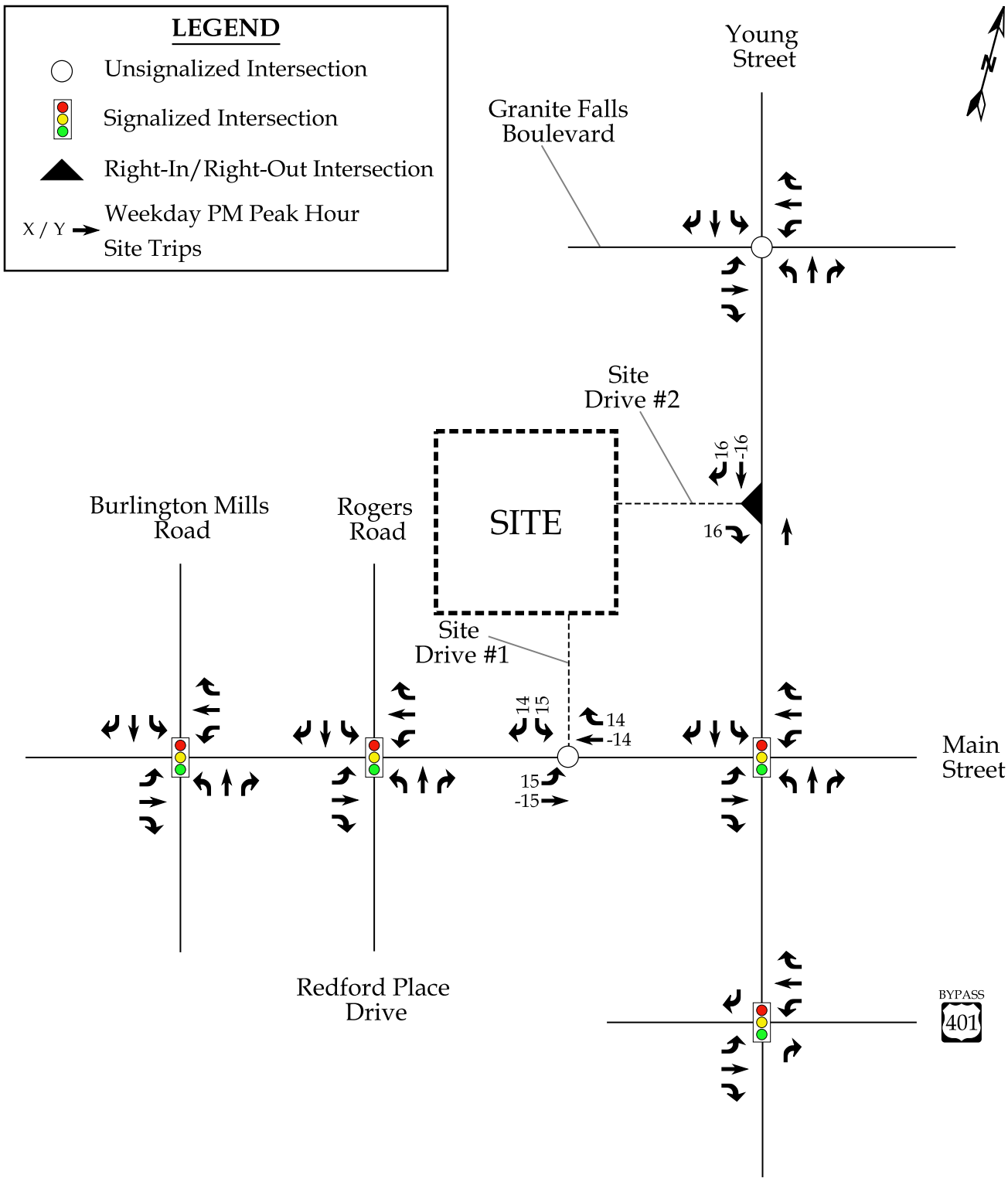
RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Residential Site Trip Assignment
		Scale: Not to Scale | Figure 9a



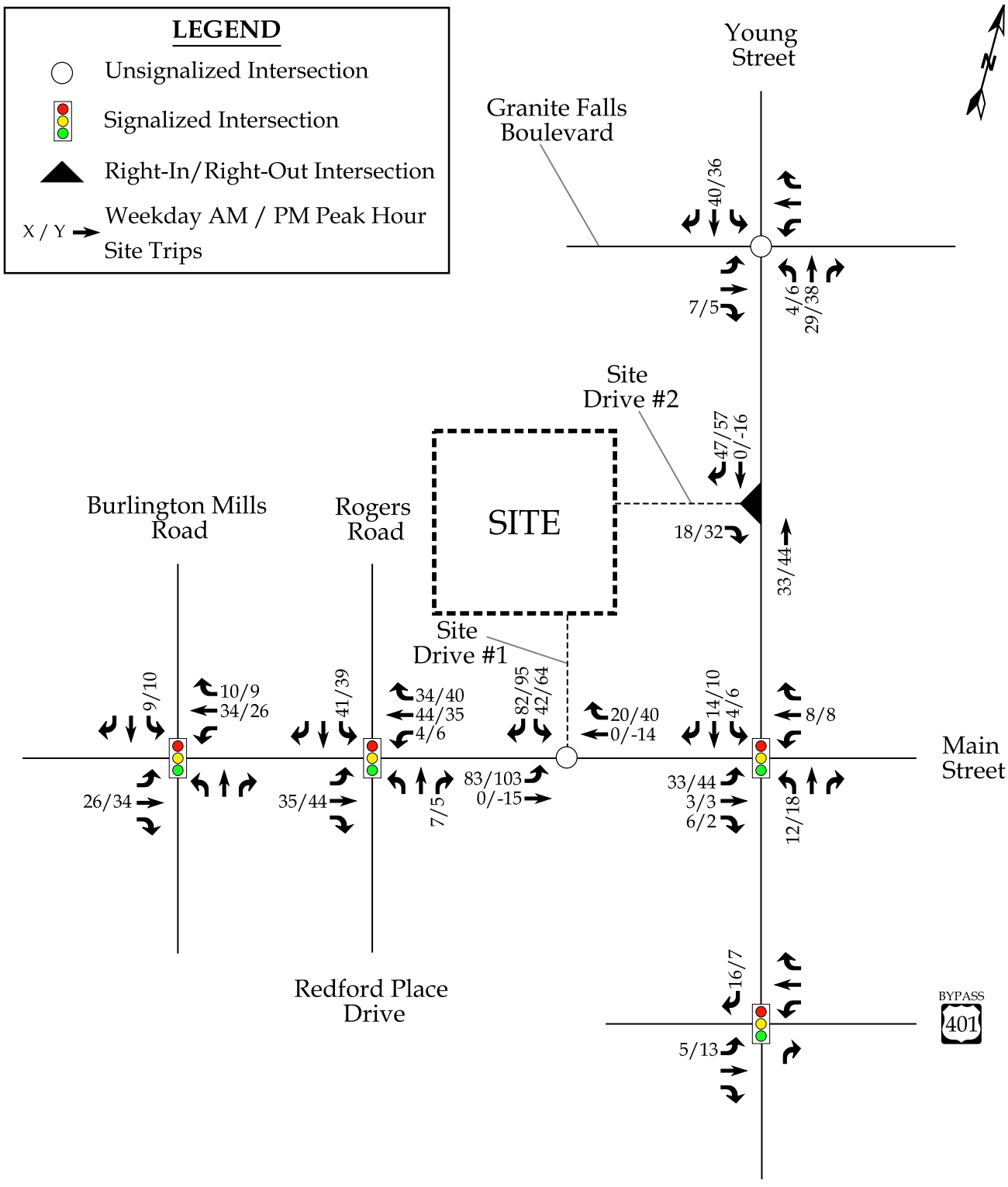
RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Retail/Commercial Site Trip Assignment Scale: Not to Scale | Figure 9b



Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Pass-By Site Trip Distribution
		Scale: Not to Scale | Figure 10



Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Pass-By Site Trip Assignment Scale: Not to Scale | Figure 11



RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Total Site Trip Assignment Scale: Not to Scale | Figure 12

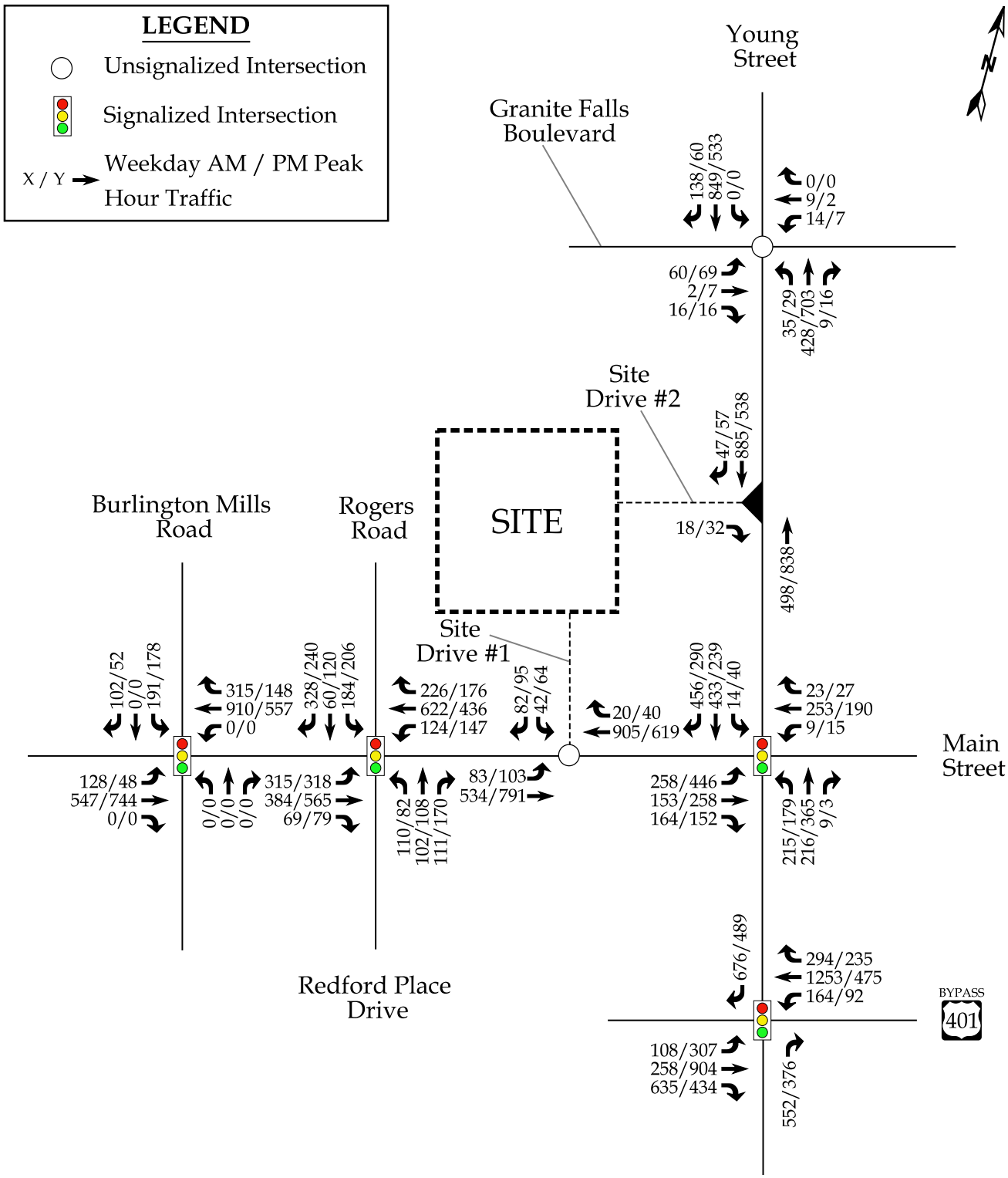
5. BUILD (2023) PEAK HOUR CONDITIONS

5.1. Build (2023) Peak Hour Traffic

To estimate traffic conditions with the site fully built-out, the total site trips were added to the no-build (2023) peak hour traffic to determine the build (2023) peak hour traffic volumes. Refer to Figure 13 for an illustration of the build (2023) weekday AM and PM peak hour traffic volumes at the study intersections with the proposed site fully developed.

5.2. Analysis of Build (2023) Peak Hour Traffic

Study intersections were analyzed with the build (2023) weekday AM and PM peak hour traffic volumes using the same methodology previously discussed for no-build traffic conditions. Intersections were analyzed with improvements necessary to accommodate future traffic volumes. The results of the capacity analysis for each intersection are presented in Section 7 of this report.



Moving forward.
RKA
RAMEY KEMP ASSOCIATES

Cobblestone Crossing
Mixed-Use
Rolesville, NC

Build (2023)
Peak Hour Traffic

Scale: Not to Scale | Figure 13

6. TRAFFIC ANALYSIS PROCEDURE

Study intersections were analyzed using the methodology outlined in the *Highway Capacity Manual* (HCM), 6th Edition published by the Transportation Research Board. Capacity and level of service are the design criteria for this traffic study. A computer software package, Synchro (Version 10.3), was used to complete the analyses for most of the study area intersections. Please note that the unsignalized capacity analysis does not provide an overall level of service for an intersection; only delay for an approach with a conflicting movement.

The HCM defines capacity as "the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions." Level of service (LOS) is a term used to represent different driving conditions, and is defined as a "qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers." Level of service varies from Level "A" representing free flow, to Level "F" where breakdown conditions are evident. Refer to Table 4 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes "initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay". An average control delay of 50 seconds at a signalized intersection results in LOS "D" operation at the intersection.

Table 4: Highway Capacity Manual – Levels-of-Service and Delay

UNSIGNALIZED INTERSECTION		SIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

6.1. Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to the NCDOT Congestions Management Guidelines.

7. CAPACITY ANALYSIS

7.1. Main Street and Young Street

The existing signalized intersection of Main Street and Young Street was analyzed under existing (2020), no-build (2023), and build (2023) traffic conditions with the lane configurations and traffic control shown in Table 5. Refer to Table 5 for a summary of the analysis results. Refer to Appendix G for the Synchro capacity analysis reports.

Table 5: Analysis Summary of Main Street and Young Street

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2020) Conditions	EB WB NB SB	1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT	B D B C	C (21)	A B D D	C (24)
No-Build (2023) Conditions w/ STIP U-6241 Lanes	EB WB NB SB	1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT-TH, 1 RT	C D D D	D (43)	D D E D	D (46)
Build (2023) Conditions w/ STIP U-6241 Lanes	EB WB NB SB	1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH-RT 1 LT-TH, 1 RT	D D D D	D (47)	D E E D	D (53)

Improvements and/or revised lane configurations associated with STIP U-6241 shown underlined.

Capacity analysis indicates that this intersection currently operates at an overall LOS C during the weekday AM and PM peak hours. Under future traffic conditions, STIP U-6241 is expected to modify the lane configurations at this intersection to provide improvements to the pedestrian and bike facilities. Signal timings along the Main Street corridor were optimized under no-build (2023) traffic conditions due to the improvements associated with STIP U-6241. These optimized signal timings were held constant under build (2023) traffic conditions to evaluate the proportional impacts the proposed site traffic is expected to have at this intersection. Under no-build (2023) and build (2023) traffic conditions, this intersection is expected to operate at an overall LOS D during the weekday AM and PM peak hours. It should be noted that the

proposed development is expected to account for less than 5% of the overall traffic at this intersection during the weekday AM and PM peak hours under build (2023) traffic conditions.

7.2. Main Street and Rogers Road / Redford Place Drive

The existing signalized intersection of Main Street and Rogers Road / Redford Place Drive was analyzed under existing (2020), no-build (2023), and build (2023) traffic conditions with the lane configurations and traffic control shown in Table 6. Refer to Table 6 for a summary of the analysis results. Refer to Appendix H for the Synchro capacity analysis reports.

Table 6: Analysis Summary of Main Street and Rogers Road / Redford Place Drive

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2020) Conditions	EB WB NB SB	1 LT, 1 TH-RT 1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT	B C D C	C (25)	C C D C	C (29)
No-Build (2023) Conditions <u>w/ STIP U-6241 Lanes</u>	EB WB NB SB	1 LT, 1 TH-RT 1 LT, <u>1 TH-RT</u> 1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT	C D F F	D (50)	B B D E	C (31)
Build (2023) Conditions <u>w/ STIP U-6241 Lanes</u>	EB WB NB SB	1 LT, 1 TH-RT 1 LT, <u>1 TH-RT</u> 1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT	D D F F	E (64)	C C D E	D (36)

<u>Improvements and/or revised lane configurations associated with STIP U-6241 shown underlined.</u>

Capacity analysis indicates that this intersection currently operates at an overall LOS C during the weekday AM and PM peak hours. Under future traffic conditions, STIP U-6241 is expected to modify the lane configurations at this intersection to provide improvements to the bike facilities. Signal timings along the Main Street corridor were optimized under no-build (2023) traffic conditions due to the improvements associated with STIP U-6241. These optimized signal timings were held constant under build (2023) traffic conditions to evaluate the proportional impacts the proposed site traffic is expected to have at this intersection. Under no-build (2023) traffic conditions, this intersection is expected to operate at an overall LOS D during the weekday AM peak hour and an overall LOS C during the weekday PM peak hour.

Under build (2023) traffic conditions, this intersection is expected to operate at an overall LOS E and LOS D during the weekday AM and PM peak hours, respectively.

The exclusive westbound right-turn lane at this intersection is expected to be removed as a result of the modified lane configurations associated with STIP U-6241 improvements to provide exclusive bikes lanes in both directions on Main Street. Based on coordination with NCDOT and Town staff, Old Rogers Road could provide an alternative route for westbound right-turning traffic at this intersection if the unpaved portion near Rogers Road is brought up to current roadway design standards and under ownership of the Town. This alternative route could be utilized by westbound traffic on Main Street to circumvent the signalized intersection of Main Street and Rogers Road / Redford Place Drive heading north on Rogers Road.

Geometric improvements and signal timing modifications were considered at this intersection; however, it should be noted that the proposed development is expected to account for less than 7% of the overall traffic at this intersection during both the weekday AM and PM peak hours under build (2023) traffic conditions. Because signal timings were optimized under no-build (2023) traffic conditions due to the improvements associated with STIP U-6241, it is unlikely that signal timing modifications under build (2023) traffic conditions would provide significant operational benefit to this intersection.

7.3. Main Street and Burlington Mills Road

The existing signalized intersection of Main Street and Burlington Mills Road was analyzed under existing (2020), no-build (2023), and build (2023) traffic conditions with the lane configurations and traffic control shown in Table 7. Refer to Table 7 for a summary of the analysis results. Refer to Appendix I for the Synchro capacity analysis reports.

Table 7: Analysis Summary of Main Street and Burlington Mills Road

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2020) Conditions	EB WB SB	2 LT, 1 TH 1 TH, 1 RT 1 LT, 1 RT	B B D	B (18)	A A D	B (16)
No-Build (2023) Conditions w/ STIP U-6241 Lanes	EB WB NB SB	2 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT	C C E F	C (31)	B B D E	C (20)
Build (2023) Conditions w/ STIP U-6241 Lanes	EB WB NB SB	2 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT 1 LT, 1 TH, 1 RT	C C E F	C (32)	B B D E	C (22)

Improvements and/or revised lane configurations associated with STIP U-6241 shown underlined.

Capacity analysis indicates that this intersection currently operates at an overall LOS B during the weekday AM and PM peak hours. Under future traffic conditions, STIP U-6241 is expected to realign Burlington Mills Road and install a traffic signal at the relocated intersection on Main Street. Signal timings along the Main Street corridor were optimized under no-build (2023) traffic conditions due to the improvements associated with STIP U-6241. These optimized signal timings were held constant under build (2023) traffic conditions to evaluate the proportional impacts the proposed site traffic is expected to have at this intersection. Under no-build (2023) and build (2023) traffic conditions, this intersection is expected to operate at an overall LOS C during the weekday AM and PM peak hours.

7.4. Young Street and US 401 Bypass

The existing signalized intersection of Young Street and US 401 Bypass was analyzed under existing (2020), no-build (2023), and build (2023) traffic conditions with the lane configurations and traffic control shown in Table 8. This intersection currently operates as a reduced conflict intersection (superstreet). Due to the nature of a superstreet and the signal design for this intersection type, this intersection operates under two (2) separate signal controllers resulting in capacity analysis results being reported as two (2) separate signalized intersections. Additionally, there are constraints when modelling this intersection in Synchro resulting in certain movements being labelled differently. For example, the eastbound left-turn movement at this intersection is represented as the northbound through movement due to Synchro constraints. Refer to Table 8 for a summary of the analysis results. Refer to Appendix J for the Synchro capacity analysis reports.

Table 8: Analysis Summary of Young Street and US 401 Bypass

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2020) Conditions	WB NB* SB	2 TH, 1 RT 1 TH 2 RT	B B C	B (14)	A B B	A (8)
	EB NB SB**	2 TH, 1 RT 2 RT 1 TH	A B A	A (7)	A B B	A (9)
No-Build (2023) Conditions	WB NB* SB	2 TH, 1 RT 1 TH 2 RT	B B C	B (18)	A B B	A (10)
	EB NB SB**	2 TH, 1 RT 2 RT 1 TH	A B A	A (7)	A B B	A (10)
Build (2023) Conditions	WB NB* SB	2 TH, 1 RT 1 TH 2 RT	B B C	B (19)	A B B	A (10)
	EB NB SB**	2 TH, 1 RT 2 RT 1 TH	A B A	A (7)	A B B	A (10)

* Synchro analyzed the EB left-turns as NB through movements due to the nature of the superstreet and synchro limitations.
** Synchro analyzed the WB left-turns as SB through movements due to the nature of the superstreet and synchro limitations.

Capacity analysis indicates that this intersection currently operates at an overall LOS B or better during the weekday AM and PM peak hours. Under no-build (2023) and build (2023) traffic conditions, this intersection is expected to continue operating at an overall LOS B or better during the weekday AM and PM peak hours. It should be noted that all intersection approaches are expected to operate at LOS C or better during the weekday AM and PM peak hours under all analysis scenarios. Additionally, all left-turn movements were coded with protected only phasing to provide for a conservative analysis.

7.5. Young Street and Granite Falls Boulevard

The existing unsignalized intersection of Young Street and Granite Falls Boulevard was analyzed under existing (2020), no-build (2023), and build (2023) traffic conditions with the lane configurations and traffic control shown in Table 9. Refer to Table 9 for a summary of the analysis results. Refer to Appendix K for the Synchro capacity analysis reports.

Table 9: Analysis Summary of Young Street and Granite Falls Boulevard

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Existing (2020) Conditions	EB WB NB SB	1 LT, 1 TH-RT 1 LT-TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH-RT	D[2] C[2] A[1] A[1]	N/A	C[2] C[2] A[1] A[1]	N/A
No-Build (2023) Conditions	EB WB NB SB	1 LT, 1 TH-RT 1 LT-TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH-RT	F[2] F[2] B[1] A[1]	N/A	F[2] D[2] A[1] A[1]	N/A
Build (2023) Conditions	EB WB NB SB	1 LT, 1 TH-RT 1 LT-TH-RT 1 LT, 1 TH-RT 1 LT, 1 TH-RT	F[2] F[2] B[1] A[1]	N/A	F[2] E[2] A[1] A[1]	N/A

1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis indicates that the major street left-turn movements currently operate at LOS A and the minor street approaches currently operate at LOS D or better during the weekday AM and PM peak hours. Under no-build (2023) and build (2023) traffic conditions, the major street left-turn movements are expected to operate at LOS B or better during the weekday AM and PM peak hours. The minor street approaches are expected to operate at LOS E or LOS F under no-build (2023) and build (2023) conditions during the weekday AM and PM peak hours, with the exception of the westbound approach which is expected to operate at LOS D during the weekday PM peak hour under no-build (2023) conditions. These levels of service are not uncommon for stop-controlled minor street approaches with heavy mainline traffic volumes.

Due to the poor level of service expected for the minor street approaches, a traffic signal was considered at this intersection under no-build (2023) and build (2023) traffic conditions to achieve acceptable levels-of-service. The peak hour signal warrant from the *Manual on Uniform Traffic Control Devices* (MUTCD) was considered; however, this intersection does not meet the peak hour warrants for either peak hour under no-build (2023) or build (2023) traffic conditions. It is not expected that this intersection would satisfy the MUTCD 8-hour and 4-hour warrants, which NCDOT favors for installation of a traffic signal. These longer period warrants are not typically met for residential and school areas due to the distinct peak traffic period for these types of development. For these reasons, signalization is not recommended at this intersection.

7.6. Main Street and Site Drive 1

The proposed unsignalized intersection of Main Street and Site Drive 1 was analyzed under build (2023) traffic conditions with the lane configurations and traffic control shown in Table 10. Refer to Table 10 for a summary of the analysis results. Refer to Appendix L for the Synchro capacity analysis reports.

Table 10: Analysis Summary of Main Street and Site Drive 1

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Build (2023) Conditions	EB WB **SB**	**1 LT**, 1 TH 1 TH-**RT** **1 LT, 1 RT**	B[1] -- F[2]	N/A	A[1] -- F[2]	N/A

Improvements and/or revised lane configurations shown in **BOLD.**
1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis indicates that the eastbound major street left-turn movement at this intersection is expected to operate at LOS B or better during the weekday AM and PM peak hours under build (2023) traffic conditions. The southbound minor street approach is expected to operate at LOS F during the weekday AM and PM peak hours under build (2023) traffic conditions. These levels of service are not uncommon for a stop-controlled minor street approach with heavy mainline traffic volumes.

Due to the poor level of service expected for the minor street approach, a traffic signal was considered at this intersection under build (2023) traffic conditions to achieve acceptable levels-of-service. The peak hour signal warrant from the *Manual on Uniform Traffic Control Devices* (MUTCD) was considered and this intersection meets the peak hour warrants for both the weekday AM and PM peak hours under build (2023) traffic conditions. It is not expected that this intersection would satisfy the MUTCD 8-hour and 4-hour warrants, which NCDOT favors for installation of a traffic signal. These longer period warrants are not typically met for residential and school areas due to the distinct peak traffic period for these types of

development. Additionally, this intersection is located approximately 600 feet west of the existing signalized intersection of Main Street and Young Street, which is less than NCDOT's desirable spacing between signalized intersections (1,000 to 1,200 feet). For these reasons, signalization is not recommended at this intersection.

Right and left-turn lanes were considered based on the NCDOT *Policy on Street and Driveway Access to North Carolina Highways* and a left-turn lane is recommended at the eastbound approach.

7.7. Young Street and Site Drive 2

The proposed right-in/right-out (RIRO) intersection of Young Street and Site Drive 2 was analyzed under build (2023) traffic conditions with the lane configurations and traffic control shown in Table 11. Refer to Table 11 for a summary of the analysis results. Refer to Appendix M for the Synchro capacity analysis reports.

Table 11: Analysis Summary of Young Street and Site Drive 2

ANALYSIS SCENARIO	APPROACH	LANE CONFIGURATIONS	WEEKDAY AM PEAK HOUR LEVEL OF SERVICE		WEEKDAY PM PEAK HOUR LEVEL OF SERVICE	
			Approach	Overall (seconds)	Approach	Overall (seconds)
Build (2023) Conditions	**EB** NB SB	**1 RT** 1 TH 1 TH, 1 TH-**RT**	B[2] -- --	N/A	B[2] -- --	N/A

Improvements and/or revised lane configurations shown in **BOLD.**
1. Level of service for major-street left-turn movement.
2. Level of service for minor-street approach.

Capacity analysis indicates that the minor street approach is expected to operate at LOS B during the weekday AM and PM peak hours under build (2023) traffic conditions.

A right turn-lane was considered based on the NCDOT *Policy on Street and Driveway Access to North Carolina Highways*. Site Drive 2 is expected to tie-in to Young Street within the storage for the proposed southbound (Young Street) right-turn lane at the intersection of Main Street and Young Street; therefore, no additional turn lanes on Young Street are recommended.

8. CONCLUSIONS

This Traffic Impact Analysis was conducted to determine the potential traffic impacts of the proposed Cobblestone Crossing Mixed-Use development, located in the northwest quadrant of the intersection of Young Street and Main Street in Rolesville, North Carolina. The proposed development, anticipated to be completed in 2023, is expected to of 180 apartment units, 18,200 sq. ft. of municipal flex space, and 50,000 sq. ft. of retail space. Site access is proposed via one (1) full movement site driveway on Main Street and one (1) right-in/right-out site driveway on Young Street.

The scope of work for this study was developed based on coordination with the North Carolina Department of Transportation (NCDOT) and the Town of Rolesville (Town). A copy of the approved scoping documentation has been provided in Appendix A.

Existing Peak Hour Traffic

Due to the COVID-19 pandemic, previously conducted turning movement counts were utilized, where available, to determine existing (2020) peak hour traffic volumes. Additionally, peak hour turning movement counts conducted by Quality Counts, LLC in December 2020 at the remaining study intersection where no historic count data was available. A NCDOT and Town approved adjustment factor was applied at the study intersections where turning movement counts were collected during the effects of the COVID-19 pandemic. Refer to Section 2.1 for a more detailed explanation of how existing (2020) peak hour traffic volumes were determined.

Trip Generation

It is estimated that the proposed development will generate approximately 5,610 total site trips on the roadway network during a typical 24-hour weekday period. Of the daily traffic volume, it is anticipated that 292 primary trips (150 entering and 142 exiting) will occur during the weekday AM peak hour and 301 primary trips (155 entering and 146 exiting) will occur during the weekday PM peak hour.

Adjustments to Analysis Guidelines

Capacity analysis at all study intersections was completed according to NCDOT Congestion Management Guidelines. Refer to Section 6.1 of this report for a detailed description of any adjustments to these guidelines made throughout the analysis.

Intersection Capacity Analysis Summary

The roadway improvements associated with NCDOT STIP U-6241 (Main Street Improvements) were considered in the analysis of future traffic conditions based on coordination with the Town and NCDOT. STIP U-6241 is expected to realign Burlington Mills Road and install a traffic signal at the relocated intersection on Main Street. STIP U-6241 is also expected to provide improvements to the pedestrian and bike facilities along Main Street and add a concrete median island along Main Street west of Rogers Road. The Town's goal and long-term vision for the intersection of Main Street and Young Street, is to be a town center, safe for pedestrians and bicyclists. As a result, exclusive turn lanes at the intersection of Main Street & Young Street are expected to be removed to provide improved pedestrian facilities (sidewalk, signalized push-button pedestals, shortened pedestrian crossing lengths for all legs of this intersection, etc.) to make this a walkable, pedestrian friendly area. Modified lane configurations and signal phasing were considered at the intersection of Main Street and Young Street to provide acceptable traffic operations while maintaining the long-term vision of this intersection. It should be noted that signal timings along the Main Street corridor were optimized under no-build (2023) traffic conditions due to the improvements associated with STIP U-6241. These optimized signal timings were held constant under build (2023) traffic conditions to evaluate the proportional impacts the proposed site traffic is expected to have at this intersection.

All the study area intersections (including the proposed site driveways) are expected to operate at acceptable levels-of-service under existing and future year conditions with the exception of the intersections listed below. A summary of the study area intersections that are expected to need improvements are as follows:

Main Street and Rogers Road / Redford Place Drive

Under build (2023) traffic conditions, this intersection is expected to operate at an overall LOS E and LOS D during the weekday AM and PM peak hours, respectively. The exclusive westbound right-turn lane at this intersection is expected to be removed as a result of the modified lane configurations associated with STIP U-6241 improvements to provide exclusive bikes lanes in both directions on Main Street. Based on coordination with NCDOT and Town staff, Old Rogers Road could provide an alternative route for westbound right-turning traffic at this intersection if the unpaved portion near Rogers Road is brought up to current roadway design standards and under ownership of the Town. This alternative route could be utilized by westbound traffic on Main Street to circumvent the signalized intersection of Main Street and Rogers Road / Redford Place Drive heading north on Rogers Road.

Geometric improvements and signal timing modifications were considered at this intersection; however, it should be noted that the proposed development is expected to account for less than 7% of the overall traffic at this intersection during both the weekday AM and PM peak hours under build (2023) traffic conditions. Because signal timings were optimized under no-build (2023) traffic conditions due to the improvements associated with STIP U-6241, it is unlikely that signal timing modifications under build (2023) traffic conditions would provide significant operational benefit to this intersection.

Young Street and Granite Falls Boulevard

Under no-build (2023) and build (2023) conditions, the minor street approaches are expected to operate at LOS E or LOS F during the weekday AM and PM peak hours. These levels of service are not uncommon for stop-controlled minor street approaches with heavy mainline traffic volumes.

Due to the poor level of service expected for the minor street approaches, a traffic signal was considered at this intersection under no-build (2023) and build (2023) traffic conditions to achieve acceptable levels-of-service. The peak hour signal warrant from the *Manual on Uniform Traffic Control Devices* (MUTCD) was considered; however, this intersection does not meet the peak hour warrants for either peak hour under no-build (2023) or build (2023) traffic conditions.

It is not expected that this intersection would satisfy the MUTCD 8-hour and 4-hour warrants, which NCDOT favors for installation of a traffic signal. These longer period warrants are not typically met for residential and school areas due to the distinct peak traffic period for these types of development. For these reasons, signalization is not recommended at this intersection.

Main Street and Site Drive 1

The southbound minor street approach is expected to operate at LOS F during the weekday AM and PM peak hours under build (2023) traffic conditions. These levels of service are not uncommon for a stop-controlled minor street approach with heavy mainline traffic volumes.

Due to the poor level of service expected for the minor street approach, a traffic signal was considered at this intersection under build (2023) traffic conditions to achieve acceptable levels-of-service. The peak hour signal warrant from the *Manual on Uniform Traffic Control Devices* (MUTCD) was considered and this intersection meets the peak hour warrants for both the weekday AM and PM peak hours under build (2023) traffic conditions. It is not expected that this intersection would satisfy the MUTCD 8-hour and 4-hour warrants, which NCDOT favors for installation of a traffic signal. These longer period warrants are not typically met for residential and school areas due to the distinct peak traffic period for these types of development. Additionally, this intersection is located approximately 600 feet west of the existing signalized intersection of Main Street and Young Street, which is less than NCDOT's desirable spacing between signalized intersections (1,000 to 1,200 feet). For these reasons, signalization is not recommended at this intersection.

Right and left-turn lanes were considered based on the NCDOT *Policy on Street and Driveway Access to North Carolina Highways* and a left-turn lane is recommended at the eastbound approach.

9. RECOMMENDATIONS

Based on the findings of this study, specific geometric improvements have been identified and are recommended to accommodate future traffic conditions. See a more detailed description of the recommended improvements below. Refer to Figure 14 for an illustration of the recommended lane configuration for the proposed development.

Improvements by STIP U-6241

STIP U-6241 is expected to realign Burlington Mills Road and install a traffic signal at the relocated intersection on Main Street. STIP U-6241 is also expected to provide improvements to the pedestrian and bike facilities along Main Street and add a concrete median island along Main Street west of Rogers Road. These improvements associated with STIP U-6241 will alter the existing lane configurations at the study intersections along Main Street.

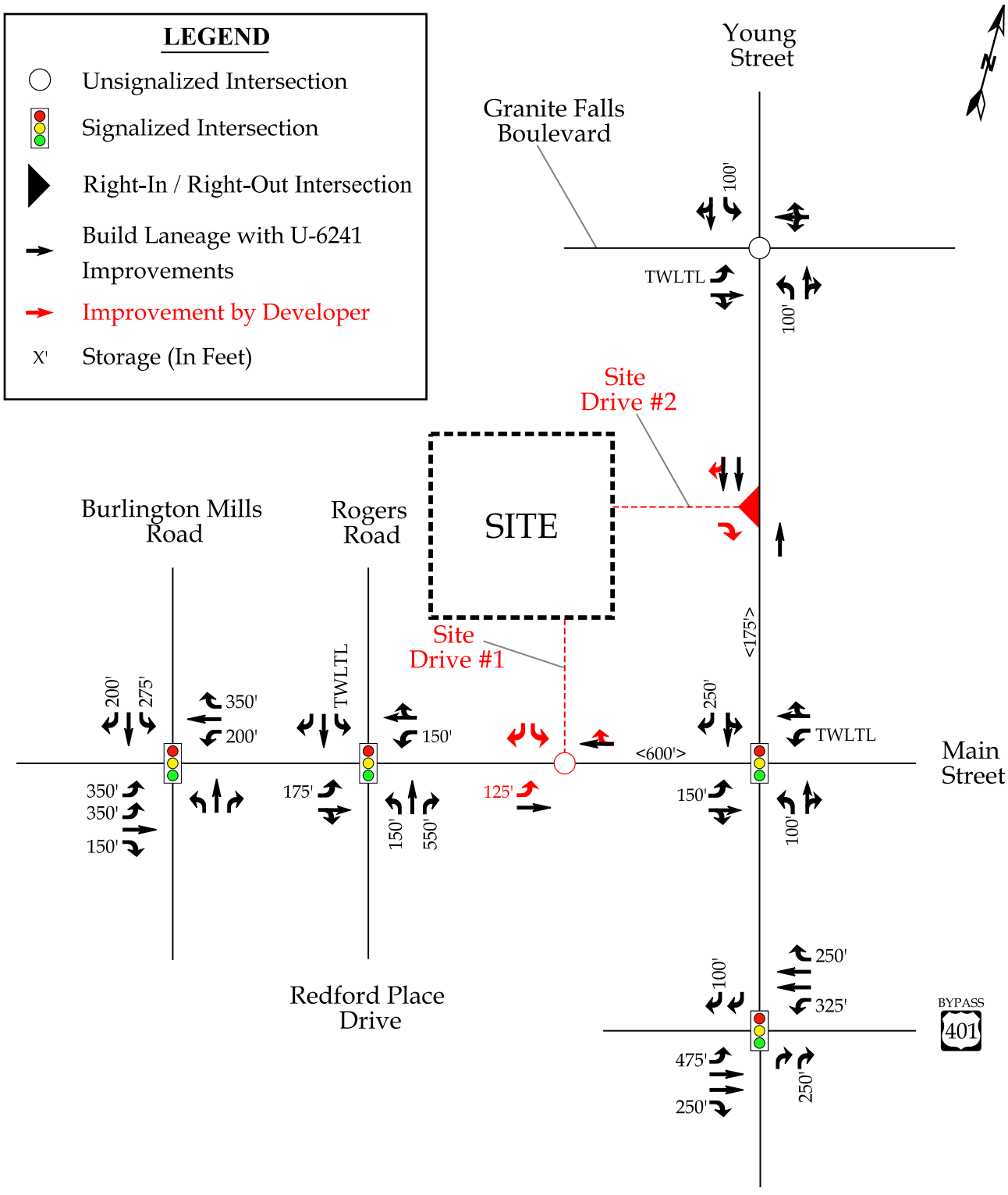
Recommended Improvements by Developer

Main Street and Site Drive 1

- Construct the southbound approach with one ingress and two egress lanes.
- Provide stop control for the southbound approach.
- Install an eastbound left-turn lane with at least 125 feet of storage and appropriate decel and taper.

Young Street and Site Drive 2

- Construct the eastbound approach with one ingress and egress lane.
- Provide stop control for the eastbound approach.



Moving forward. RKA RAMEY KEMP ASSOCIATES	Cobblestone Crossing Mixed-Use Rolesville, NC	Recommended Lane Configurations Scale: Not to Scale | Figure 14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

April 13, 2021

Cobblestone Crossing Mixed-Use

Traffic Impact Analysis Review Report

Congestion Management Section

TIA Project: SC-2021-074
Division: 5
County: Wake

Doumit Y. Ishak, Regional Engineer
Clarence B. Bunting, IV, P.E. Project Engineer
Braden M. Walker, P.E. Project Design Engineer

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
TRANSPORTATION MOBILITY & SAFETY DIVISION
1561 MAIL SERVICE CENTER
RALEIGH, NC 27699-1561

Telephone: (919) 814-5000
Fax: (919) 771-2745
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
750 N. GREENFIELD PARKWAY
GARNER, NC 27529

Cobblestone Crossing Mixed-Use

SC-2021-074	Rolesville	Wake County

Per your request, the Congestion Management Section (CMS) of the Transportation Mobility and Safety Division has completed a review of the subject site. The comments and recommendations contained in this review are based on data for background conditions presented in the Traffic Impact Analysis (TIA) and are subject to the approval of the local District Engineer's Office and appropriate local authorities.

Date Initially Received by CMS	03/15/21	Date of Site Plan	N/A
Date of Complete Information	03/15/21	Date of Sealed TIA	03/15/21

Proposed Development

The TIA assumes the development is to be completed by 2023 and consist of the following:

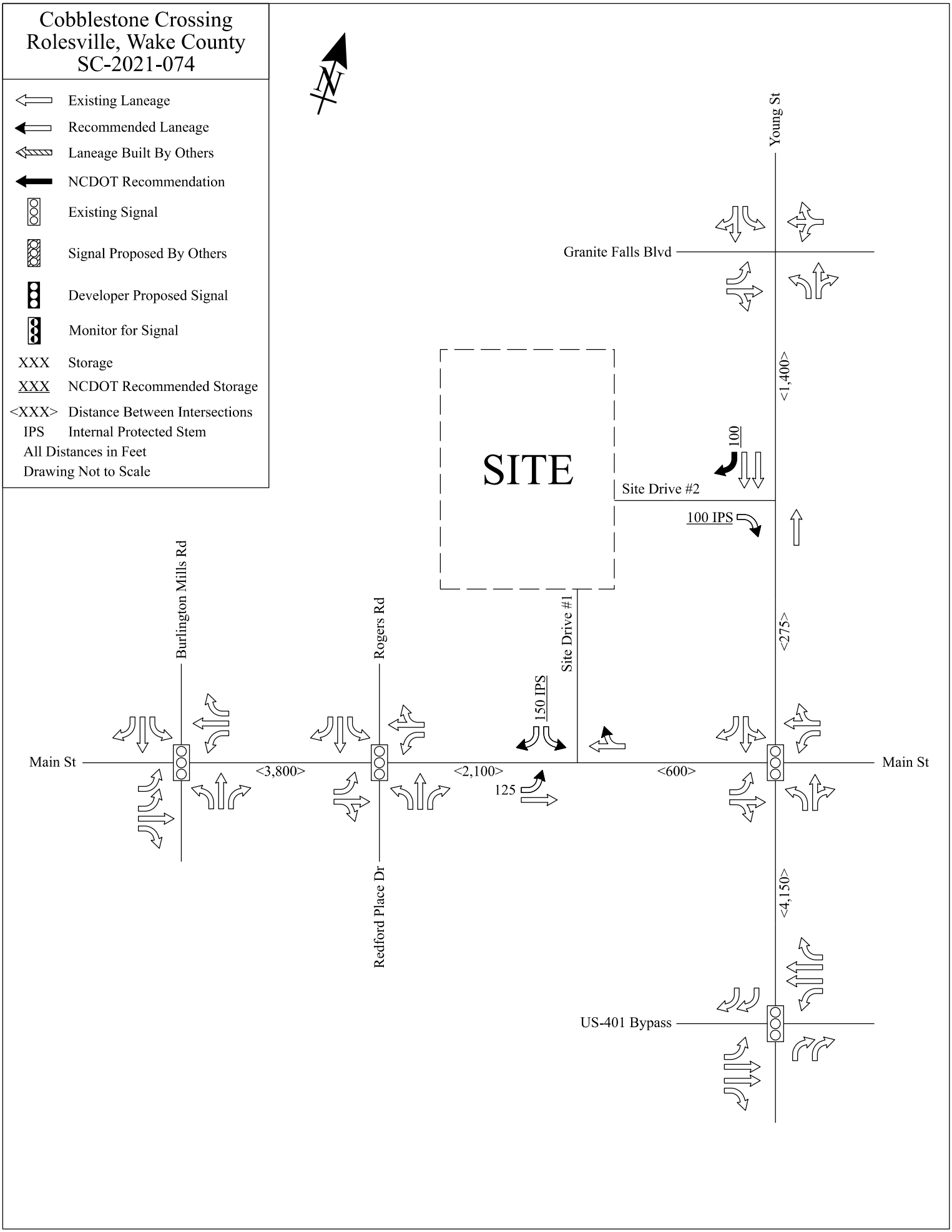
Land Use	Land Use Code	Size
Multi-Family Housing (Low-Rise)	220	180 d.u.
Municipal Flex Space	495	18,200 sq.ft.
Shopping Center	820	50,000 sq.ft.

Trip Generation - Unadjusted Volumes During a Typical Weekday			
	IN	**OUT**	**TOTAL**
AM Peak Hour	150	142	292
PM Peak Hour	239	228	467
Daily Trips			5,610

General Reference

For reference to various documents applicable to this review please reference the following link: *http://www.ncdot.org/doh/preconstruct/traffic/teppl/Topics/C-37/C-37.html*

Once the driveway permit has been approved and issued, a copy of the final driveway permit requirements should be forwarded to this office. If we can provide further assistance, please contact the Congestion Management Section.


Cobblestone Crossing
Rolesville, Wake County
SC-2021-074
Existing Laneage
Recommended Laneage
Laneage Built By Others
NCDOT Recommendation
Existing Signal
Signal Proposed By Others
Developer Proposed Signal
Monitor for Signal
XXX Storage
XXX NCDOT Recommended Storage
<XXX> Distance Between Intersections
IPS Internal Protected Stem
All Distances in Feet
Drawing Not to Scale
N
Young St
Granite Falls Blvd
<1,400>
SITE
100
Site Drive #2
100 IPS
Burlington Mills Rd
Rogers Rd
Site Drive #1
150 IPS
<275>
Main St
<3,800>
<2,100>
<600>
125
Main St
Redford Place Dr
<4,150>
US-401 Bypass

BASS, NIXON & KENNEDY, INC., CONSULTING ENGINEERS
6310 CHAPEL HILL ROAD, SUITE 250, RALEIGH, NC 27607
919/851-4422 ■ FAX 919/851-8968 www.BNKinc.com

COBBLESTONE VILLAGE
ROLESVILLE, NORTH CAROLINA

SHARED PARKING ANALYSIS

6/29/21

PREPARED BY
MARTY D. BIZZELL, PE, CPESC
BASS, NIXON & KENNEDY, INC.
CONSULTING ENGINEERS
MAY 2021
REVISED JUNE 2021

BASS, NIXON & KENNEDY, INC., CONSULTING NGINEERS
6310 Chapel Hill Road, Ste. 250, Raleigh, NC 27607
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Cobblestone Village Mixed-Use Development

Shared Parking Analysis

The proposed Cobblestone Village Mixed Use Development is to be located in Rolesville, NC at the intersection of S. Main Street and W. Young Street. A number of uses including residential apartments, restaurants, retail and community center are proposed for the mixed-use development. The mixed-use development proposes to include 180 residential apartments, 18,200 square feet of community center use and 49,830 square feet of retail/restaurant space.

A shared parking study has been performed to determine the parking demand for the development. A number of items were considered when determining the parking demand for the development including land use and hours of operation.

The parking requirements were taken from the Town of Rolesville's Town Center ordinance. The ordinance breaks parking requirements into two land uses, mixed-use residential and mixed-use nonresidential. The mixed-use residential requires two parking spaces per dwelling unit. The mixed-use nonresidential requires three spaces for each 1,000 square feet of gross floor area.

Based upon 180 mixed-use residential units and 49,830 square feet of mixed-use nonresidential mixed-use space, the parking requirement are as follows:

180 mixed use residential units x 2 spaces per unit = 360 spaces

49,830 sf mixed-use nonresidential @ 3 spaces per 1,000 sf = 150 spaces

18,200 sf mixed-use nonresidential (Comm. Center) @ 3 spaces per 1,000 sf = 55 spaces

Total Single-Use Parking Requirement = 565 spaces

Once the parking requirement was established, a shared parking analysis was performed. Shared Parking is defined as *the concept of parking which recognizes that uses in proximity to one another may have parking demands which permit such uses to share the same marginal parking spaces provided to accommodate peak parking conditions in a common parking facility.*

An optimized parking analysis was performed using parking demand and parking distribution data from the Institute of Transportation Engineers "Parking Generation Manual" 5th Edition. Parking distribution data expressed in percent of peak parking demand given hourly was

performed for each use. This analysis was performed for weekday and on Saturday. A peak hour parking demand was determined from each of the analysis.

Conclusion

The shared parking analysis shows that during weekdays, the peak parking demand for the development occurs at 7:00 p.m. with a total parking demand of 437 parking spaces needed. The Saturday analysis also shows that the peak parking demand occurred at 10:00 a.m. with a parking demand of 457 parking spaces.

The site plan proposes a total of 457 on-site spaces and 24 on-street parking spaces for a total of 481 parking spaces proposed. Therefore, based on the results of the shared parking analysis performed for Cobblestone Village, the peak hour parking demand of 457 parking spaces will be met.

For events that may be held at Cobblestone Village, it is difficult to quantify a parking demand due to a number of factors such as what the event may be, type of event, time of event, etc. The developer of Cobblestone Village is committed to working with the Town of Rolesville to identify overflow parking locations/facilities that can be utilized during an event where additional parking is needed.

Cobblestone Village Shared Parking Analysis

June 29, 2021

Total Square Footage and Unit Tabulation

	Restaurant SF	Community Center SF	Retail/Flex SF	Residential Units
Building 1	.			40
Building 2	11,523		4,938	30
Building 3	7,984		3,421	18
Building 4		18,200		
Building 5	2,671		1,145	4
Building 6	12,702		5,444	36
Building 7				40
Building 8				12
Total:	34,880	18,200	14,948	180

NON-OPTIMIZED Single-Use Parking Requirements

Parking Coefficient:	3/1,000 SF	3/1,000 SF	3/1,000 SF	2 per unit	
Parking Count:	**105**	**55.00**	**45.00**	**360**	**Total:**
				Single-Use Required:	**565**

OPTIMIZED Peak Hour Percentage Factors WEEKDAY

TIME	% of peak	demand	% of peak	demand	% of peak	demand	% of peak	demand	Total Hourly Sums
6:00 AM	10%	11	0%	0	0%	0	90%	324	335
7:00 AM	25%	27	58%	32	0%	0	77%	277	337
8:00 AM	68%	72	72%	40	15%	7	56%	202	321
9:00 AM	72%	76	95%	53	32%	15	45%	162	306
10:00 AM	77%	81	94%	52	54%	25	40%	144	302
11:00 AM	83%	88	95%	53	71%	32	37%	133	307
12:00 PM	100%	105	83%	46	99%	45	36%	130	326
1:00 PM	91%	96	65%	36	100%	45	36%	130	307
2:00 PM	56%	59	56%	31	90%	41	37%	133	265
3:00 PM	42%	45	64%	36	83%	38	43%	155	274
4:00 PM	42%	45	75%	42	81%	37	45%	162	286
5:00 PM	64%	68	84%	47	84%	38	55%	198	351
6:00 PM	87%	92	100%	55	86%	39	66%	238	424
7:00 PM	79%	83	99%	55	80%	36	73%	263	437
8:00 PM	65%	69	0%	0	63%	29	77%	277	376
9:00 PM	42%	45	0%	0	42%	19	86%	310	374
10:00 PM	21%	23	0%	0	15%	7	92%	331	362
11:00 PM	0%	0	0%	0	0%	0	97%	349	350
12:00 AM	0%	0	0%	0	0%	0	100%	360	360

WEEKDAY Peak Demand Required: **437**

OPTIMIZED Peak Hour Percentage Factors SATURDAY

TIME	% of peak	demand	% of peak	demand	% of peak	demand	% of peak	demand	Total Hourly Sums
6:00 AM	15%	16	0%	0	0%	0	98%	353	369
7:00 AM	28%	30	50%	28	0%	0	96%	346	404
8:00 AM	52%	55	75%	42	27%	13	92%	331	442
9:00 AM	75%	79	100%	55	46%	21	80%	288	443
10:00 AM	91%	96	89%	49	67%	31	78%	281	457
11:00 AM	100%	105	80%	44	85%	39	71%	256	444
12:00 PM	90%	95	68%	38	95%	43	68%	245	421
1:00 PM	80%	84	60%	33	100%	45	66%	238	400
2:00 PM	67%	71	60%	33	98%	45	65%	234	383
3:00 PM	45%	48	53%	30	92%	42	68%	245	365
4:00 PM	39%	41	52%	29	86%	39	70%	252	361
5:00 PM	40%	42	49%	27	79%	36	73%	263	368
6:00 PM	40%	42	50%	28	71%	32	77%	277	380
7:00 PM	58%	61	50%	28	69%	32	81%	292	413
8:00 PM	40%	42	0%	0	60%	27	82%	295	365
9:00 PM	35%	37	0%	0	51%	23	86%	310	370
10:00 PM	33%	35	0%	0	38%	18	87%	313	367
11:00 PM	0%	0	0%	0	0%	0	92%	331	332
12:00 AM	0%	0	0%	0	0%	0	93%	335	335

SATURDAY Peak Demand Required: **457**

Parking Provided:	
On-Site	457
On-Street	24
Total Parking Provided	**481**

Assumptions:

Parking requirements based on current Town of Rolesville Town Center District parking requirements.
Accessible Spaces: 11 Required / 25 Provided
40 Bicycle Spaces are provided.

Cobblestone Village Event Overflow Parking Narrative

Dear Members of Rolesville Planning Staff and Town Board,

An Item which has frequently been brought up as an area of concern for the impending Cobblestone Village Development Plan was posed to the team as a simple question: “What will people do for Overflow Parking during Events?” While it’s impossible to accurately judge the number of people that will attend an event orchestrated by either the Town or the Development Team, we have identified a few options for Overflow Parking which will help to provide additional parking solutions to those traveling by car to attend. Attached is a reference map which lays out the locations of these intended “Overflow Lots,” and I’ve been asked to provide a written narrative which helps to describe our intended improvement to these lots and the surrounding areas in order to best utilize the available resources.

Overflow Lot A and B, shaded in Red and Light Blue, consist of roughly 105 “dirt lot” spaces which are currently used to provide additional parking service to Main Street Park. We would like to request the ability to provide a mix of permanent and temporary “Guidance by Signage” to help make individuals aware that, during cooperative Town and Cobblestone Events, they will be able to use these parking lots in order to attend the festivities being held on and about Main and Young Street. Our intention is to provide permanent but non-invasive signage within the park itself to help direct community members along the trails to access Cobblestone Village during these events. We would also make use of temporary signage put up prior to the event, then taken down after, helping to direct traffic to these Overflow Lots. This area is about a 3-5 minutes’ walk away from the Town Center, and will do wonders in helping to provide easy access while reducing congestion at the Main and Young intersection.

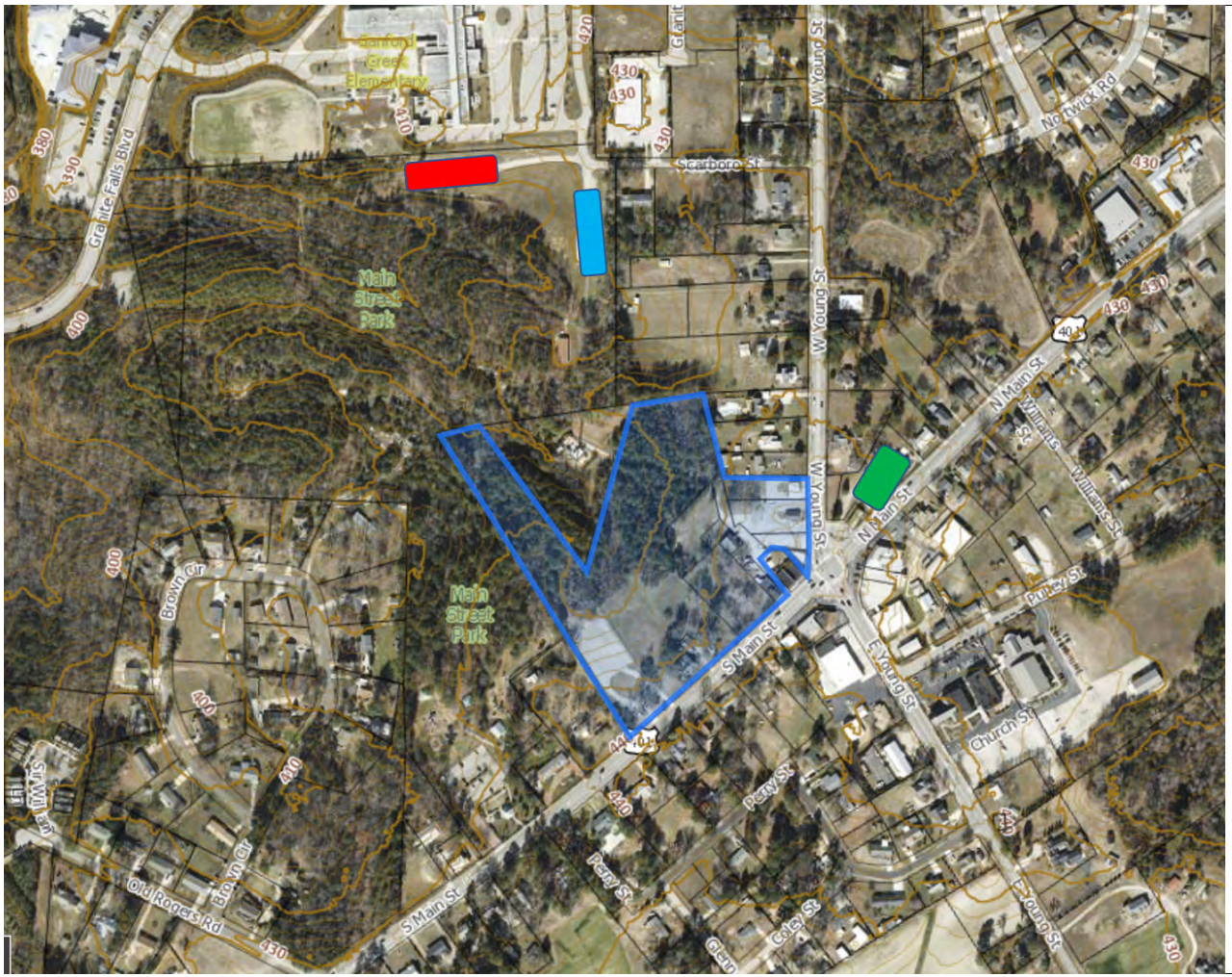
Overflow Lot C, shaded in Green, is an additional 30 space temporary, public lot that is being constructed as a part of the Main Street Redevelopment Plan. Cobblestone would like to request the ability to, at some point during construction, improve this Parking Lot to a permanent Public Overflow

Parking Area, meeting town standards. If the timeline of these two projects are not able to line up, then Cobblestone would offer to deposit $50,000 from its construction budget in to an Escrow (or otherwise) Account to cover the cost of this expenditure by the Town at a later date. Cobblestone is willing to commit to conditions stating as such in order to ensure this Public Overflow Lot is built in order to help better serve the surrounding community.

With these additional 135 spaces available, Cobblestone believes that there will be sufficient Overflow Parking during Town-Sponsored events for residents and out-of-towners alike. We do anticipate a high demand for spaces during events and festivals, but with this level of Overflow Parking, we believe that this demand will be met.

Thank you,

Kenyon Burnham
Vice President
KDM Development and Cobblestone Village



Overflow Lot A
Est. 65 Spaces

Overflow Lot B
Est. 40 Spaces

Overflow Lot C
30 Spaces
Town built as part of
Main Street Project

Total: 105 Spaces of Event Overflow Parking