DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, WILMINGTON DISTRICT
RALEIGH REGULATORY FIELD OFFICE
3331 HERITAGE TRADE DRIVE, SUITE 105
WAKE FOREST NORTH CAROLINA 27587

July 22, 2025

Regulatory Program

Sent Via Email: randy.vosburg@apexnc.org

Randy Vosburg
Town of Apex
105 B Upchurch Street
Apex, North Carolina 27502

Dear Mr. Vosburg:

In accordance with your written request of September 10, 2024, and the ensuing administrative record, enclosed is a Department of the Army permit (Action ID: SAW-2005-20159) to construct the Big Branch Force Main and Pump Station consisting of the construction of a new wastewater pump station and dual 20-inch force main that would run 26,016 feet (4.93 miles) in length and connect to the existing influent structure at the Western Wake Regional Water Reclamation Facility. Specifically, the project would result in the permanent discharge of fill material within 3,608 square feet (375 linear feet) of stream channel (930 square feet [155 linear feet] of which are considered a permanent loss of waters), and the temporary discharge of fill or dredged material within 4,697 square feet (494 linear feet) of stream channel. The project would also result in the permanent discharge of fill material within 0.019 acre of wetlands and the temporary discharge of fill or dredged material within 0.049 acre of wetlands. This permit should be made available at the construction site. The Corps must be notified of:

a. The date of commencement of the work,

b. The date of final completion.

This information should be emailed to the U.S. Army Corps of Engineers (Corps), Raleigh Regulatory Field Office, at raleighncreg@usace.army.mil. The Corps is also responsible for inspections to determine whether Permittees have strictly adhered to permit conditions. Other notable conditions:

a. You must complete construction before **December 31, 2030**.

b. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.

Should you require any changes to the work authorized or obligated by this permit, it is the responsibility of the Permittee to submit a modification request to the Corps. The Corps will evaluate the request and determine whether it is appropriate to modify the terms and conditions of the permit. The Permittee must obtain written approval of the requested modifications from the Corps prior to initiation of those changes.

If you have any questions concerning this correspondence, please contact George Lyle Phillips III, Biologist of the Raleigh Regulatory Field Office at (919) 588-9200, by mail at the above address, or by email at raleighncreg@usace.army.mil. Please take a moment to complete our customer satisfaction survey located at https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,

for Tommy Fennel
Chief, Regulatory Division
Wilmington District

Enclosures

cc: Keven Duerr, Hazen and Sawyer (via kduerr@hazenandsawyer.com)

Samantha Wooten, North Carolina Division of Water Resources (via samantha.wooten@deq.nc.gov)

Todd Bowers, U.S. Environmental Protection Agency (via vowers.todd@epa.gov)

U.S. Army Corps of Engineers (USACE)

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

For use of this form, see Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act; the proponent agency is CECW-COR.

Form Approved –
OMB No. 0710-0003
Expires 2027-10-31

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority	The authorities for requesting this information are Sections 9, 10, 13, and 14, Rivers and Harbors Act of March 3, 1899; Section 404, Clean Water Act; and Section 103 Marine Protection Research and Sanctuaries Act of 1972.
Principal Purpose	This information serves as notification to affected parties regarding the USACE administrative appeal options and process, as well as to facilitate requests for appeal of USACE decisions with which they disagree.
Routine Uses	Routine uses will include: (a) To serve as notification to affected parties of the Corps administrative appeal options and process and to facilitate requests for appeal of Corps decisions with which they disagree. (b) Records may be referred to the Department of Justice for possible criminal prosecution. (c) Records may be referred to other Federal, State, and local agencies for evaluation and enforcement purposes.
Disclosure	Disclosure of this information is voluntary on your part. However, failure of individual to provide requested information could result in inability to determine all pertinent information regarding a Department of the Army permit matter.

The Agency Disclosure Notice (ADN)

The Public reporting burden for this collection of information, 0710-0003, is estimated to average 1 hour per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PURPOSE: This form is used to facilitate the initiation of the administrative appeals process. The appeals process allows an affected party to pursue an administrative appeal of certain Corps of Engineers decisions with which they disagree.

Upon release, this form will also be available on the Corps website https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/

Applicant: Town of Apex, Attn: Randy Vosburg	File Number: SAW-2005-20159	Date: 7/22/2025

Documents Attached (*select all that apply*):		Form Reference Section:
☐	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
☒	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐	PERMIT DENIAL WITHOUT PREJUDICE	C
☐	PERMIT DENIAL WITH PREJUDICE	D
☐	APPROVED JURISDICTIONAL DETERMINATION	E
☐	PRELIMINARY JURISDICTIONAL DETERMINATION	F

SECTION I

The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/appeals/ or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C. PERMIT DENIAL WITHOUT PREJUDICE: Not appealable

You received a permit denial without prejudice because a required Federal, state, and/or local authorization and/or certification has been denied for activities which also require a Department of the Army permit before final action has been taken on the Army permit application. The permit denial without prejudice is not appealable. There is no prejudice to the right of the applicant to reinstate processing of the Army permit application if subsequent approval is received from the appropriate Federal, state, and/or local agency on a previously denied authorization and/or certification.

D: PERMIT DENIAL WITH PREJUDICE: You may appeal the permit denial

You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information for reconsideration

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

- RECONSIDERATION: You may request that the district engineer reconsider the approved JD by submitting new information or data to the district engineer within 60 days of the date of this notice. The district will determine whether the information submitted qualifies as new information or data that justifies reconsideration of the approved JD. A reconsideration request does not initiate the appeal process. You may submit a request for appeal to the division engineer to preserve your appeal rights while the district is determining whether the submitted information qualifies for a reconsideration.

F: PRELIMINARY JURISDICTIONAL DETERMINATION: Not appealable

You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision you may contact:	If you have questions regarding the appeal process, or to submit your request for appeal, you may contact:
Name: George Lyle Phillips III	Name: Krista Sabin, Regulatory Appeals Review Officer
Street Address, City, State: 3331 Heritage Trade Drive, Suite 105 Wake Forest, North Carolina 27587	Street Address, City, State: 701 San Marco Blvd. Jacksonville, Florida 32207
Phone: (919) 588-9200	Phone: (904) 314-9631
Email: raleighncreg@usace.army.mil	Email: krista.d.sabin@usace.army.mil

SECTION II – REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. Use additional pages as necessary. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation and will have the opportunity to participate in all site investigations.

Email address of appellant and/or agent	Telephone number
Signature of appellant or agent	Date

DEPARTMENT OF THE ARMY PERMIT

Permittee: **Randal Vosburg**
Town of Apex
105 B Upchurch Street
Apex, **North Carolina 27502**

Permit No: SAW-2005-20159

Issuing Office: U.S. Army Engineer District, Wilmington

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the U.S. Army Corps of Engineers (Corps) having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: The proposed activities for the Big Branch Force Main and Pump Station consists of the construction of a new wastewater pump station and dual 20-inch force main that would run 26,016 feet (4.93 miles) in length and connect to the existing influent structure at the Western Wake Regional Water Reclamation Facility. The project would result in the permanent discharge of fill material within 3,608 square feet (375 linear feet) of stream channel (930 square feet [155 linear feet] of which are considered a permanent loss of waters), and the temporary discharge of fill or dredged material within 4,697 square feet (494 linear feet) of stream channel. The project would also result in the permanent discharge of fill material within 0.019 acre of wetlands and the temporary discharge of fill or dredged material within 0.049 acre of wetlands.

The work described above is to be completed in accordance with the 3 attachments affixed at the end of this permit instrument.

Project Location: The project is located in the Cape Fear River basin, in Apex, Wake County, North Carolina. The project extends in a southwesterly direction, generally following the US Highway 1 corridor. The proposed pipe alignment crosses US Highway 1 immediately west of its interchange with NC Highway 540 and roughly parallels the north side of US Highway 1 to a point approximately 1,700 ft southwest of its interchange with New Hill Holleman Road. The force main corridor turns west then north to follow the east side of the eastern property boundary of the Western Wake Regional Water Reclamation Facility, located at 3500 Reclamation Road in New Hill.

Approximate Central Coordinates: Latitude: 35.677944 N
Longitude: -78.911341 W

Permit Conditions

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2030**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature and the mailing address of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. Work Limits: All work authorized by this permit shall be performed in strict compliance with the attached permit plans entitled, “Big Branch 2 Pump Station – Force Main” and “Impact Map” exhibits, which are a part of this permit. The Permittee shall ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Any modification to

the attached permit plans must be approved by the U.S. Army Corps of Engineers (Corps) prior to any active construction in waters or wetlands.

2. Unauthorized Dredge and/or Fill: Except as authorized by this permit or any Corps-approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

3. Permit Distribution: The Permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions and drawings shall be available at the project site during construction and maintenance of this project.

4. Preconstruction Meeting: The Permittee shall conduct an onsite preconstruction meeting between their representatives, contractor's representatives, and the appropriate U.S. Army Corps of Engineers Project Manager prior to undertaking any work within potentially jurisdictional waters and wetlands to ensure that there is a mutual understanding of all terms and conditions contained within the Department of the Army permit. The Permittee shall schedule the preconstruction meeting for a time frame when the Corps and NCDEQ-DWR Project Managers can attend. The Permittee shall invite the Corps and NCDEQ-DWR Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedule and participate in the required meeting. The thirty (30) day requirement can be waived with the concurrence of the Corps.

5. Notification of Construction Commencement and Completion: The Permittee shall notify the Corps in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.

6. Reporting Address: All reports, documentation, and correspondence required by the conditions of this permit shall be submitted to the following: U.S. Army Corps of Engineers, Wilmington District, Raleigh Regulatory Field Office, Attn: George Lyle Phillips III, at 919-588-9200 or George.L.Phillips@usace.army.mil. The Permittee shall reference the following permit number, SAW-2005-20159, on all submittals.

7. Permit Revocation: The Permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense

to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.

8. Reporting Violations: Violation of these permit conditions or violation of Section 404 of the Clean Water Act shall be reported to the Corps in writing and by telephone at: 919-588-9200 or George.L.Phillips@usace.army.mil within 24 hours of the Permittee's discovery of the violation.

9. Endangered Species Act: The Permittee shall implement all necessary measures to ensure the authorized activity does not kill, injure, capture, harass, or otherwise harm any federally listed threatened or endangered species. While accomplishing the authorized work, if the Permittee discovers or observes an injured or dead threatened or endangered species, the U.S. Army Corps of Engineers, Wilmington District Raleigh Field Office, Attn: George Lyle Phillips III, at 919-588-9200 George.L.Phillips@usace.army.mil will be immediately notified to initiate the required Federal coordination.

10. National Historic Preservation Act: If the Permittee discovers any previously unknown historic, cultural, or archeological remains and/or artifacts while accomplishing the activity authorized by this permit, the Permittee must immediately notify the U.S. Army Corps of Engineers, Wilmington District Raleigh Regulatory Field Office, Attn: George Lyle Phillips III, 3331 Heritage Trade Drive, Suite 105, Wake Forest, North Carolina 27587 or George.L.Phillips@usace.army.mil to initiate the required Federal coordination. The Permittee must notify the Corps of what has been found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The Corps will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

11. A 6 foot wide and 617 foot long vegetated buffer shall be established, maintained and protected in the location depicted on the "WWRWRF Buffer Mitigation Map" exhibit. This buffer area shall be recorded at the Wake County Register of Deeds as an amendment to the "Declaration of Covenants, Conditions and Restrictions dated July 26, 2011" (Book: 014413, Page: 00659-00675), no later than initiation of construction of activities authorized by this permit.

12. Suitable habitat for tricolored bat (*Perimyotis subflavus*) may be present at the site. On September 14, 2022, the Service published a proposal in the Federal Register to list the tricolored bat as endangered under the Endangered Species Act (ESA). The permittee understands and agrees that all work associated with the clearing and removal of trees and removal or modification of culverts must be completed prior to the effective date of the final listing in the Federal Register.

Work associated with the aforementioned activities not completed by that time must cease and the permittee must contact the Corps' (RaleighNCREG@usace.army.mil) to determine if additional coordination with the Service is required under Section 7 of the ESA prior to continuing work.

13. Authorized permanent at-grade stream and wetland crossings (e.g. fords) for the utilities project component must be constructed according to the details included (EC14 Sheet 54 of 56) in the attached permit plans.

14. Temporary Impacts Restoration Measures: Within thirty (30) days of the date of completing the authorized work, the Permittee shall remove all temporary fills in potential waters of the US and restore the affected areas to pre-construction contours and elevations. The affected areas shall be re-vegetated with regionally appropriate native, non-invasive riparian vegetation to minimize erosion and ensure site stability.

15. Authorized temporary impacts to streams for the utility project component of this project must be restored and stabilized according to the attached permit plans.

16. In wetland areas where utility installation via trenching is authorized, wetland topsoil shall be segregated from the underlying subsoil, and the top 6 to 12 inches of the trench shall be backfilled with topsoil from the trench.

17. Maintain Flows and Circulation Patterns of Waters: Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters and/or wetlands.

18. Fills Within 100-Year Floodplains: The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

19. Sediment and Erosion Control:

    a. During the clearing phase of the project, heavy equipment shall not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of non-erodible materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.

    b. No fill or excavation impacts for the purposes of sedimentation and erosion control shall occur within potentially jurisdictional waters, including wetlands, unless the impacts are included on the plan drawings and

specifically authorized by this permit. This includes, but is not limited to, sediment control fences and other barriers intended to catch sediment losses.

c. The Permittee shall remove all sediment and erosion control measures placed in waters and/or wetlands, and shall restore natural grades on those areas, prior to project completion.

d. The Permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the “North Carolina Sediment and Erosion Control Planning and Design Manual” to ensure compliance with the appropriate turbidity water quality standard. Erosion and sediment control practices shall be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to ensure compliance with the appropriate turbidity water quality standards. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project shall remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4). Adequate sedimentation and erosion control measures shall be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. These measures shall be inspected and maintained regularly, especially following rainfall events. All fill material shall be adequately stabilized at the earliest practicable date to prevent sediment from entering into adjacent waters or wetlands.

20. Clean Fill: The Permittee shall use only clean fill material for this project. The fill material shall be free of items such as trash, construction debris, metal and plastic products, and concrete block with exposed metal reinforcement bars. Soils used for fill shall not be contaminated with any toxic substance in concentrations governed by Section 307 of the Clean Water Act. Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source.

21. Water Contamination: All mechanized equipment shall be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the Permittee shall immediately report it to the N.C. Division of Water Resources at (919) 733-3300 or (800) 858-0368 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act shall be followed.

22. Aquatic Life Movement: No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area. All discharges of dredged or fill material within waters of the United States shall be designed and constructed, except as authorized as indirect impacts, to maintain low flows to sustain the movement of aquatic species.

23. Prohibitions on Concrete: The Permittee shall take measures necessary to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with any water in or entering into waters of the United States. Water inside coffer dams or casings that has been in contact with concrete shall only be returned to waters of the United States when it no longer poses a threat to aquatic organisms (concrete is set and cured).

24. In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form(s). The requirements of this form(s), including any special conditions listed on the form(s), are hereby incorporated as special conditions of this permit.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344)

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413)

( ) Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. 408)

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a

prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Randy Vos 7/15/25

(PERMITTEE) (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

FOR THE DISTRICT COMMANDER

for David E Bailey Date: July 22, 2025

Brad A. Morgan, P.E.
Colonel, U.S. Army
District Commander

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____
(TRANSFEREE-SIGNATURE) (DATE)

_____
(NAME-PRINTED)

_____
(ADDRESS)

_____
(CITY, STATE, AND ZIP CODE)

Attachments to Department of the Army
Permit Number SAW-2005-20159

1. PERMIT DRAWINGS: Big Branch 2 Pump Station – Force Main and Impact Map exhibits; 6 pages

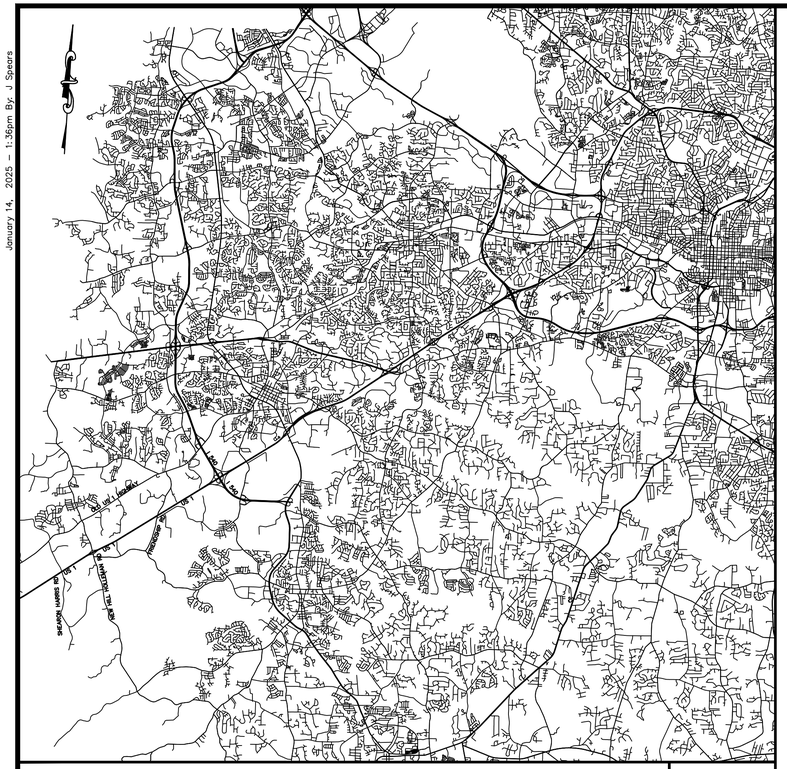
2. BUFFER MITIGATION DRAWING: “WWRWRF Buffer Mitigation Map” exhibit; 1 page

3. COMPENSATORY MITIGATION RESPONSIBILITY TRANSFER FORMS; 4 pages

4. WATER QUALITY CERTIFICATION: Specific Conditions of the water quality permit/ certification in accordance with General Condition number 5 on page 2 of this DA permit; 12 pages

SAW-2005-20159, Big Branch Force Main and Pump Station

PERMIT DRAWINGS



PROJECT LOCATION NOT TO SCALE

PROJECT SITE NOT TO SCALE

TOWN OF APEX
WATER RESOURCES DEPARTMENT
APEX, NC

BIG BRANCH 2 PUMP STATION - FORCE MAIN

PERMIT SUBMITTAL

JANUARY 2025

PUBLIC INFRASTRUCTURE TABLE	
WATER LINES (LF)	0
STORM DRAIN (PUBLIC, LF)	0
SEWER LINES (LF)	48,800
SIDEWALK/GREENWAYS (LF)	0
CURB & GUTTER (LF)	0
NEW STREETS (PUBLIC, LF-LANE)	0

APPROVED EXCEPTIONS

The following items have been approved as exceptions for this drawing by the Town of Apex Department Director(s), and to the best of my knowledge and belief, this drawing conforms to the requirements established by the Director(s) allowing deviation from the Standard Specifications and Standard details of the Town of Apex. The signature below represents that the requesting Engineer has been granted a variance ONLY for the items listed. The developer/engineer/contractor is solely responsible for meeting all applicable requirements.

(List items below add number as needed)

APPROVED EXCEPTION	DIRECTOR GRANTING EXCEPTION
SECTION 807 A.2 – STANDARD EASEMENT WIDTH	
SECTION 807 A.2 – INSTALLATION WITHIN NCDOT R/W	
SECTION 807 A.2 – STANDARD FM SEPARATION	
SECTION 807 A.3 – INSTALLATION IN Z1 AND Z2 BUFFERS	
SECTION 807 A.3 – EASEMENT WIDTH FOR DUAL PIPELINES	
SECTION 807 A.7 – 90° BENDS	
SECTION 807 A.14.f.1 – INSTALLATION IN WELL RADIUS	
DETAIL 800.02 – AIR RELEASE VALVES	
DETAIL 800.11 – PLUG VALVES	

By: _____ Date_____
Requesting Engineer

BUILDING INSPECTIONS & PERMITS TOWN OF APEX CERTIFICATION

This drawing has been reviewed by the Town of Apex Building Inspections & Permits Department, and to the best of my knowledge and belief, conforms to the requirements established within the Town's Code of Ordinances and the North Carolina State Building Codes. However, this signature does not constitute a variance from any requirements contained in any federal, state, or local code, law, specification, rule or ordinance. It is the sole responsibility of the owner/developer, or any of his agents or contract professionals to ensure that this construction plan meets all the aforementioned requirements.

By: _____

ELECTRIC TOWN OF APEX CERTIFICATION

This drawing has been reviewed by the Town of Apex Electric Department, and to the best of my knowledge and belief, conforms to the requirements established in the Standard Specifications and Construction Details and the Unified Development Ordinance of the Town of Apex. However, this signature does not constitute a variance from any requirements contained in any federal, state, or local code, law, specification, rule or ordinance. It is the sole responsibility of the owner/developer, or any of his agents or contract professionals to ensure that this construction plan meets all the aforementioned requirements.

By: _____

FIRE DEPARTMENT TOWN OF APEX CERTIFICATION

This drawing has been reviewed by the Town of Apex Fire Department, and to the best of my knowledge and belief, conforms to the requirements established within the Town's Standard Specifications, Fire Protection Ordinances, and the North Carolina International Fire Code. However, this signature does not constitute a variance from any requirements contained in any federal, state, or local code, law, specification, rule or ordinance. It is the sole responsibility of the owner/developer, or any of his agents or contract professionals to ensure that this construction plan meets all the aforementioned requirements.

By: _____

PARKS, RECREATION, AND CULTURAL RESOURCES TOWN OF APEX CERTIFICATION

These plans have been reviewed by the Town of Apex, and to the best of my knowledge and belief, conform to representations made by the developer to myself and the Parks, Recreation, and Cultural Resource Advisory Commission consistent with the projects requirements for public Parks and Recreation, either in total or in part, as outlined in the Town of Apex Unified Development Ordinance and Town of Apex Code of Ordinances. However, this signature does not constitute a variance from any requirements contained in any federal, state, or local code, law, specification, rule or ordinance. It is the sole responsibility of the owner/developer, or any of his agents or contract professionals to ensure that this construction plan meets all the aforementioned requirements.

By: _____

STANDARD SPECIFICATIONS & STANDARD DETAILS VERSION: APRIL 9, 2024

TRANSPORTATION & INFRASTRUCTURE DEVELOPMENT TRANSPORTATION ENGINEERING – TOWN OF APEX CERTIFICATION

This drawing has been reviewed by the Town of Apex Transportation & Infrastructure Development Department, and to the best of my knowledge and belief, provides an acceptable transportation system with consideration for the elements contained within the Transportation Plan conforming to the requirements established in the Standard Specifications & Standard Details and the Unified Development Ordinance of the Town of Apex. However, this signature does not constitute a variance from any requirements contained in any federal, state, or local code, law, specification, rule or ordinance. It is the sole responsibility of the owner/developer, or any of his agents or contract professionals to ensure that this construction plan meets all the aforementioned requirements.

By: _____

PLANNING/ZONING TOWN OF APEX CERTIFICATION

This construction drawing has been reviewed by the Town of Apex Planning Department, and to the best of my knowledge and belief, conforms to the Subdivision or Site Plan that was approved by the Town of Apex Town Council or Technical Review Committee, as appropriate, and meets the standards of the Town of Apex Unified Development Ordinance. This signature does not constitute a variance from any requirements of the originally approved Subdivision or Site Plan cited above, or any federal, state, or local code, law, specification, rule, guideline, or ordinance. It is the sole responsibility of the owner/developer, or any of his agents or contract professionals to ensure that this construction plan meets all the aforementioned requirements.

By: _____

WATER RESOURCES STORMWATER ENGINEERING TOWN OF APEX CERTIFICATION

This drawing has been reviewed by the Town of Apex Water Resources Stormwater Engineering Division and to the best of my knowledge and belief, conforms to the requirements established in the Soil Erosion and Sedimentation Control Ordinance, Standard Specifications and Standard Details, and the Unified Development Ordinance of the Town of Apex. However, this signature does not constitute a variance from any requirements contained in any federal, state, or local code, law, specification, rule or ordinance. It is the sole responsibility of the owner/developer, or any of his agents or contract professionals to ensure that this construction plan meets all the aforementioned requirements. This signature serves as the stormwater permit for this project. This signature does not constitute soil erosion and sedimentation control plan approval, only plan requirements. A separate letter of soil erosion and sedimentation control plan approval will be mailed to the financially responsible person at a later date according to the construction sequence.

By: _____

WATER RESOURCES UTILITY ENGINEERING TOWN OF APEX CERTIFICATION

This drawing has been reviewed by the Town of Apex Water Resources Department, and to the best of my knowledge and belief, conforms to the requirements established in the Standard Specifications and Standard Details of the Town of Apex. However, this signature does not constitute a variance from any requirements contained in any federal, state, or local code, law, specification, rule or ordinance. It is the sole responsibility of the owner/developer, or any of his agents or contract professionals to ensure that this construction plan meets all the aforementioned requirements.

By: _____

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

PROJECT LOCATED WITHIN SECONDARY WATERSHED OVERLAY, BIG BRANCH SUB-WATERSHED, CAPE FEAR RIVER BASIN

105-B UPCHURCH STREET
APEX, NC 27502

PHONE: (919) 372-7475
FAX: (919) 387-7055

CLIENT PROJECT NO. WS-9856

PREPARED IN THE OFFICE OF:
CJS Conveyance, PLLC
320 S. ACADEMY STREET
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM
PHONE: (919) 890-3876

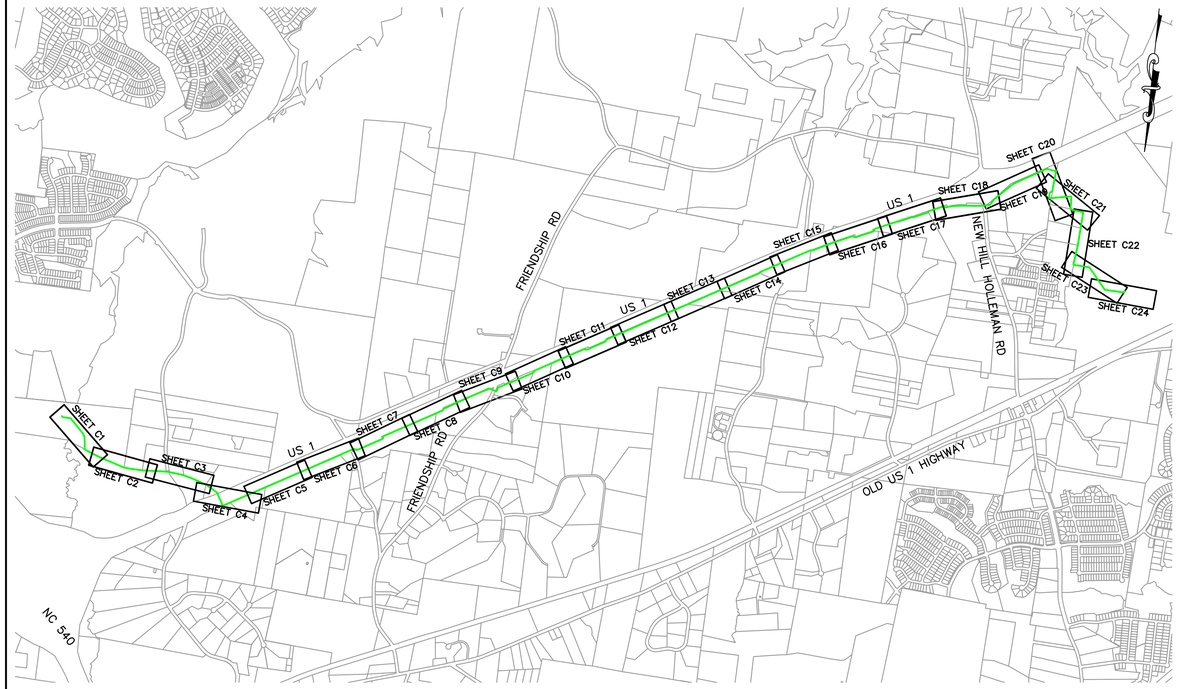
CJS PROJECT NO. 100-005

PERMIT SUBMITTAL
CJS JOB NO. 100-005
CLIENT: WATER RESOURCES DEPARTMENT TOWN OF APEX
PROJECT: BIG BRANCH 2 PUMP STATION - FORCE MAIN

ABBREVIATIONS

ABC	AGGREGATE BASE COURSE	EL/ELEV	ELEVATION	NIC	NOT IN CONTRACT	TBM	TEMPORARY BENCHMARK
ABN	ABANDONED	ENGR	ENGINEER	NO	NUMBER	TC	TERRA COTTA/TOP OF CURB
AC	ASBESTOS CEMENT	EOI	END OF INVESTIGATION	NOM	NOMINAL	TCP	TRAFFIC CONTROL PLAN
ADDL	ADDITIONAL	EOP	EDGE OF PAVEMENT	NPW	NON-POTABLE WATER	TD	TRENCH DRAIN
ALT	ALTERNATE	EQPT	EQUIPMENT	NTS	NOT TO SCALE	TDH	TOTAL DYNAMIC HEAD
APPROX	APPROXIMATE	ESMT	EASEMENT			TEL	TELEPHONE
ASPH	ASPHALT	EXIST/EX	EXISTING	OHE	OVERHEAD ELECTRIC	TEMP	TEMPORARY
ATTN	ATTENTION	EXT	EXTERIOR			TOB	TOP OF BANK
AVG	AVERAGE			PC	PRESSURE CLASS	TOL	TOLERANCE
		FDC	FIRE DEPARTMENT	PCCP	PRE-STRESSED CONCRETE CYLINDER PIPE	TOS	TOP OF SLAB
B	BORING	CONNECTION				TP	TELEPHONE POLE
BFE	BASE FLOOD ELEVATION	FES	FLARED END SECTION	PCF	POUNDS PER CUBIC FOOT	TPF	TREE PROTECTION FENCE
BFP	BACKFLOW PREVENTER	FFE	FINISHED FLOOR ELEVATION	PERM	PERMANENT	TRANS	TRANSFORMER
BFV	BUTTERFLY VALVE	FGP	FIBERGLASS PIPE	PG	PAGE	TV	TELEVISION
BLDG	BUILDING	FH	FIRE HYDRANT	PKWY	PARKWAY	TYP	TYPICAL
BLK	BLOCK	FL	FLOW LINE	PL	PROPERTY LINE		
BM	BENCHMARK	FLG	FLANGE	PLF	POUNDS PER LINEAR FOOT	UGND	UNDERGROUND
BO	BLOWOFF	FM	FORCE MAIN	POLY	POLYETHYLENE (PLASTIC)	UNK	UNKNOWN
BOC	BACK OF CURB	FOC	FACE OF CURB	PP	POWER POLE	UTIL	UTILITY
BOT	BOTTOM	FPS	FEET PER SECOND	PPM	PARTS PER MILLION		
BRG	BEARING	FT	FEET	PROP	PROPERTY	VAR	VARIES
		FW	FINISHED WATER	PRV	PRESSURE RELIEF VALVE	VFD	VARIABLE FREQUENCY DRIVE
C&G	CURB AND GUTTER			PS	PUMP STATION	VOL	VOLUME
CAP	CAPACITY	G	NATURAL GAS	PSF	POUNDS PER SQUARE FOOT		
CB	CATCH BASIN	GAL	GALLON	PSI	POUNDS PER SQUARE INCH	W	WEST
CCW	COUNTERCLOCKWISE	GALV	GALVANIZED	PT	POINT OF TANGENT/POINT	W/	WITH
CEM	CEMENT	GOVT	GOVERNMENT	PV	PLUG VALVE	W/O	WITHOUT
CI	CAST IRON	GPD	GALLONS PER DAY	PVC	POLYVINYL CHLORIDE	WL	WATERLINE
CI	CURB INLET	GPH	GALLONS PER HOUR	PVMT	PAVEMENT	WM	WATER METER
CIP	CAST IRON PIPE	GPM	GALLONS PER MINUTE	PW	POTABLE WATER	WP	WATERPROOF
CL	CENTERLINE	GTS	GAS TEST STATION			WPFG	WATERPROOFING
CL	CLASS	GV	GATE VALVE	QA	QUALITY ASSURANCE	WT	WEIGHT
CMP	CORRUGATED METAL PIPE	GW	GUY WIRE	QC	QUALITY CONTROL	WV	WATER VALVE
CO	CLEANOUT			QTY	QUANTITY	WW	WASTE WATER
CONC	CONCRETE	HDPE	HIGH DENSITY POLYETHYLENE				
CONST	CONSTRUCTION	HH	HAND HOLE	RCP	REINFORCED CONCRETE PIPE	YD	YARD
CONT	CONTINUOUS	HORIZ	HORIZONTAL	RCW	RECLAIMED WATER	YI	YARD INLET
COORD	COORDINATE	HP	HORSEPOWER	RD	ROAD/ROOF DRAIN		
CORP	CORPORATION	HYD	HYDRANT	REIN	REINFORCED		
CPP	CORRUGATED PLASTIC PIPE			REQD	REQUIRED		
CTR	CENTER	IN	INCH	REST	RESTRAINED JOINT		
CTRL	CONTROL	INCL	INCLUDED	ROW	RIGHT OF WAY		
CU FT/CF	CUBIC FEET	INV	INVERT	RR	RAILROAD		
CU IN	CUBIC INCH	IP	IRON PIPE	RW	RAW WATER		
CU YD/CY	CUBIC YARD	IPF	IRON PIPE FOUND				
CW	CLOCKWISE	IRF	IRON ROD FOUND	S	SOUTH		
				SAN	SANITARY		
DAT	DATUM	JT	JOINT	SCHED	SCHEDULE		
DATUR	DRAWN ACCORDING TO UTILITY RECORDS			SECT	SECTION		
		LF	LINEAR FEET (FOOT)	SERV	SERVICE		
DB	DEED BOOK	LL	LOWER LEVEL	SF	SQUARE FEET/SILT FENCE		
DBL	DOUBLE	LOD	LIMIT OF DISTURBANCE	SHT	SHEET		
DC	DIRECT CURRENT	LN	LANE	SI	INTERNATIONAL SYSTEM OF UNITS/SQUARE INCHES		
DEG	DEGREE	LP	LIGHT POLE				
DEPT	DEPARTMENT	LS	LUMP SUM	SIM	SIMILAR		
DET	DETAIL	LTS	LAND TREATMENT SITE	SLV	SLEEVE		
DI	DROP INLET			SN	STIFFNESS		
DIA	DIAMETER	MATL	MATERIAL	SPEC	SPECIFICATION		
DIM	DIMENSION	MAX	MAXIMUM	SQ	SQUARE		
DIP	DUCTILE IRON PIPE	MGD	MILLION GALLONS PER DAY	SS	SANITARY SEWER		
DISC	DISCHARGE	MH	MANHOLE	SST	STAINLESS STEEL		
DIST	DISTANCE	MISC	MISCELLANEOUS	ST	STREET		
DR	DRIVE	MIN	MINIMUM	STA	STATION		
		MJ	MECHANICAL JOINT	STD	STANDARD		
		MSL	MEAN SEA LEVEL	SUR	SURFACE		
E	EAST			SURV	SURVEY		
EA	EACH	N	NORTH	SW	SIDEWALK		
EFF	EFFICIENCY	NA	NOT APPLICABLE	SYM	SYMBOL		
		NFC	NATIONAL FIRE CODE				

SHEET INDEX MAP



INDEX TO SHEETS

LEGEND

EXISTING ITEMS

- 100 FP — 100-YEAR FLOODPLAIN BOUNDARY
- BACK OF CURB
- N73°16'07"E 242.16' — BOUNDARY
- BUFFER
- Z1 — BUFFER ZONE 1 BOUNDARY
- Z2 Z2 — BUFFER ZONE 2 BOUNDARY
- Z3 Z3 — BUFFER ZONE 3 BOUNDARY
- BUILDINGS & STRUCTURES
- TV — CABLE TV
- X X — CHAIN-LINK FENCE
- DIRT OR GRAVEL ROAD
- DB — DUCTBANK
- EASEMENT
- EDGE OF PAVEMENT
- EXISTING CENTERLINE
- PS — EXISTING PUMP STATION
- FACE OF CURB
- FO — FIBER OPTIC LINE
- FW — FLOODWAY BOUNDARY
- FM — FORCE MAIN
- G — GAS LINE
- 650 — MAJOR CONTOUR
- MINOR CONTOUR
- OHP — OVERHEAD POWER
- PAVEMENT MARKINGS
- 100 — PROJECT PARCEL ID NUMBER
- PROPERTY BOUNDARY
- RCW — RECLAIMED WATER LINE
- RIPRAP
- RETAINING WALL
- R/W — RIGHT OF WAY
- ROAD CENTERLINE
- SS — SANITARY SEWER
- SIDEWALK
- STORM SEWER
- STREAM CENTER
- TOB — STREAM TOP OF BANK
- SWALE OR DITCH
- TREELINE
- UGE — UNDERGROUND ELECTRIC
- T — UNDERGROUND TELEPHONE
- U — UNKNOWN UTILITY
- W — WATER LINE
- WETLAND (BOUNDARY)
- WETLANDS
- WOOD FENCE
- X X — NCDOT R/W FENCE
- UTILITY POLE
- LIGHT POLE
- ELECTRIC MANHOLE
- ELECTRIC PEDESTAL
- GUY WIRE
- TBM — TEMPORARY BENCHMARK
- BM — BENCHMARK
- RIGHT-OF-WAY MONUMENT
- RBC — CONTROL POINT REBAR AND CAP
- NCGS MONUMENT
- IRS — CONTROL POINT IRON ROD SET
- IRON PIN
- CO — CLEANOUT
- ARV — ARV
- SANITARY SEWER MANHOLE
- TV PEDESTAL
- TELEPHONE PEDESTAL
- COMMUNICATION MANHOLE
- TELEPHONE MANHOLE
- TRAFFIC SIGNAL PEDESTAL
- CABLE TV BOX
- FIBER OPTIC MARKER
- STORM MANHOLE
- CURB INLET
- DROP INLET
- FIRE HYDRANT
- WATER MANHOLE
- WELL
- WATER METER
- WATER VALVE
- MONITORING WELL
- MAILBOX
- SIGN
- GAS VALVE
- GEOTECHNICAL BORE LOCATION

PROPOSED ITEMS

- FORCE MAIN
- PLUG VALVE
- PLUG VALVE MANHOLE
- AIR RELEASE VALVE
- PUE — PERMANENT UTILITY EASEMENT
- TCE — TEMPORARY CONSTRUCTION EASEMENT
- LOD — LIMITS OF DISTURBANCE
- SF — SILT FENCE
- TPF — TREE PROTECTION FENCE
- SF/TPF — SILT FENCE - TREE PROTECTION FENCE
- SSF — SUPER SILT FENCE
- WB — WATTLE BARRIER
- CHECK DAM
- STONE RELIEF OUTLET/ OUTLET PROTECTION
- TEMPORARY PUMP AROUND
- GRAVEL BAG INLET PROTECTION
- SILT FENCE - J HOOK
- CONCRETE WASHOUT PIT
- INLET PROTECTION
- TEMPORARY CONSTRUCTION ENTRANCE

PROJECT NOTES

GENERAL NOTES

1. CONTRACTOR TO FIELD VERIFY SIZE, DEPTH, LOCATION, AND MATERIAL OF ALL UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. THE UNDERGROUND UTILITIES INDICATED ON THE PLANS HAVE BEEN TAKEN FROM INFORMATION MADE AVAILABLE FROM THE VARIOUS UTILITY OWNERS AND LIMITED SUBSURFACE UTILITY INVESTIGATIONS. THIS INFORMATION IS NOT INCLUSIVE OF ALL EXISTING UNDERGROUND UTILITIES AND CABLES. THE CONTRACTOR IS ADVISED THAT ADDITIONAL UNDERGROUND UTILITIES AND CABLES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. PLEASE BE ADVISED THAT THE UNDERGROUND UTILITIES AND CABLES COULD CONFLICT WITH THE SEWER MAIN CONSTRUCTION AS SHOWN. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY OF ALL POTENTIAL CONFLICTS.
3. THE CONTRACTOR SHALL CAREFULLY SUPPORT AND PROTECT ANY UTILITIES, STRUCTURES, POWER POLES, PIPES, LINES, AND CONDUITS WHICH MAY BE ENCOUNTERED DURING COMPLETION OF THE WORK AT NO ADDITIONAL COST TO THE OWNER. ANY DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR OR UTILITY OWNER (WHERE REQUIRED) TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF APEX STANDARDS AND SPECIFICATIONS AND COMPLY WITH THE TOWN'S CURRENT DESIGN MANUAL.
5. CONTRACTOR SHALL REMOVE/RESET/REPLACE ALL DISTURBED MAILBOXES, SIGNS, PROPERTY IRONS, FENCES, ETC. IN LIKE KIND OR BETTER CONDITION. COST INCURRED FOR THESE ITEMS SHALL BE INCLUDED IN THE UNIT PRICE BID ITEMS, WHERE EXPLICITLY STATED. ITEMS WITH NO EXPLICIT LINE ITEM SHALL BE CONSIDERED INCIDENTAL. PROPERTY IRONS MUST BE REPLACED BY A N.C. P.L.S.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL PROCEDURES, PRACTICES, AND METHODS OF CONSTRUCTION AS DICTATED BY THE TOWN OF APEX AND NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
7. CONTRACTOR SHALL PERFORM FIELD WALKS WITH PROPERTY OWNERS AFTER EROSION CONTROL MEASURES HAVE BEEN INSTALLED TO INSPECT TREE PROTECTION FENCING AND TEMPORARY FENCING MEASURES PRIOR TO ANY CLEARING.
8. CONTRACTOR TO INSTALL EROSION CONTROL MEASURES PRIOR TO THE START OF CONSTRUCTION.
9. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE PROJECT AND UNTIL A GOOD STAND OF GRASS IS ESTABLISHED.
10. NO NEW SEWER SHALL BE LOCATED WITHIN A 25 FOOT RADIUS OF AN EXISTING POTABLE WATER WELL IF THE SEWER DESIGN CONFLICTS WITH THIS RULE, CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY. CONTRACTOR SHALL NOT PROCEED WITH SEWER INSTALLATION IN AREA OF CONFLICT UNTIL DIRECTED TO DO SO BY ENGINEER IN WRITING.
11. NO NEW SEWER STRUCTURE SHALL BE LOCATED WITHIN A 100 FOOT RADIUS OF AN EXISTING POTABLE WATER WELL. IF THE SEWER DESIGN CONFLICTS WITH THIS RULE, CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY. CONTRACTOR SHALL NOT PROCEED WITH SEWER INSTALLATION IN AREA OF CONFLICT UNTIL DIRECTED TO DO SO BY ENGINEER IN WRITING.
12. ALL LAND DISTURBANCES SHALL BE MAINTAINED WITHIN THE PERMANENT AND TEMPORARY EASEMENTS AS INDICATED ON THE PLANS. IF CONTRACTOR REQUIRES ADDITIONAL AREA FOR CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL NOTIFY ENGINEER AS SOON AS POSSIBLE AND NOT OCCUPY ADDITIONAL AREA UNTIL THE APPROVED EROSION AND SEDIMENTATION CONTROL PLAN IS REVISED AND APPROVED BY NCDEQ. CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH PERMIT MODIFICATION.
13. REINFORCED SILT FENCE OUTLETS AND WOODMATS OR TEMPORARY BRIDGE SHALL BE USED AT ALL STREAM CROSSINGS. PROVIDE REINFORCED OUTLETS ALONG PERIMETER SILT FENCE IN LOW LYING AREAS AND AT SHARP ANGLE CHANGES LESS THAN 90 DEGREES. ALL WOODMATS OR TEMPORARY BRIDGES MUST REMAIN IN PLACE UNTIL CROSSING IS STABILIZED AS SHOWN ON THE PLANS.
14. ALL INGRESS AND EGRESS TO PROJECT AREA MUST BE PERFORMED THROUGH TEMPORARY CONSTRUCTION ENTRANCES.
15. AT CHANNEL OR STREAM CROSSINGS CONTRACTOR SHALL PROVIDE RIP-RAP AS SHOWN. AT LOCATIONS NOT REQUIRING RIP-RAP CONTRACTOR SHALL PROVIDE APPROPRIATE TEMPORARY GROUND COVER IMMEDIATELY FOLLOWING LAND DISTURBANCE OR UTILIZE BIODEGRADABLE STRAW BLANKET UNTIL GROUND COVER CAN BE ESTABLISHED.
16. CONTRACTOR SHALL TAKE STEPS NECESSARY TO PROTECT EXISTING UTILITIES FROM DAMAGE DURING ALL PHASES OF CONSTRUCTION.
17. CREEK CROSSINGS AND DITCHES REQUIRING RIP-RAP SHALL HAVE THE RIP-RAP PLACED WITHIN 24-HOURS OF PIPE INSTALLATION IN THAT AREA.
18. 100-YR FLOOD ELEVATION INFORMATION INDICATED IN PIPE PROFILE AND USED FOR COMPLIANCE TO FEMA FLOOD RULES IS BASED ON THE CURRENT FIRM 100-YR BASE FLOOD ELEVATIONS.
19. IN INSTANCES THE PLANS REFER TO OBJECT AS "TO BE REMOVED AND REPLACED", IT IS THE INTENT OF THE NOTE TO MEAN THAT THE OBJECTS WILL BE REMOVED AND REPLACED AS MUCH THAT HAS BEEN DISTURBED, OR AS NECESSARY.
20. THE FORCE MAIN ROUTE SHALL BE SUCH THAT THE NUMBER OF HIGH POINTS REQUIRING COMBINATION AIR VALVES IS MINIMIZED TO THE EXTENT POSSIBLE. COMBINATION AIR VALVES RATED FOR USE WITH RAW WASTEWATER SHALL BE INSTALLED AT ALL HIGH POINTS OR RUNS EXCEEDING 3000 LF ON ALL FORCE MAINS. A HIGH POINT SHALL BE DETERMINED AS ANY LOCATION WHERE THE VERTICAL SEPARATION BETWEEN THE ADJACENT LOW POINT AND HIGH POINT IN THE FORCE MAIN IS GREATER THAN OR EQUAL TO 10 VERTICAL LF.
21. ALL PIPE, VALVES, AND FITTINGS SHALL BE RESTRAINED WHERE SHOWN ON THE PROFILE. DISTANCES SHOWN ON THE PROFILE ARE MINIMUM DISTANCES AND ALL JOINTS WITHIN THE DISTANCE SHOWN SHALL BE RESTRAINED. RESTRAINT ON OFFSET PIPELINE SHALL BE SIMILAR TO BASELINE PIPELINE.
22. THE STANDARD JOINT RESTRAINT METHOD SHALL BE TO USE A HARNESSED BELL RESTRAINT SYSTEM OR WEDGE RETAINER SYSTEM, DEPENDING ON MATERIAL. ALL JOINT RESTRAINT PRODUCT THAT INCLUDE THE MEANS OF RESTRAINT WITHIN THE JOINT GASKET SHALL BE PROHIBITED. FUSIBLE C-900 DR 18 PVC MAY BE UTILIZED AS AN ACCEPTABLE MEANS OF RESTRAINT. JOINT RESTRAINT SYSTEM SHALL BE APPROVED BY ENGINEER PRIOR TO USE.
23. VALVES SHALL BE RESTRAINED IN A MANNER CONSISTENT WITH OPERATION AS A DEAD END. THIS INCLUDES RESTRAINING THE VALVE TO THE PIPE AND RESTRAINING A SUFFICIENT NUMBER OF PIPE JOINTS ON BOTH SIDES OF THE VALVE TO ACCOMMODATE DEAD END RESTRAINT.
24. CONTRACTOR SHALL PROVIDE PRE AND POST WELL TESTING FOR ALL WELLS SHOWN ON PLANS. SEE CONTRACT DOCUMENTS.
25. SECOND FORCE MAIN SHALL BE INSTALLED SIMILAR TO BASELINE FORCE MAIN. SEPARATIONS, DEPTHS, AND RESTRAINT LENGTHS NOTED ON BASELINE FORCE MAIN SHALL BE ADHERED TO ON OFFSET FORCE MAIN.
26. ARV AND PLUG VALVE SYMBOLS ON PROFILE ARE FOR LOCATION ONLY. SEE DRAWINGS D3 AND D4 FOR SIZE AND ELEVATION DETAILS.
27. FORCE MAIN MARKERS AND TRACER WIRE SHALL BE PLACED IN ACCORDANCE WITH DETAILS ON DRAWINGS D1 AND D2.
28. CONSTRUCTION SEQUENCING SHALL FOLLOW THE TOWN OF APEX MARCH 2024 STANDARDS.
29. THE TOTAL PROPOSED DISTURBED AREA FOR THIS PROJECT IS 25.7 ACRES.
30. ALL TOPOGRAPHY SHOWN ON PLAN SHEETS WAS OBTAINED FROM STEWART ENGINEERING IN AUGUST 2022. THE TOPOGRAPHIC INFORMATION WAS CREATED VIA AERIAL IMAGERY COMPLETED FOR THE PROJECT CORRIDOR. SUPPLEMENTAL SURVEY WAS COMPLETED BY COOPER SURVEYORS.

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

TOWN OF APEX
WATER RESOURCES DEPARTMENT

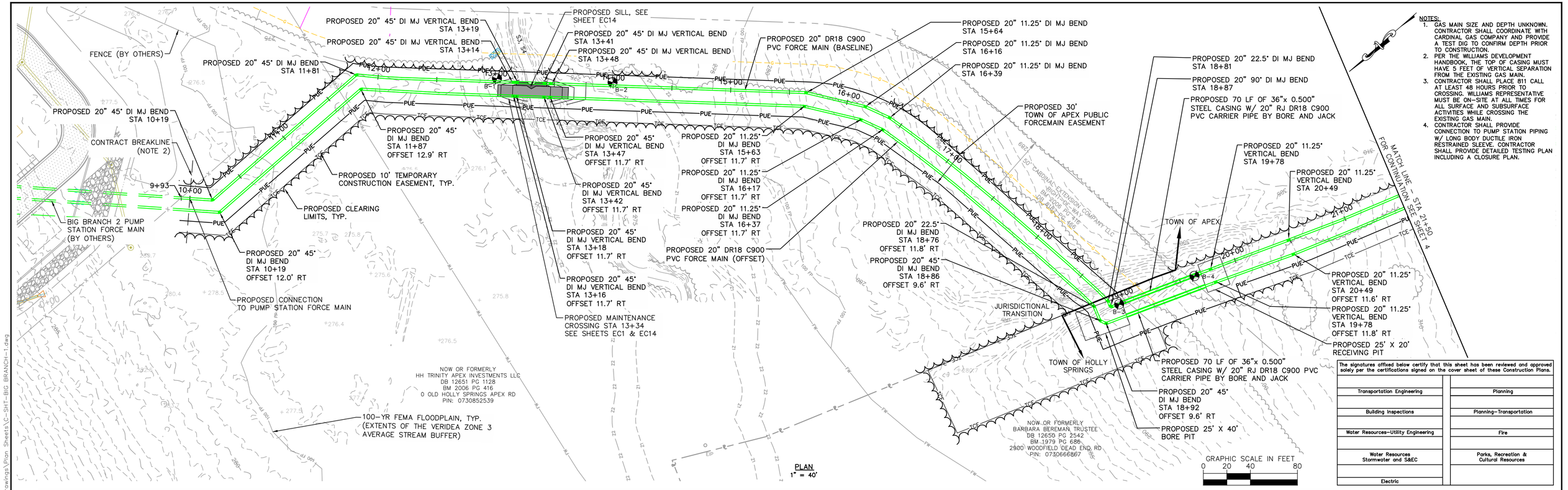
BIG BRANCH 2 PUMP STATION - FORCE MAIN

INDEX, GENERAL NOTES, AND ABBREVIATIONS

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	N/A
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

G2

SHEET NUMBER 2 OF 56



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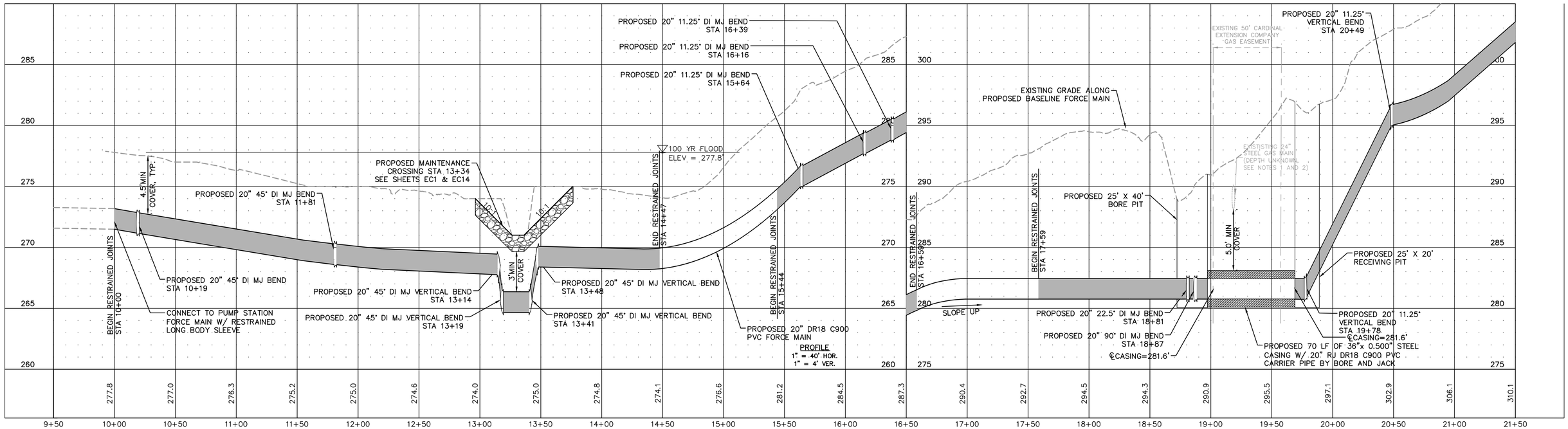

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT TOWN OF APEX

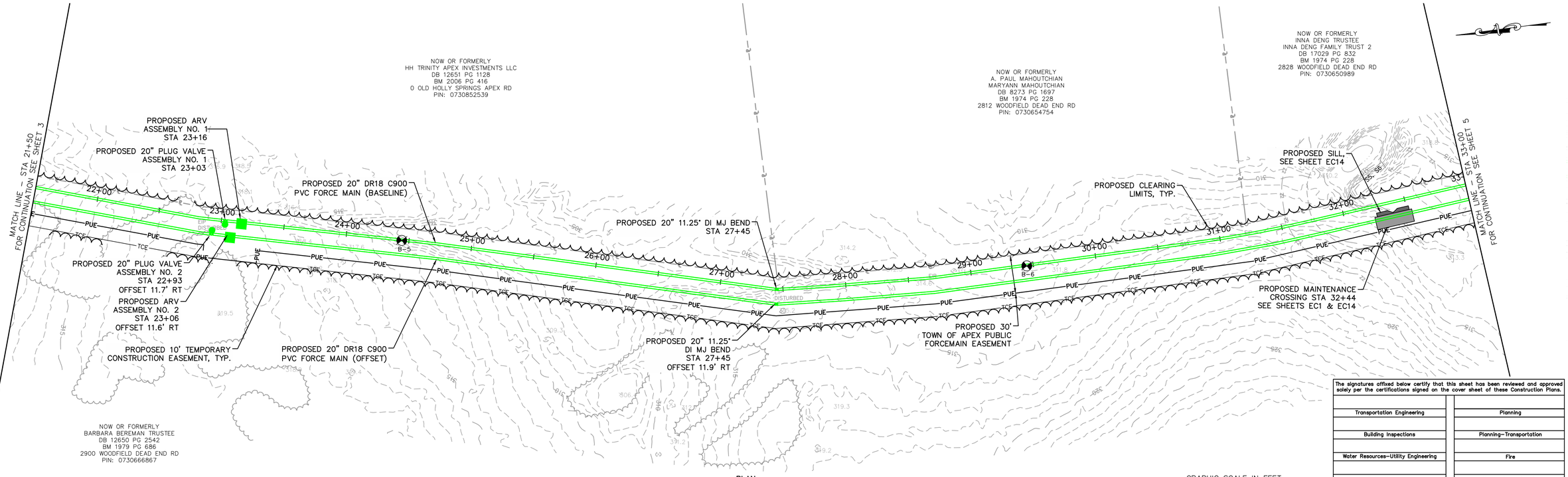
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE STA 10+00 TO STA 21+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C1

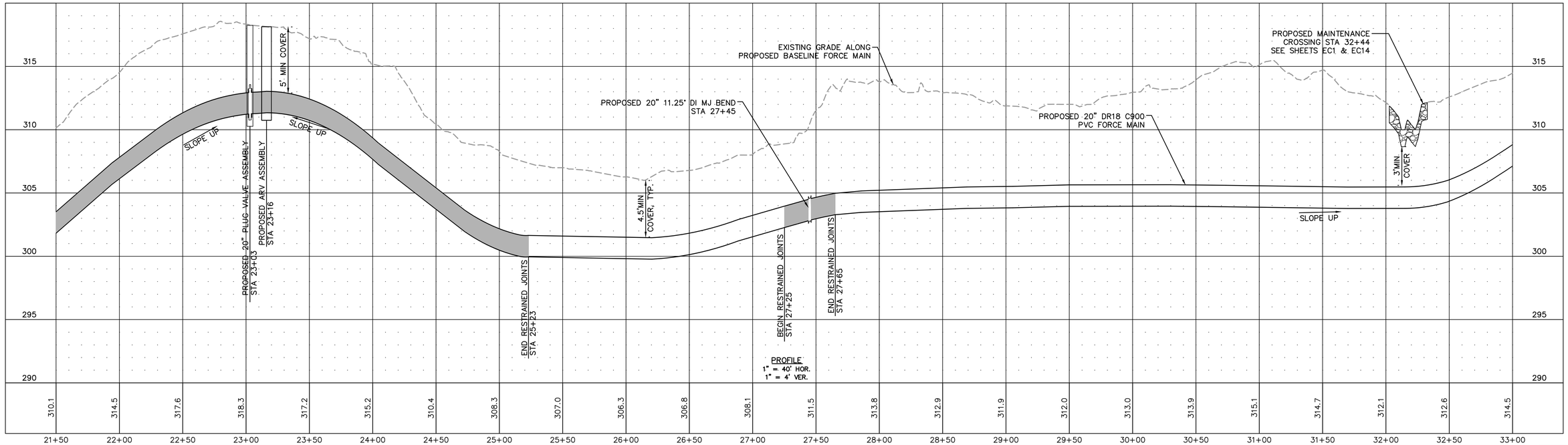
SHEET NUMBER 3 OF 56



PLAN
1" = 40'

GRAPHIC SCALE IN FEET
0 20 40 80

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



PROFILE
1" = 40' HOR.
1" = 4' VER.

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT TOWN OF APEX

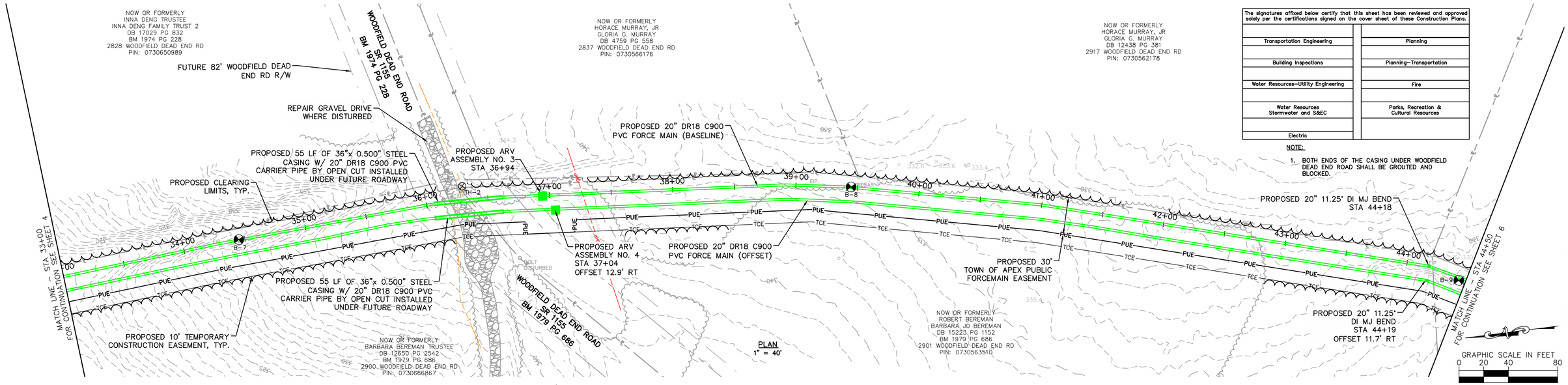
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE STA 21+50 TO STA 33+00

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C2

SHEET NUMBER 4 OF 56



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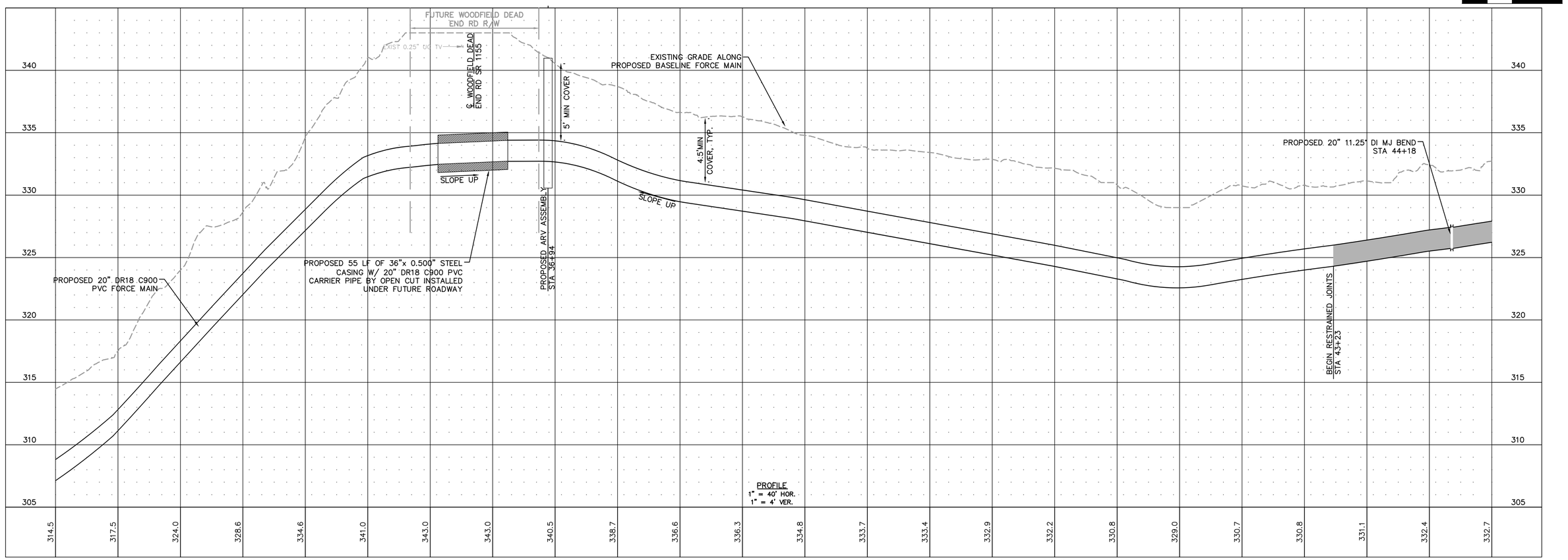
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

NOTE:

1. BOTH ENDS OF THE CASING UNDER WOODFIELD DEAD END ROAD SHALL BE GROUTED AND BLOCKED.



No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

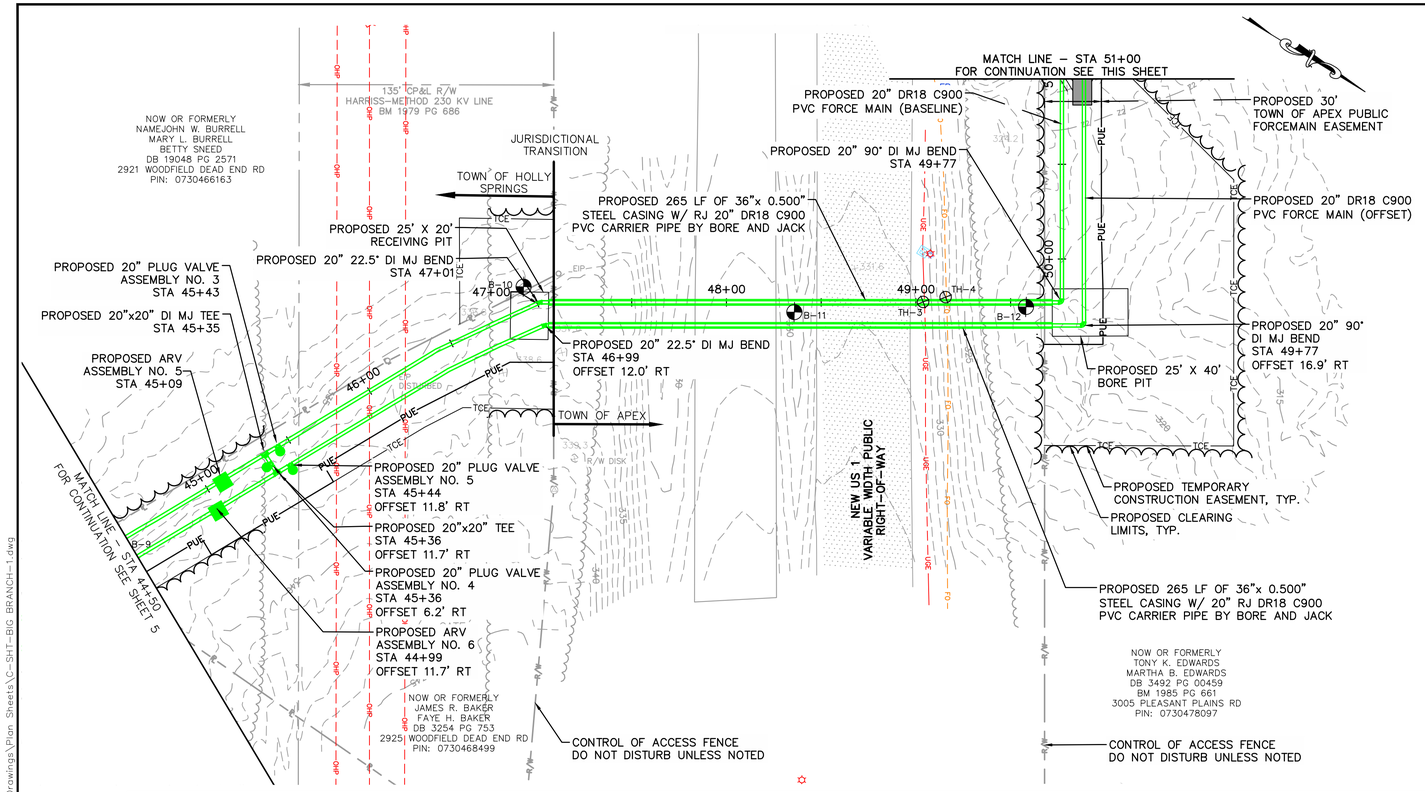
FORCE MAIN PLAN AND PROFILE
STA 33+00 TO STA 44+50

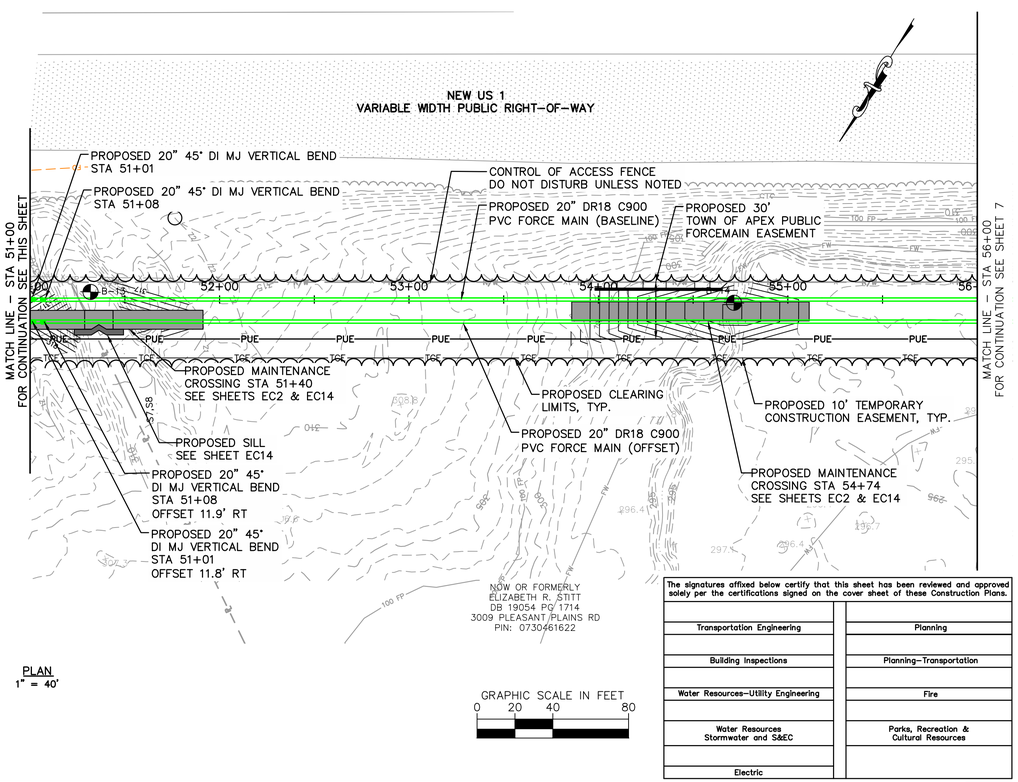
CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C3

SHEET NUMBER 5 OF 56

Plotted By: Spears Layout:5 PLAN AND PROFILE January 15, 2025 05:04:29pm S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PS\80 - Drawings\Plan Sheets\C-SHT-BIG BRANCH-1.dwg

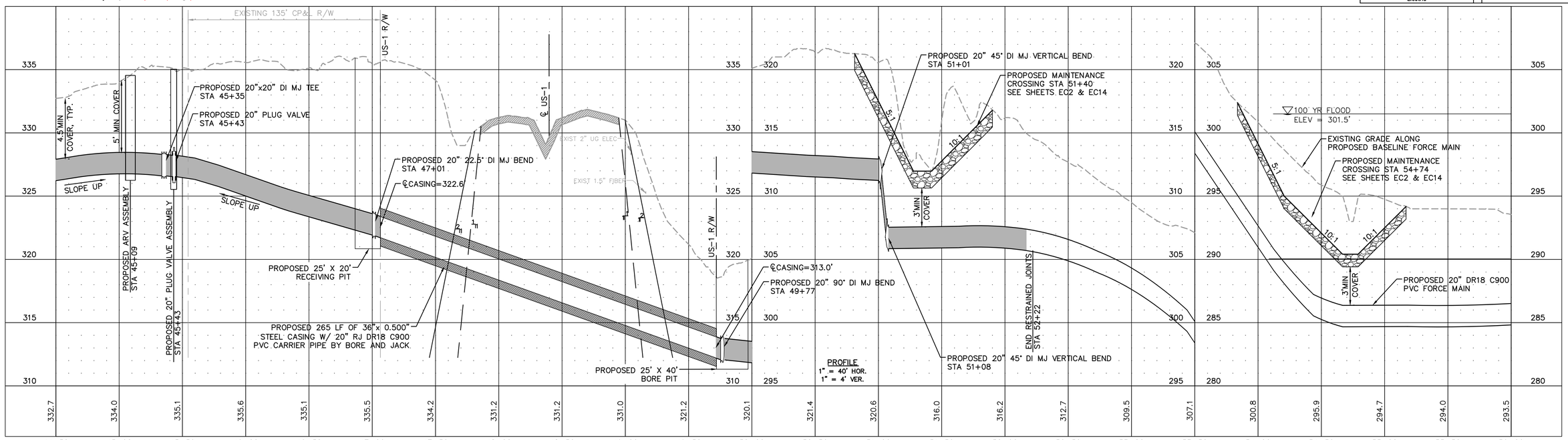




PLAN
1" = 40'

GRAPHIC SCALE IN FEET
0 20 40 80

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

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CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

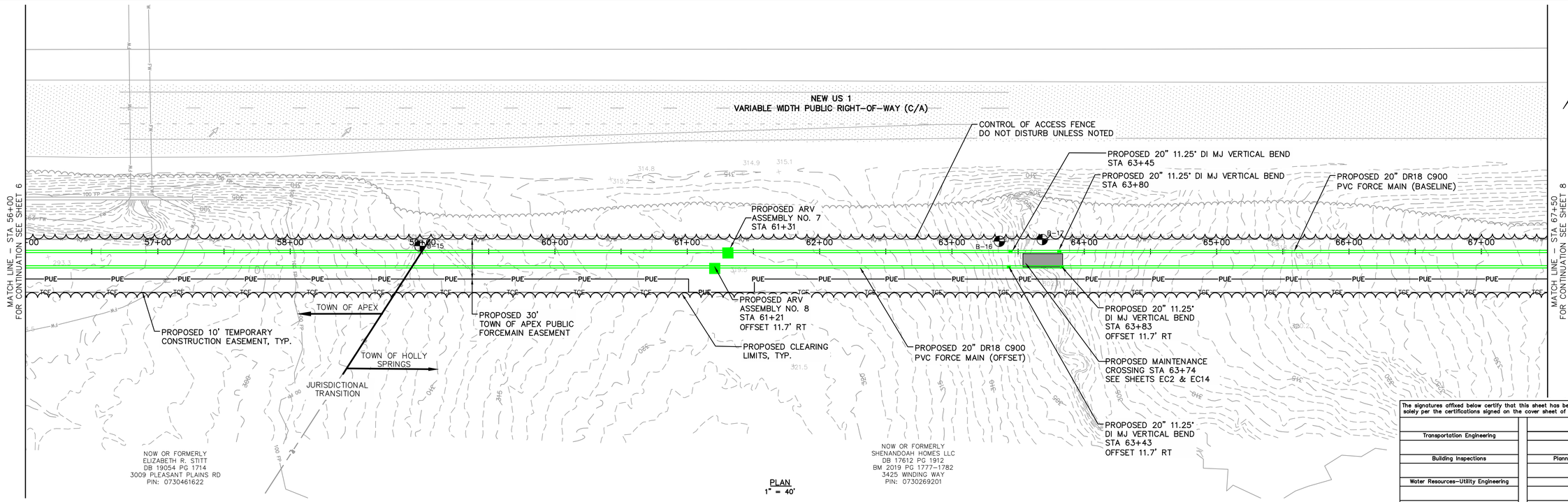
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 44+50 TO STA 56+00

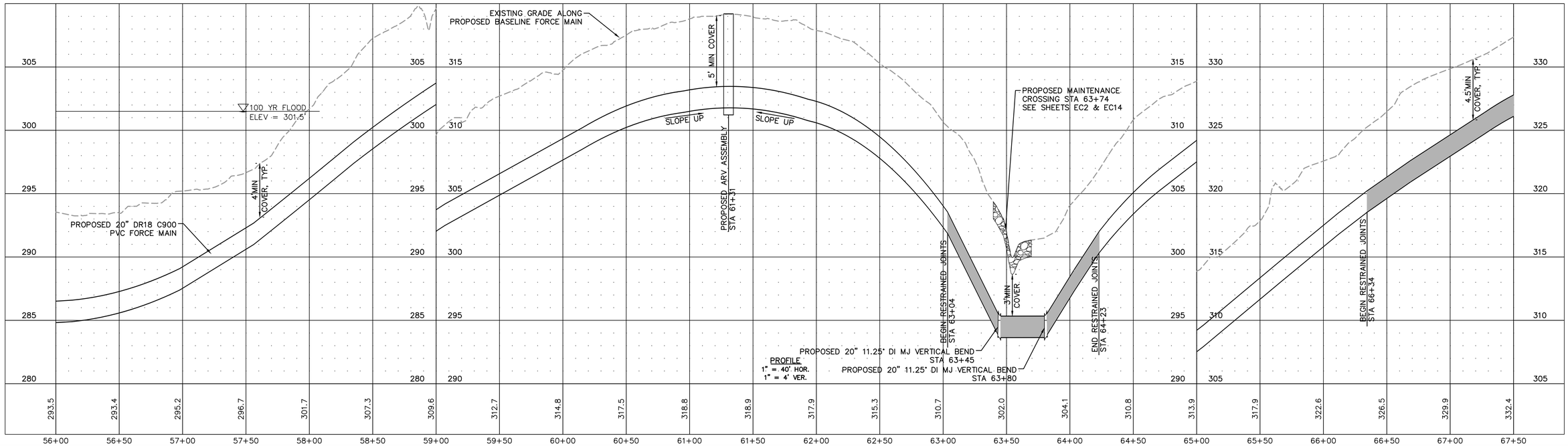
CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C4

SHEET NUMBER
6 OF 56



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

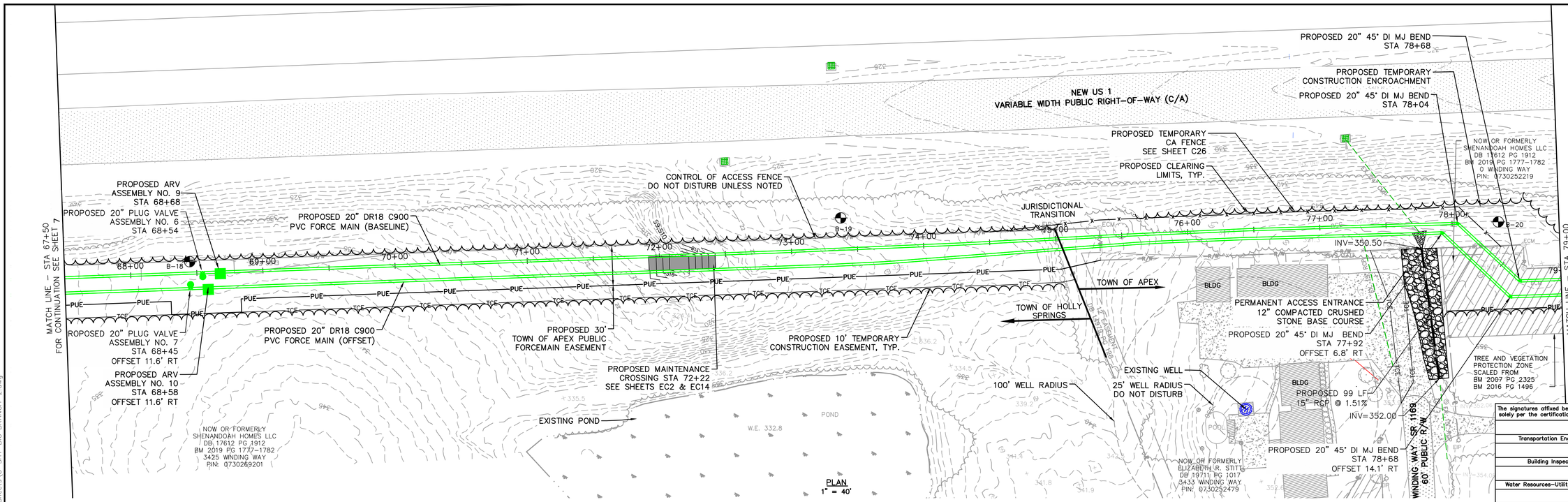
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE STA 56+00 TO STA 67+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C5

SHEET NUMBER 7 OF 56

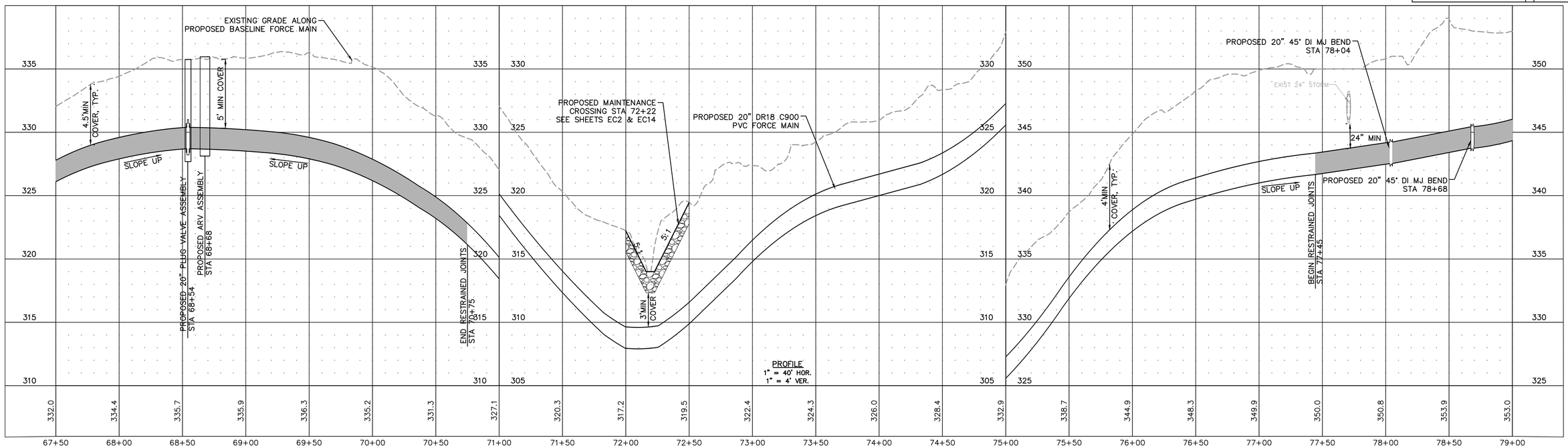


NOTES:
1. SEE SHEETS C26 AND C27 FOR FENCE MODIFICATION DETAILS

GRAPHIC SCALE IN FEET
0 20 40 80

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

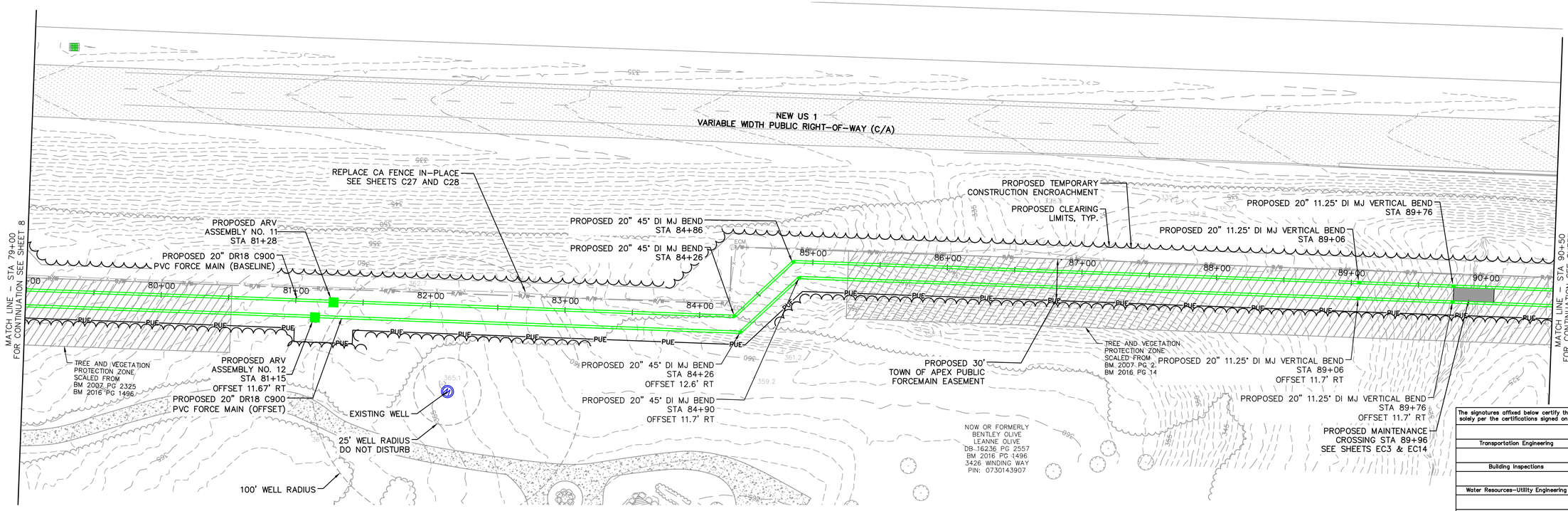
FORCE MAIN PLAN AND PROFILE
STA 67+50 TO STA 79+00

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C6

SHEET NUMBER 8 OF 56

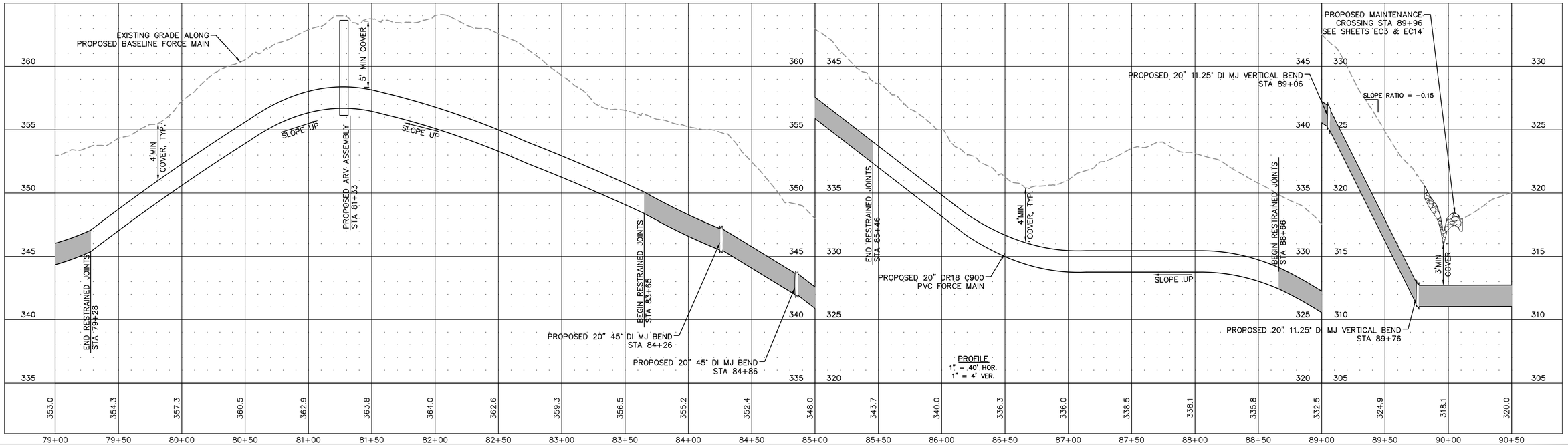
NOTES:
1. SEE SHEETS C27 AND C28 FOR FENCE MODIFICATION DETAILS.



PLAN
1" = 40'

GRAPHIC SCALE IN FEET
0 20 40 80

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



PROFILE
1" = 40' HOR.
1" = 4' VER.

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

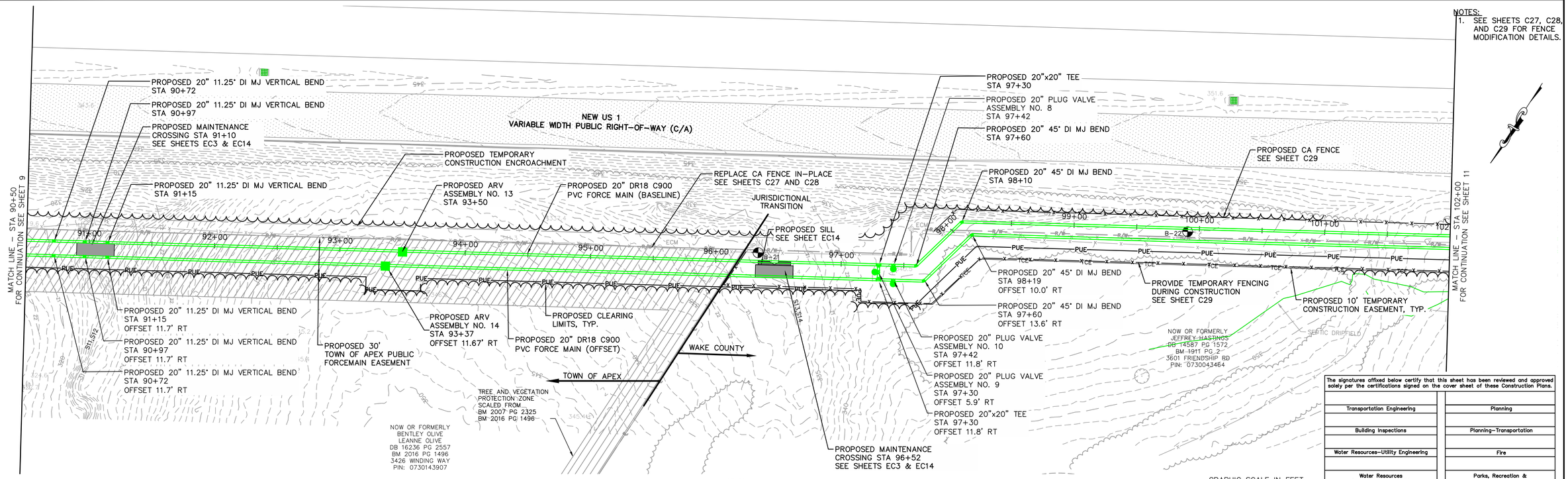
FORCE MAIN PLAN AND PROFILE
STA 79+00 TO STA 90+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C7

SHEET NUMBER
9 OF 56

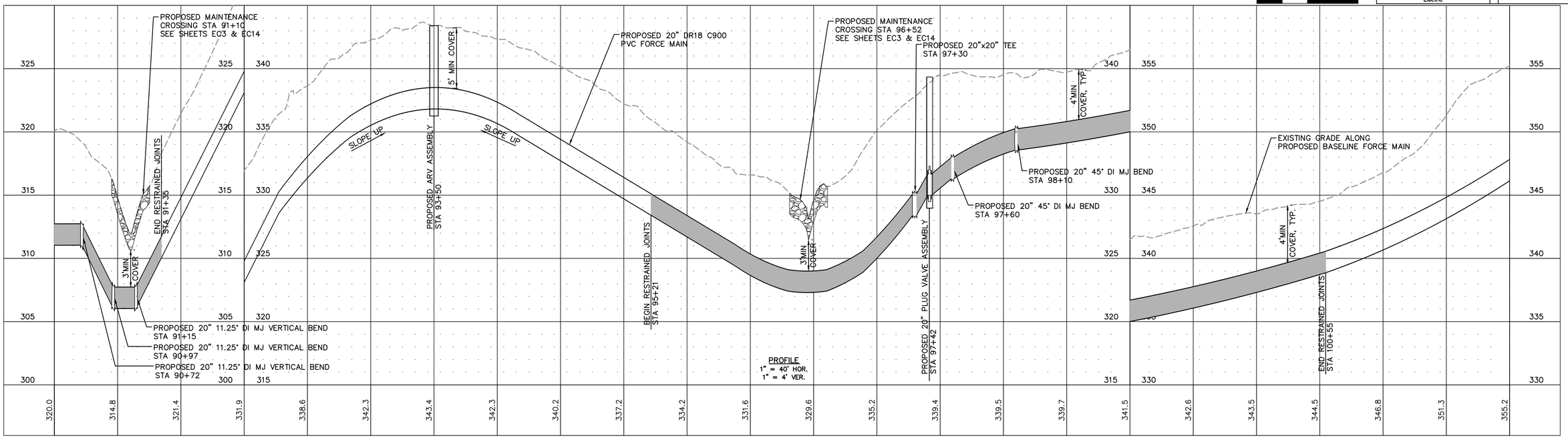
NOTES:
1. SEE SHEETS C27, C28, AND C29 FOR FENCE MODIFICATION DETAILS.



PLAN
1" = 40'

GRAPHIC SCALE IN FEET
0 20 40 80

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



PROFILE
1" = 40' HOR.
1" = 4' VER.

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 90+50 TO STA 102+00

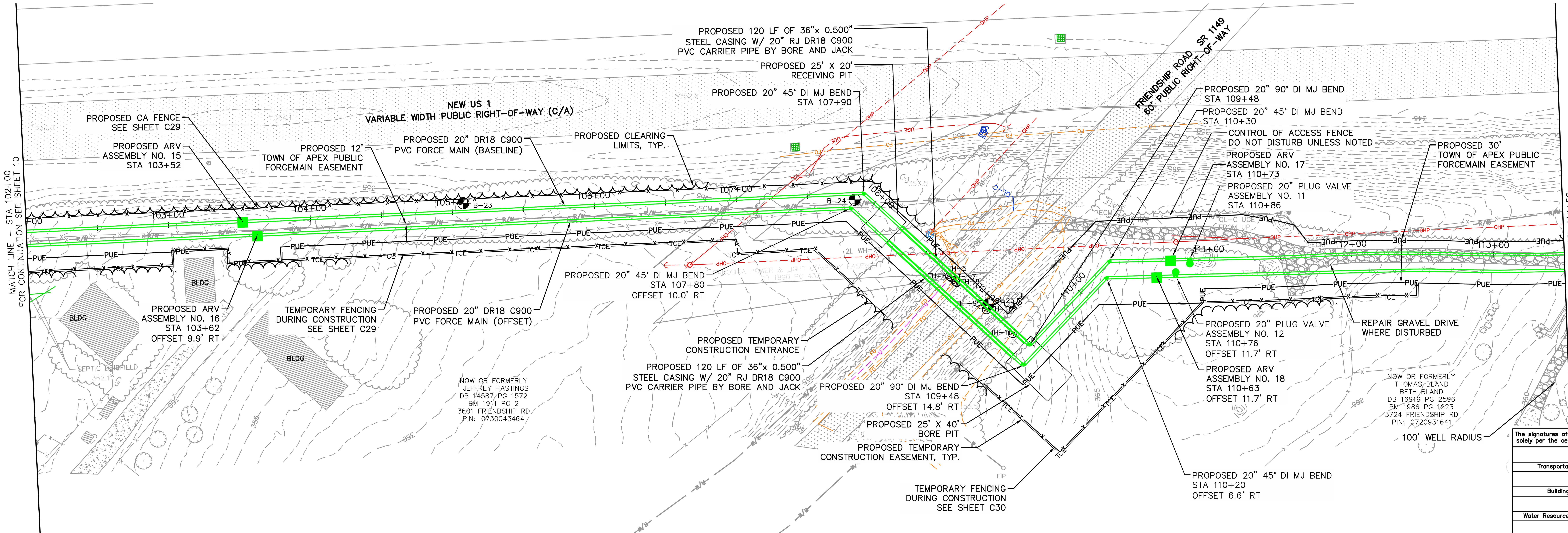
CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C8

SHEET NUMBER 10 OF 56

Plotted By: J Spears Layout: 10 PLAN AND PROFILE January 15, 2025 05:06:14pm S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PS\90 - Drawings\Plan Sheets\C-SHT-BIG BRANCH-2.dwg

NOTES:
1. SEE SHEETS C29 AND C30 FOR FENCE MODIFICATION DETAILS

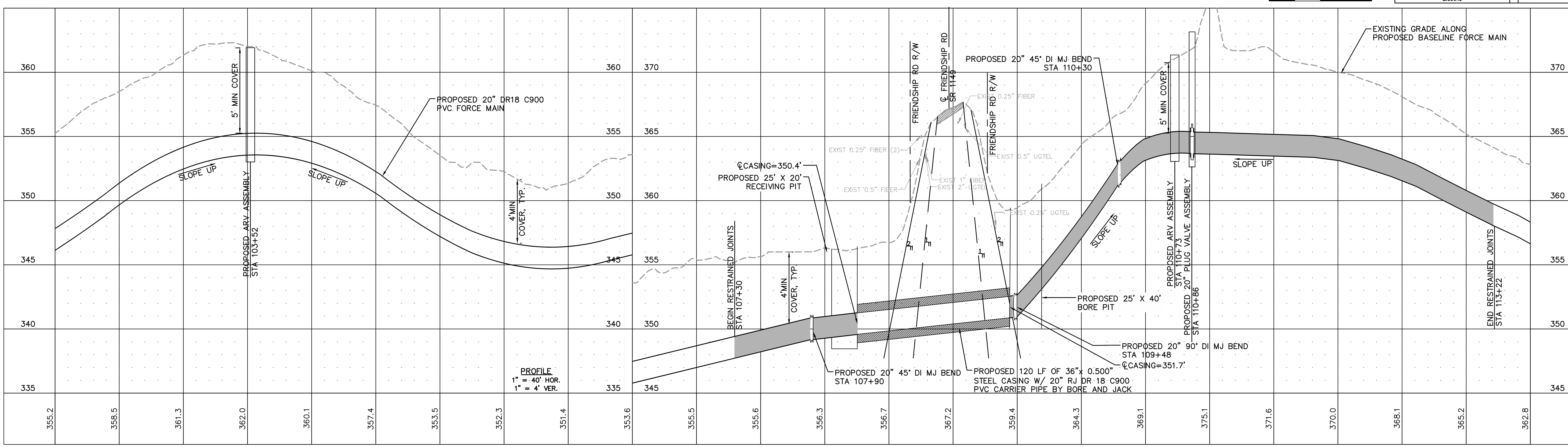


MATCH LINE – STA 102+00 FOR CONTINUATION SEE SHEET 10
MATCH LINE – STA 113+50 FOR CONTINUATION SEE SHEET 12
PROPOSED 120 LF OF 36"x 0.500" STEEL CASING W/ 20" RJ DR18 C900 PVC CARRIER PIPE BY BORE AND JACK
PROPOSED 25' X 20' RECEIVING PIT
PROPOSED 20" 45° DI MJ BEND STA 107+90
NEW US 1 VARIABLE WIDTH PUBLIC RIGHT-OF-WAY (C/A)
PROPOSED CA FENCE SEE SHEET C29
PROPOSED ARV ASSEMBLY NO. 15 STA 103+52
PROPOSED 12' TOWN OF APEX PUBLIC FORCEMAIN EASEMENT
PROPOSED 20" DR18 C900 PVC FORCE MAIN (BASELINE)
PROPOSED CLEARING LIMITS, TYP.
FRIENDSHIP ROAD SR 1149 60' PUBLIC RIGHT-OF-WAY
PROPOSED 20" 90° DI MJ BEND STA 109+48
PROPOSED 20" 45° DI MJ BEND STA 110+30
CONTROL OF ACCESS FENCE DO NOT DISTURB UNLESS NOTED
PROPOSED ARV ASSEMBLY NO. 17 STA 110+73
PROPOSED 20" PLUG VALVE ASSEMBLY NO. 11 STA 110+86
PROPOSED 30' TOWN OF APEX PUBLIC FORCEMAIN EASEMENT
PROPOSED ARV ASSEMBLY NO. 16 STA 103+62 OFFSET 9.9' RT
TEMPORARY FENCING DURING CONSTRUCTION SEE SHEET C29
PROPOSED 20" DR18 C900 PVC FORCE MAIN (OFFSET)
PROPOSED 20" 45° DI MJ BEND STA 107+80 OFFSET 10.0' RT
PROPOSED TEMPORARY CONSTRUCTION ENTRANCE
PROPOSED 120 LF OF 36"x 0.500" STEEL CASING W/ 20" RJ DR18 C900 PVC CARRIER PIPE BY BORE AND JACK
PROPOSED 20" 90° DI MJ BEND STA 109+48 OFFSET 14.8' RT
PROPOSED 25' X 40' BORE PIT
PROPOSED TEMPORARY CONSTRUCTION EASEMENT, TYP.
TEMPORARY FENCING DURING CONSTRUCTION SEE SHEET C30
PROPOSED 20" PLUG VALVE ASSEMBLY NO. 12 STA 110+76 OFFSET 11.7' RT
PROPOSED ARV ASSEMBLY NO. 18 STA 110+63 OFFSET 11.7' RT
REPAIR GRAVEL DRIVE WHERE DISTURBED
PROPOSED 20" 45° DI MJ BEND STA 110+20 OFFSET 6.6' RT
NOW OR FORMERLY JEFFREY HASTINGS DB 14587 PG 1572 BM 1911 PG 2 3601 FRIENDSHIP RD PIN: 0730043464
NOW OR FORMERLY THOMAS BLAND BETH BLAND DB 16919 PG 2596 BM 1986 PG 1223 3724 FRIENDSHIP RD PIN: 0720931641
100' WELL RADIUS
BLDG
SEPTIC DRAINFIELD
B-23
B-24
103+00
104+00
105+00
106+00
107+00
108+00
110+00
111+00
112+00
113+00
PUE
TCE

PLAN
1" = 40'

GRAPHIC SCALE IN FEET
0 20 40 80

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



360
355
350
345
340
335
370
365
5' MIN COVER
PROPOSED 20" DR18 C900 PVC FORCE MAIN
SLOPE UP
PROPOSED ARV ASSEMBLY STA 103+52
4' MIN COVER, TYP.
EXISTING GRADE ALONG PROPOSED BASELINE FORCE MAIN
PROPOSED 20" 45° DI MJ BEND STA 110+30
FRIENDSHIP RD R/W
℄ FRIENDSHIP RD SR 1149
℄CASING=350.4'
PROPOSED 25' X 20' RECEIVING PIT
BEGIN RESTRAINED JOINTS STA 107+30
PROPOSED ARV ASSEMBLY STA 110+73
PROPOSED 20" PLUG VALVE ASSEMBLY STA 110+86
END RESTRAINED JOINTS STA 113+22
PROPOSED 25' X 40' BORE PIT
PROPOSED 20" 90° DI MJ BEND STA 109+48
℄CASING=351.7'
PROPOSED 20" 45° DI MJ BEND STA 107+90
PROPOSED 120 LF OF 36"x 0.500" STEEL CASING W/ 20" RJ DR 18 C900 PVC CARRIER PIPE BY BORE AND JACK
PROFILE
1" = 40' HOR.
1" = 4' VER.
355.2 358.5 361.3 362.0 360.1 357.4 353.5 352.3 351.4 353.6 355.5 355.6 356.3 356.7 367.2 359.4 364.3 369.1 375.1 371.6 370.0 368.1 365.2 362.8
102+00 102+50 103+00 103+50 104+00 104+50 105+00 105+50 106+00 106+50 107+00 107+50 108+00 108+50 109+00 109+50 110+00 110+50 111+00 111+50 112+00 112+50 113+00 113+50

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 102+00 TO STA 113+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C9

SHEET NUMBER
11 OF 56

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT-OF-WAY (C/A)

MATCH LINE – STA 113+50
FOR CONTINUATION SEE SHEET 11

MATCH LINE – STA 125+00
FOR CONTINUATION SEE SHEET 13

CONTROL OF ACCESS FENCE
DO NOT DISTURB UNLESS NOTED

PROPOSED 20" DR18 C900
PVC FORCE MAIN (BASELINE)

PROPOSED 20" 45° DI MJ BEND
STA 117+96

PROPOSED 20" 45° DI MJ BEND
STA 118+32

PROPOSED CLEARING
LIMITS, TYP.

REPAIR GRAVEL DRIVE
WHERE DISTURBED

PROPOSED 20" DR18 C900
PVC FORCE MAIN (OFFSET)

PROPOSED 20" 45°
DI MJ BEND
STA 118+37
OFFSET 11.7' RT

PROPOSED 20" 45°
DI MJ BEND
STA 118+08
OFFSET 11.7' RT

TEMPORARY FENCING
DURING CONSTRUCTION
SEE SHEET C31

PROPOSED 30'
TOWN OF APEX PUBLIC
FORCEMAIN EASEMENT

PROPOSED 10' TEMPORARY
CONSTRUCTION EASEMENT, TYP.

100' WELL RADIUS

EXISTING BACKUP WELL

25' WELL RADIUS
DO NOT DISTURB

NOW OR FORMERLY
THOMAS BLAND
BETH BLAND
DB 16919 PG 2596
BM 1986 PG 1223
3724 FRIENDSHIP RD
PIN: 0720931641

100' WELL RADIUS

25' WELL RADIUS
DO NOT DISTURB

EXISTING WELL

NOW OR FORMERLY
YATES FRIENDSHIP FARM LLC
DB 19552 PG 185
BM 2004 PG 1386
3716 FRIENDSHIP RD
PIN: 0720838629

NOW OR FORMERLY
CHARLES BAUCOM
DB 18961 PG 2496
BM 2022 PG 334
0 OLD US 1 HWY
PIN: 0720628996

PLAN
1" = 40'

NOTES:
1. SEE SHEETS C30 AND C31 FOR FENCE MODIFICATION DETAILS.

GRAPHIC SCALE IN FEET
0 20 40 80

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

PROPOSED 20" 45° DI MJ BEND
STA 117+96

PROPOSED 20" 45° DI MJ BEND
STA 118+32

EXISTING GRADE ALONG
PROPOSED BASELINE FORCE MAIN

PROPOSED 20" DR18 C900
PVC FORCE MAIN

4' MIN
COVER, TYP.

BEGIN RESTRAINED JOINTS
STA 117+36

END RESTRAINED JOINTS
STA 118+92

SLOPE UP

PROFILE
1" = 40' HOR.
1" = 4' VER.

113+50	114+00	114+50	115+00	115+50	116+00	116+50	117+00	117+50	118+00	118+50	119+00	119+50	120+00	120+50	121+00	121+50	122+00	122+50	123+00	123+50	124+00	124+50	125+00
362.8	360.0	357.5	356.2	353.8	352.6	351.2	349.0	348.9	349.2	350.5	352.4	353.6	353.6	353.8	352.0	348.8	343.9	336.7	331.7	327.7	325.2	323.9	321.8

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 113+50 TO STA 125+00

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C10

SHEET NUMBER
12 OF 56

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT-OF-WAY (C/A)

MATCH LINE – STA 124+95
FOR CONTINUATION SEE SHEET 12

MATCH LINE – STA 136+50
FOR CONTINUATION SEE SHEET 14

PROPOSED 55 LF OF 36"x 0.500" STEEL CASING W/ 20" RJ DR18 C900 PVC CARRIER PIPE BY OPEN CUT

PROPOSED SILL, SEE SHEET EC14

PROPOSED 20" 22.5° DI MJ VERTICAL BEND STA 126+63

PROPOSED 20" 22.5° DI MJ VERTICAL BEND STA 126+86

PROPOSED DOUBLE GATE IN R/W FENCE STA 128+49 SEE DETAIL 866.02 ON SHEET C34

PROPOSED 20" 45° DI MJ BEND STA 129+14

PROPOSED 20" 45° DI MJ BEND STA 129+58

PROPOSED ARV ASSEMBLY NO. 19 STA 130+40

CONTROL OF ACCESS FENCE DO NOT DISTURB UNLESS NOTED

PROPOSED CLEARING LIMITS, TYP.

PROPOSED 20" 45° DI MJ BEND STA 133+66

PROPOSED 20" 45° DI MJ BEND STA 134+08

PROPOSED 20" DR18 C900 PVC FORCE MAIN (BASELINE)

PROPOSED 20" DR18 C900 PVC FORCE MAIN (OFFSET)

PROPOSED 20" 22.5° DI MJ VERTICAL BEND STA 126+87 OFFSET 11.7' RT

PROPOSED 20" 22.5° DI MJ VERTICAL BEND STA 126+66 OFFSET 11.7' RT

PROPOSED MAINTENANCE CROSSING STA 126+61 SEE SHEETS EC4 & EC14

PROPOSED 55 LF OF 36"x 0.500" STEEL CASING W/ 20" RJ DR18 C900 PVC CARRIER PIPE BY OPEN CUT

50' DIXIE PIPELINE COMPANY GAS EASEMENT BM 2022 PG 334 Ex. 6" STEEL

PROPOSED 20" 45° DI MJ BEND STA 129+58 OFFSET 12.6' RT

PROPOSED 20" 45° DI MJ BEND STA 129+09 OFFSET 11.7' RT

PROPOSED ARV ASSEMBLY NO. 20 STA 130+30 OFFSET 11.7' RT

PROPOSED 30' TOWN OF APEX PUBLIC FORCEMAIN EASEMENT

PROPOSED 10' TEMPORARY CONSTRUCTION EASEMENT, TYP.

PROPOSED 20" 45° DI MJ BEND STA 134+03 OFFSET 11.7' RT

PROPOSED 20" 45° DI MJ BEND STA 133+66 OFFSET 12.6' RT

EXISTING WETLAND

NOW OR FORMERLY
CHARLES BAUCOM
DB 18961 PG 2496
BM 2022 PG 334
0 OLD US 1 HWY
PIN: 0720628996

B-26 B-27 B-28 TH-12

PLAN
1" = 40'

GRAPHIC SCALE IN FEET
0 20 40 80

NOTES:
1. CONTRACTOR SHALL PLACE A ONE-CALL (811) AT LEAST 48-HOURS PRIOR TO CROSSING THE GAS PIPELINE. ENTERPRISE REPRESENTATIVE MUST BE ON-SITE TO PERFORM CROSSING.
2. CONTRACTOR SHALL SUPPORT THE GAS MAIN EVERY 10' IF EXPOSED VIA OPEN-CUT.
3. IF ROCK IS ENCOUNTERED DURING GAS CROSSING, SPECIFIC PLANS SHALL BE SUPPLIED INDICATING CROSSING REVISIONS, SUBJECT TO REVIEW AND APPROVAL BY ENTERPRISE.

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

PROFILE
1" = 40' HOR.
1" = 4' VER.

EXISTING 50' DIXIE PIPELINE COMPANY GAS, EASEMENT

EXIST 8" GAS LINE

24" MIN

3' MIN COVER

BEGIN RESTRAINED JOINTS STA 126+10

END RESTRAINED JOINTS STA 127+47

BEGIN RESTRAINED JOINTS STA 128+54

END RESTRAINED JOINTS STA 130+18

PROPOSED ARV ASSEMBLY STA 130+40

5' MIN COVER

4' MIN COVER, TYP.

SLOPE UP

SLOPE UP

EXISTING GRADE ALONG PROPOSED BASELINE FORCE MAIN

PROPOSED 20" DR18 C900 PVC FORCE MAIN

BEGIN RESTRAINED JOINTS STA 133+02

END RESTRAINED JOINTS STA 134+68

PROPOSED 20" 22.5° DI MJ VERTICAL BEND STA 126+86

PROPOSED 20" 22.5° DI MJ VERTICAL BEND STA 126+63

PROPOSED 20" 45° DI MJ BEND STA 129+58

PROPOSED 20" 45° DI MJ BEND STA 129+14

PROPOSED 20" 45° DI MJ BEND STA 134+08

PROPOSED 20" 45° DI MJ BEND STA 133+66

PROPOSED 55 LF OF 36"x 0.500" STEEL CASING W/ 20" RJ DR18 C900 PVC CARRIER PIPE BY OPEN CUT

321.8 323.6 320.8 318.5 327.2 330.5 329.8 327.9 328.1 332.3 338.6 338.3 335.9 335.5 333.7 332.6 328.2 323.0 320.6 317.2 314.0 310.0 306.8 302.2

125+00 125+50 126+00 126+50 127+00 127+50 128+00 128+50 129+00 129+50 130+00 130+50 131+00 131+50 132+00 132+50 133+00 133+50 134+00 134+50 135+00 135+50 136+00 136+50

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 125+00 TO STA 136+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C11

SHEET NUMBER
13 OF 56

Plotted By: I Speers Layout: 13 PLAN AND PROFILE January 15, 2025 05:07:37pm S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PS\80 - Drawings\Plan Sheets\C-SHT-BIG BRANCH-3.dwg

PLAN
1" = 40'

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

PROFILE
1" = 40' HOR.
1" = 4' VER.

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

STEPHEN D. LEITCH
029995

CJS Conveyance, PLLC
320 S. ACADEMY ST
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WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

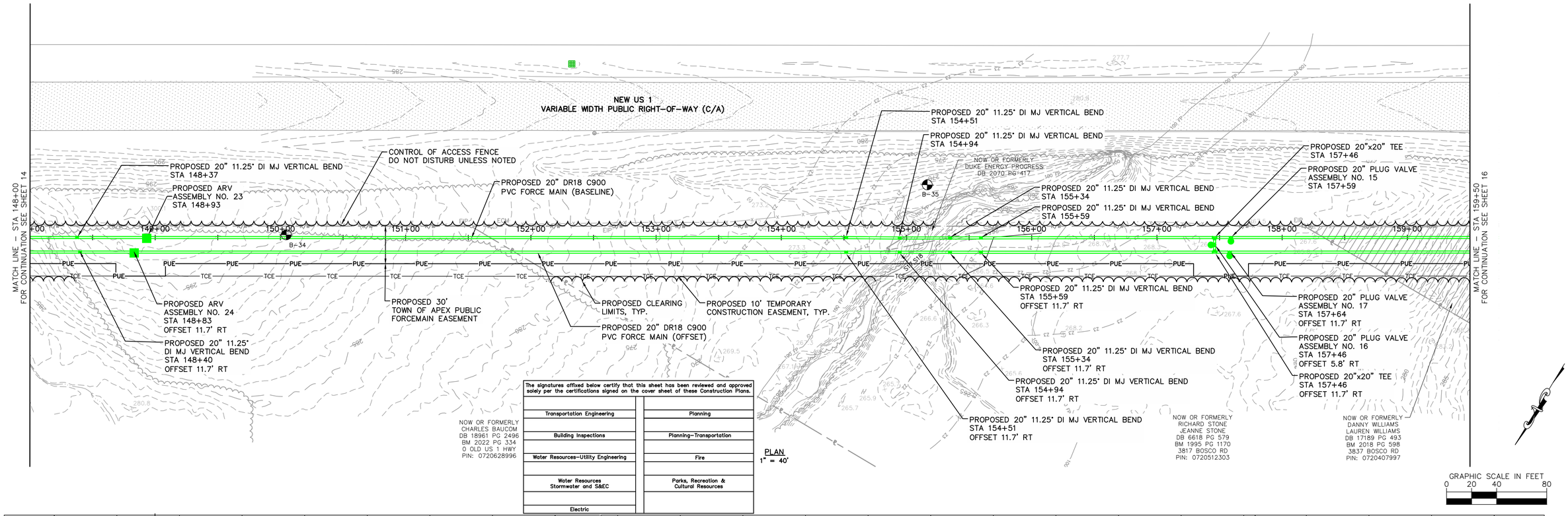
BIG BRANCH 2 PUMP STATION -
FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 136+50 TO STA 148+00

CJS PROJ. #:	100–005
DATE:	12–18–2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C12

SHEET NUMBER
14 OF 56



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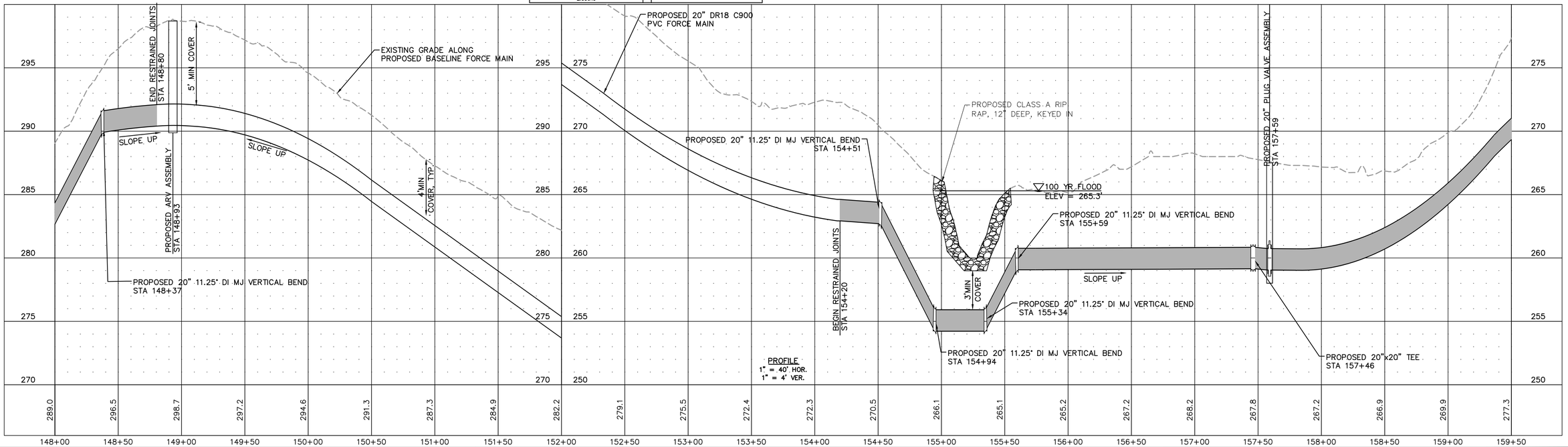
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LELICH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

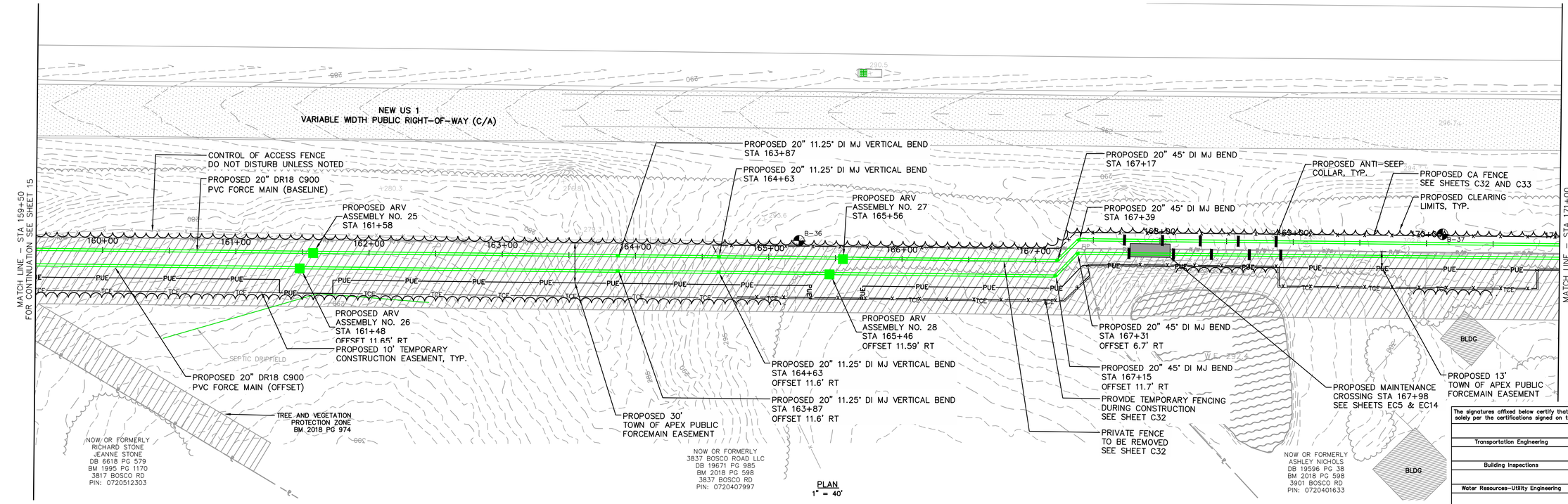
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE STA 148+00 TO STA 159+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 20'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

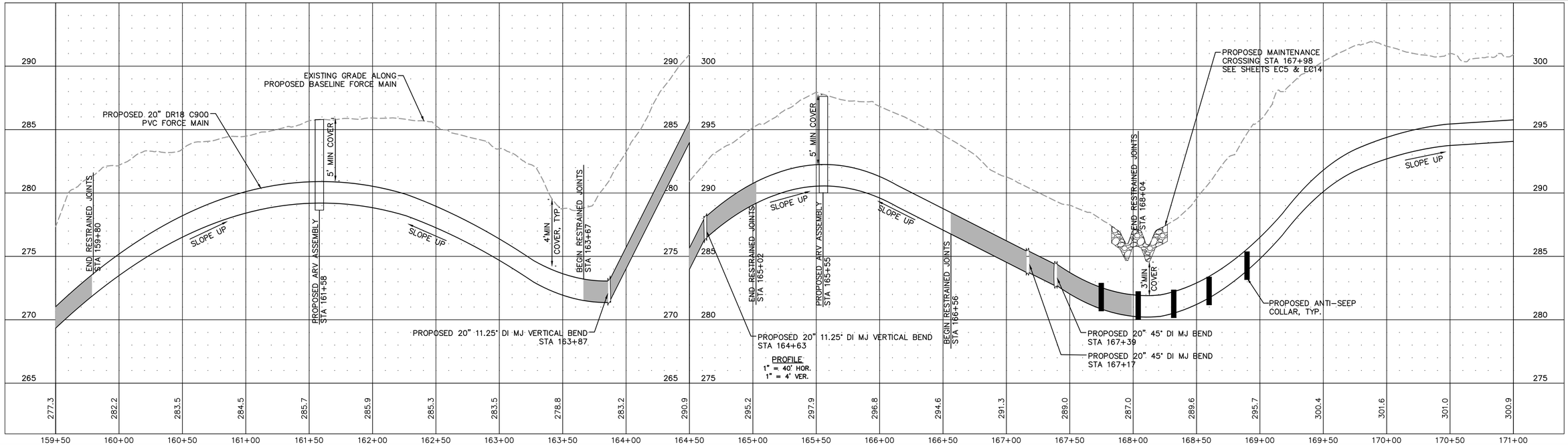
C13

SHEET NUMBER
15 OF 56



NOTES:
1. SEE SHEETS C32 AND C33 FOR FENCE MODIFICATION DETAILS.

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

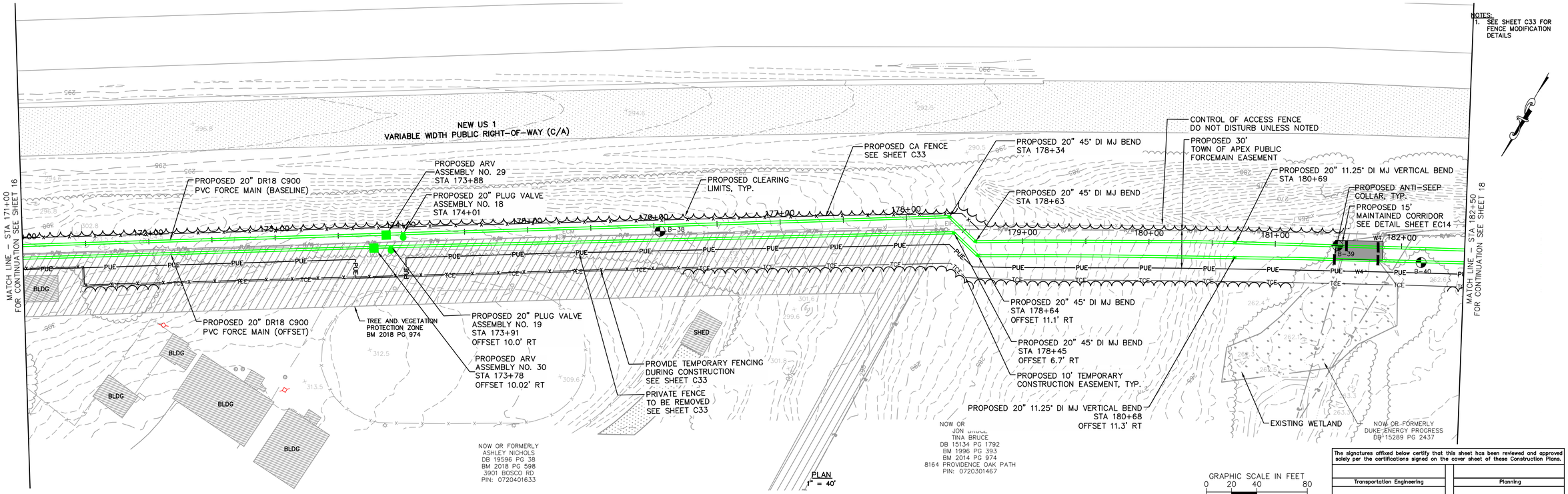
FORCE MAIN PLAN AND PROFILE STA 159+50 TO STA 171+00

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C14

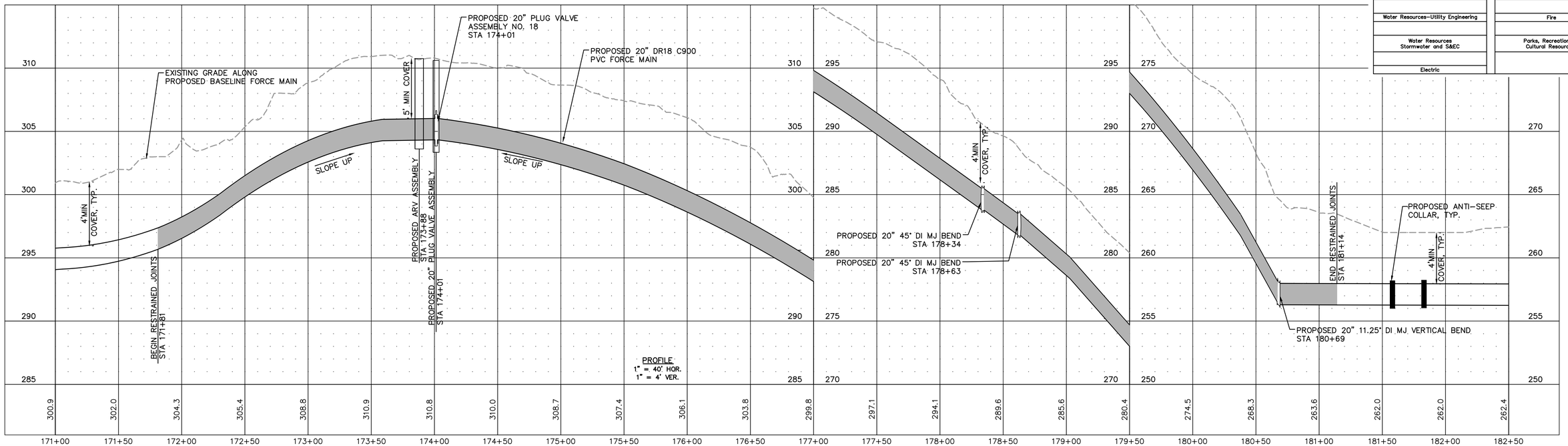
SHEET NUMBER 16 OF 56

NOTES:
1. SEE SHEET C33 FOR FENCE MODIFICATION DETAILS



PLAN
1" = 40'

GRAPHIC SCALE IN FEET
0 20 40 80



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

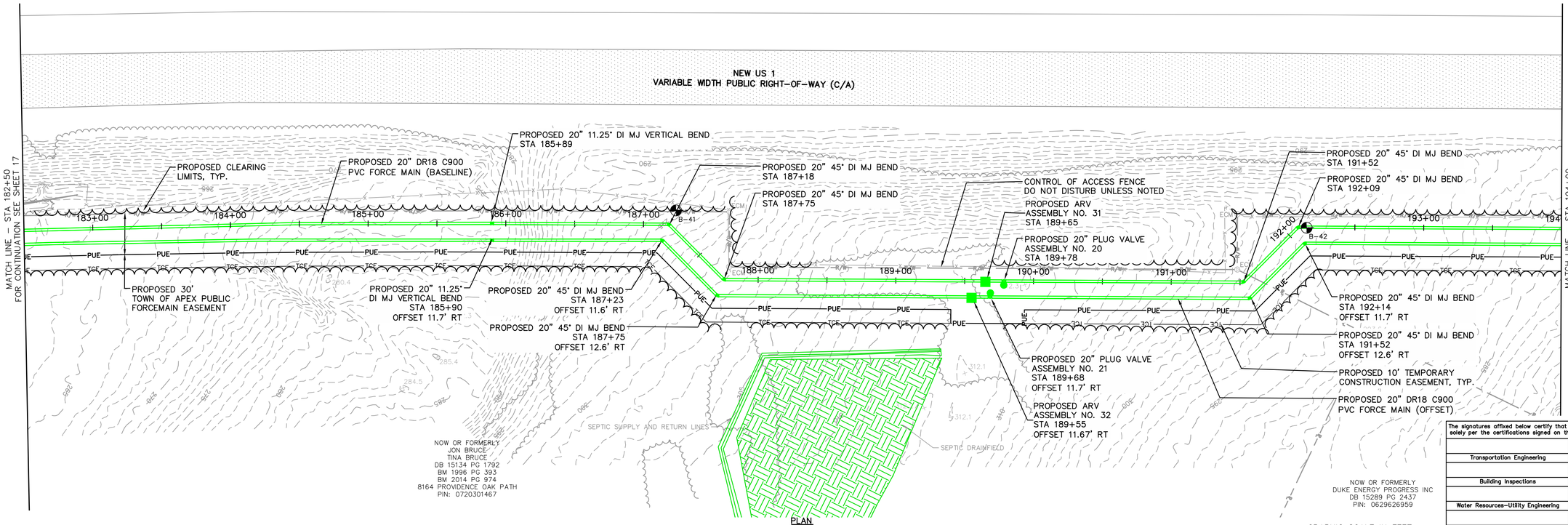
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE STA 171+00 TO STA 182+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

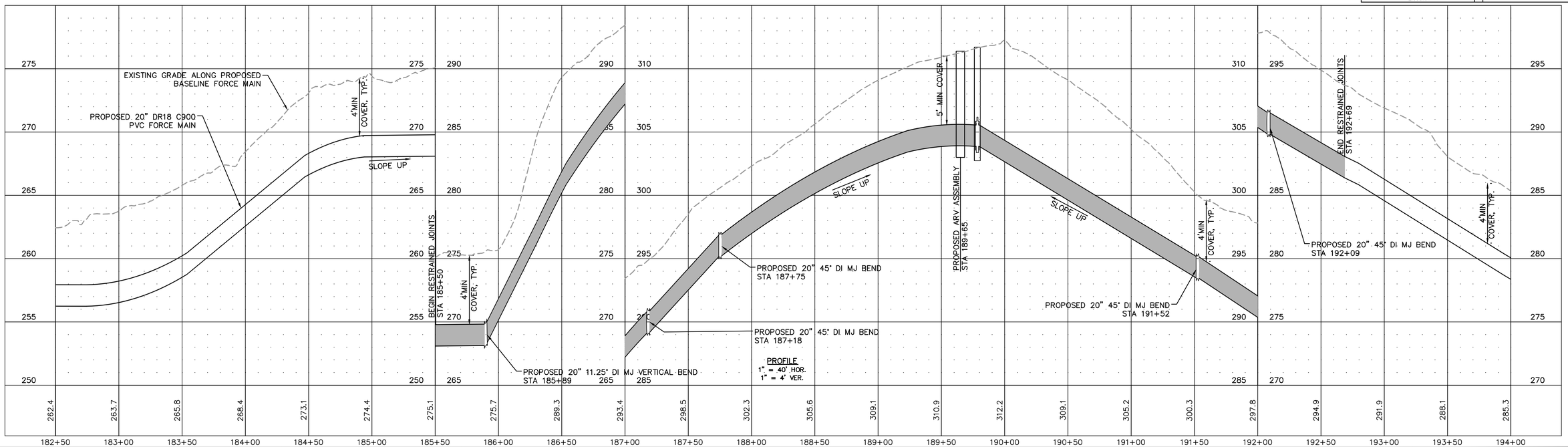
C15

SHEET NUMBER 17 OF 56



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE STA 182+50 TO STA 194+00

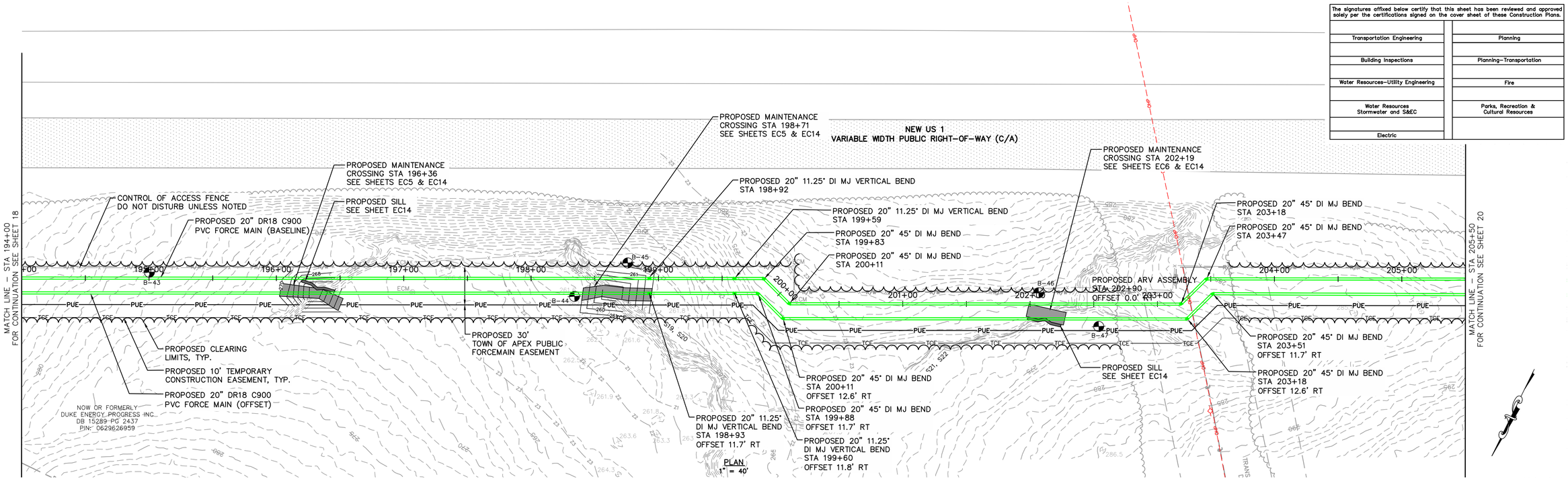
CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

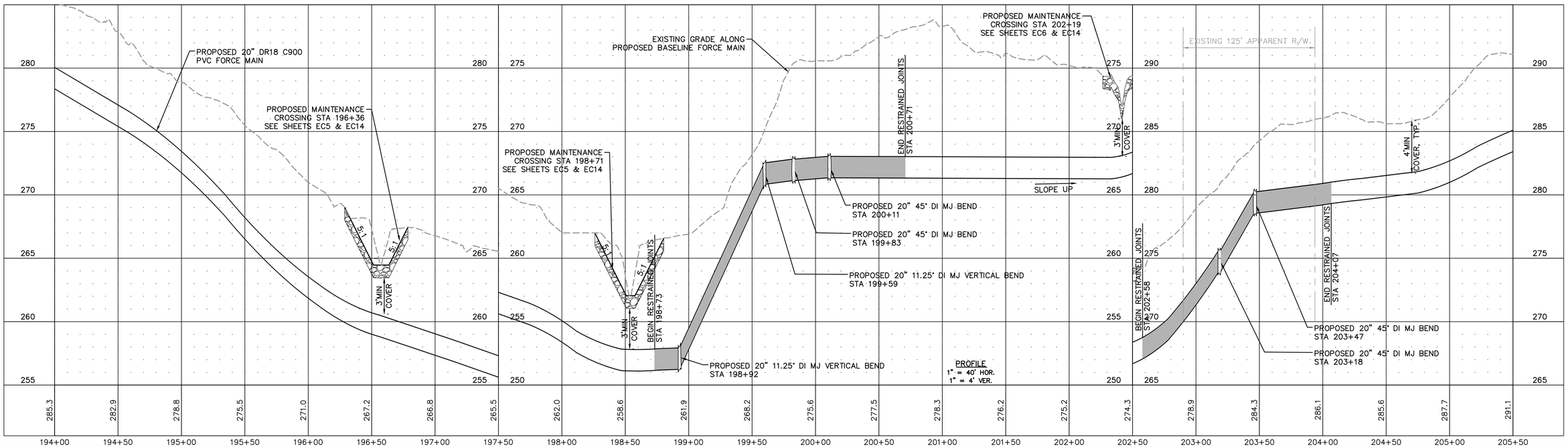
C16

SHEET NUMBER 18 OF 56

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	





No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE STA 194+00 TO STA 205+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C17

SHEET NUMBER 19 OF 56

NOTES:
1. PRIOR TO BORING ACTIVITIES CONTACT PAUL LUSK AT LARRY.LUSK @DOMINIONENERGY.COM OR (919) 819–6983

PLAN
1" = 40'

GRAPHIC SCALE IN FEET
0 20 40 80

PROFILE
1" = 40' HOR.
1" = 4' VER.

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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CARY, NC 27511
NC LICENSE #P–1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

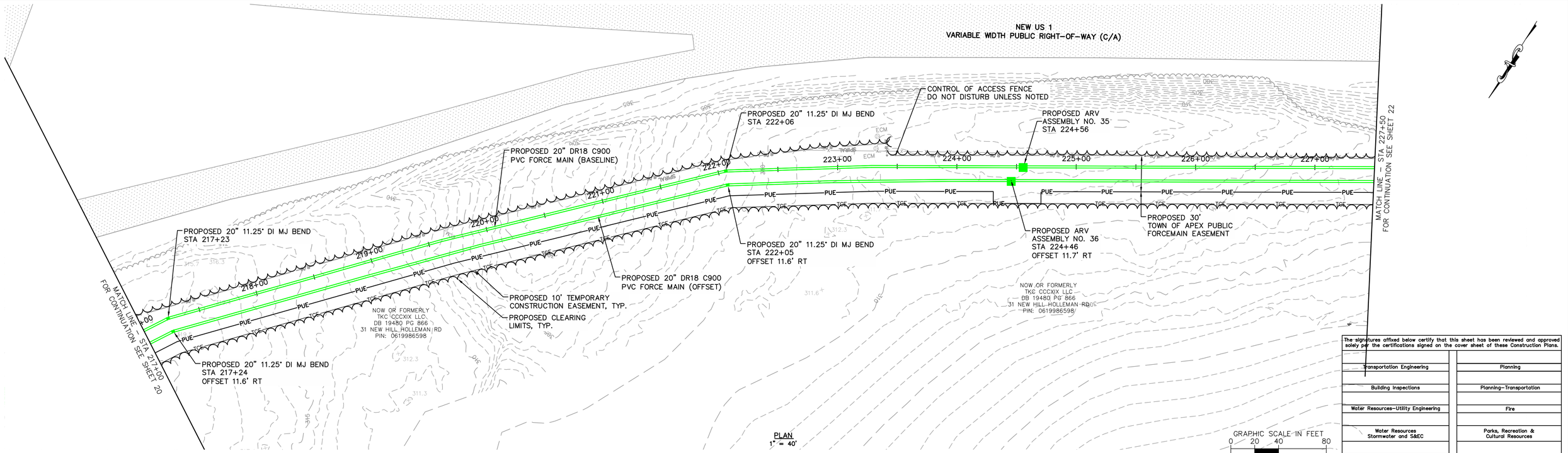
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 205+50 TO STA 217+00

CJS PROJ. #:	100–005
DATE:	12–18–2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C18

SHEET NUMBER 20 OF 56



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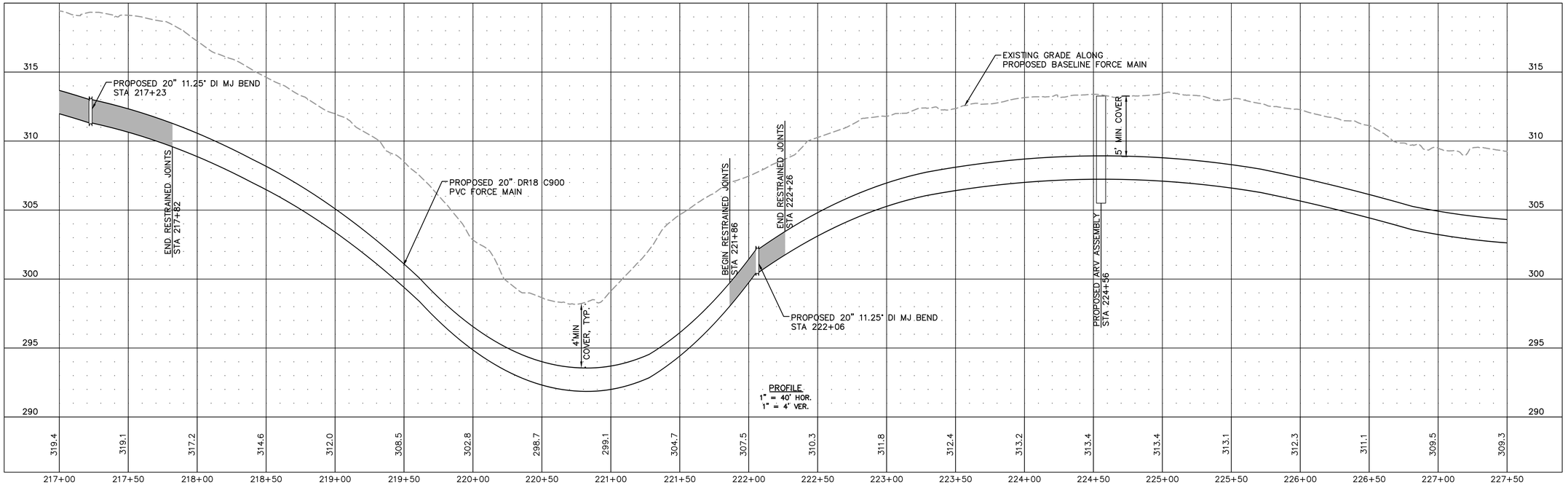
Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

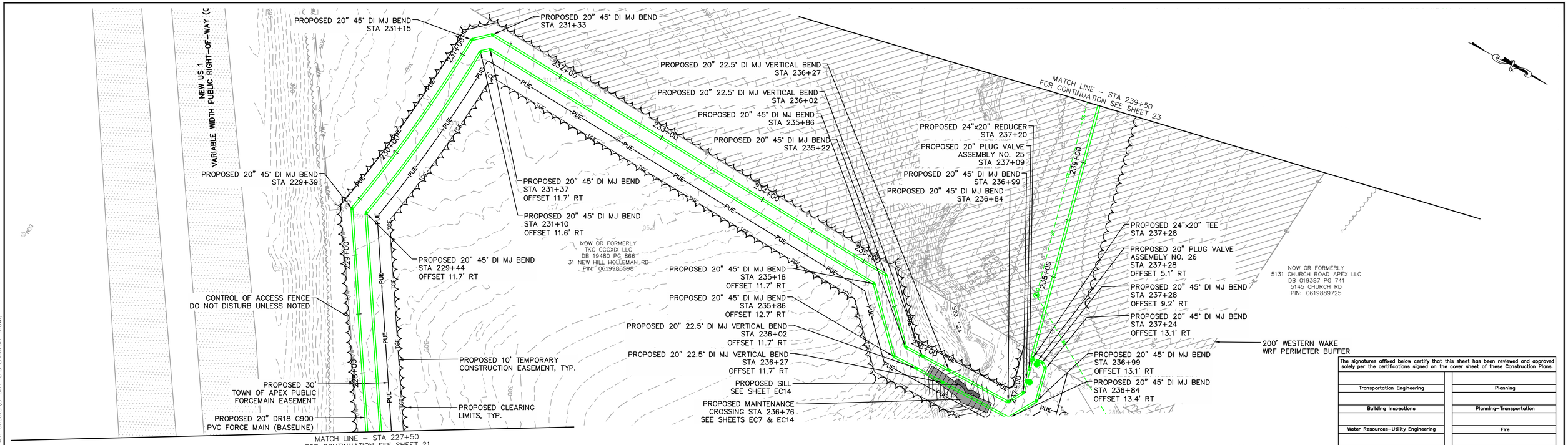
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE STA 217+00 TO STA 227+50

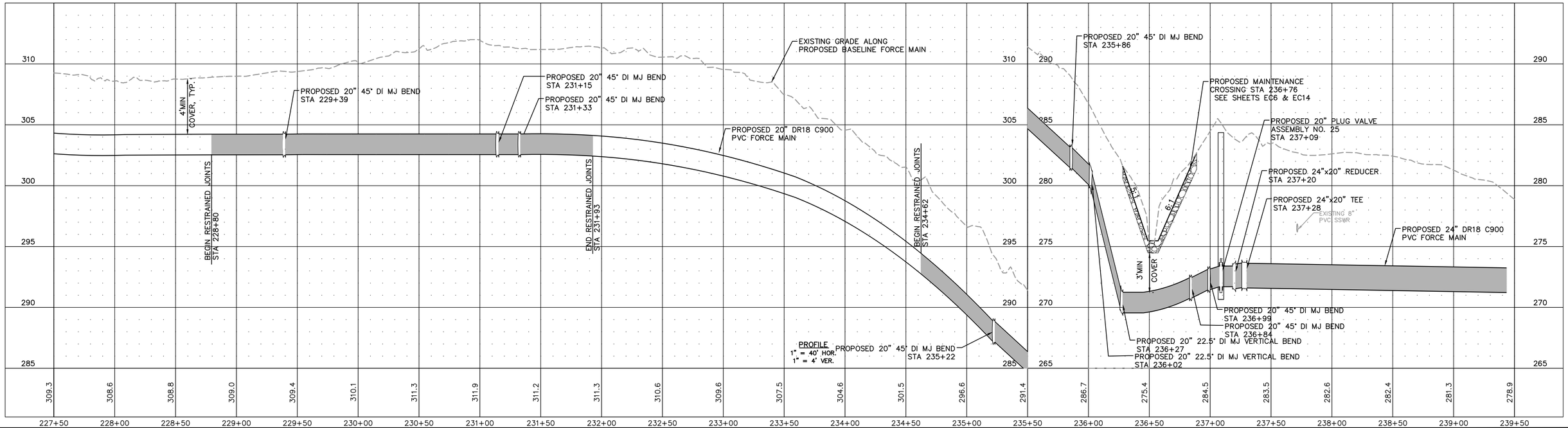
CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C19

SHEET NUMBER 21 OF 56



PLAN
1" = 40'



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Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

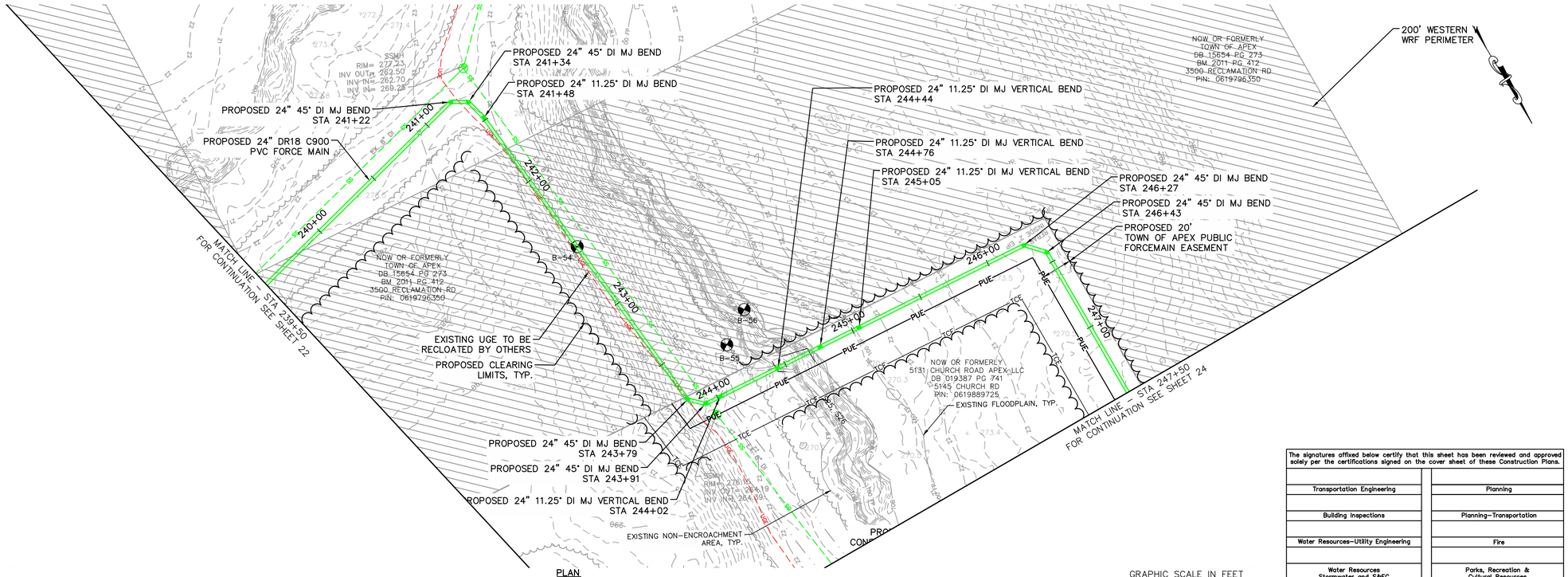
BIG BRANCH 2 PUMP STATION - FORCE MAIN

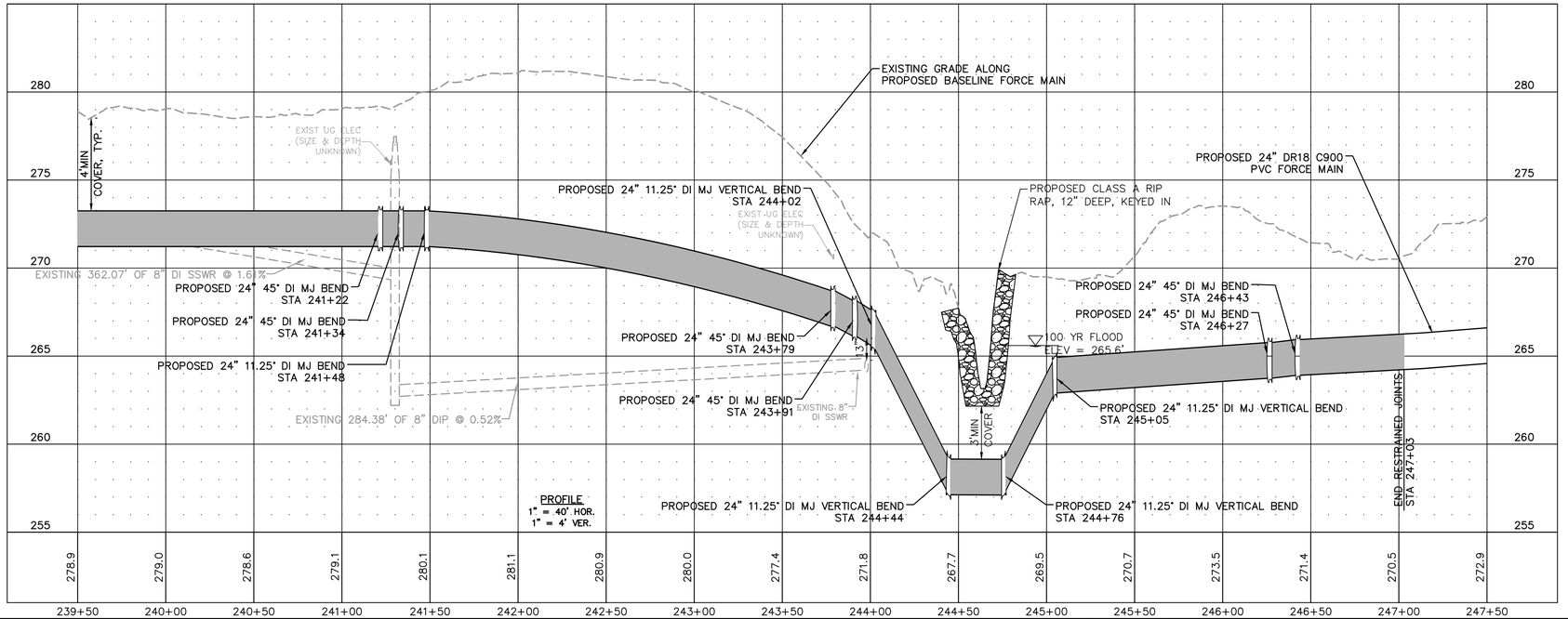
FORCE MAIN PLAN AND PROFILE STA 227+50 TO STA 239+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C20

SHEET NUMBER
22 OF 56





No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE STA 239+50 TO STA 247+50

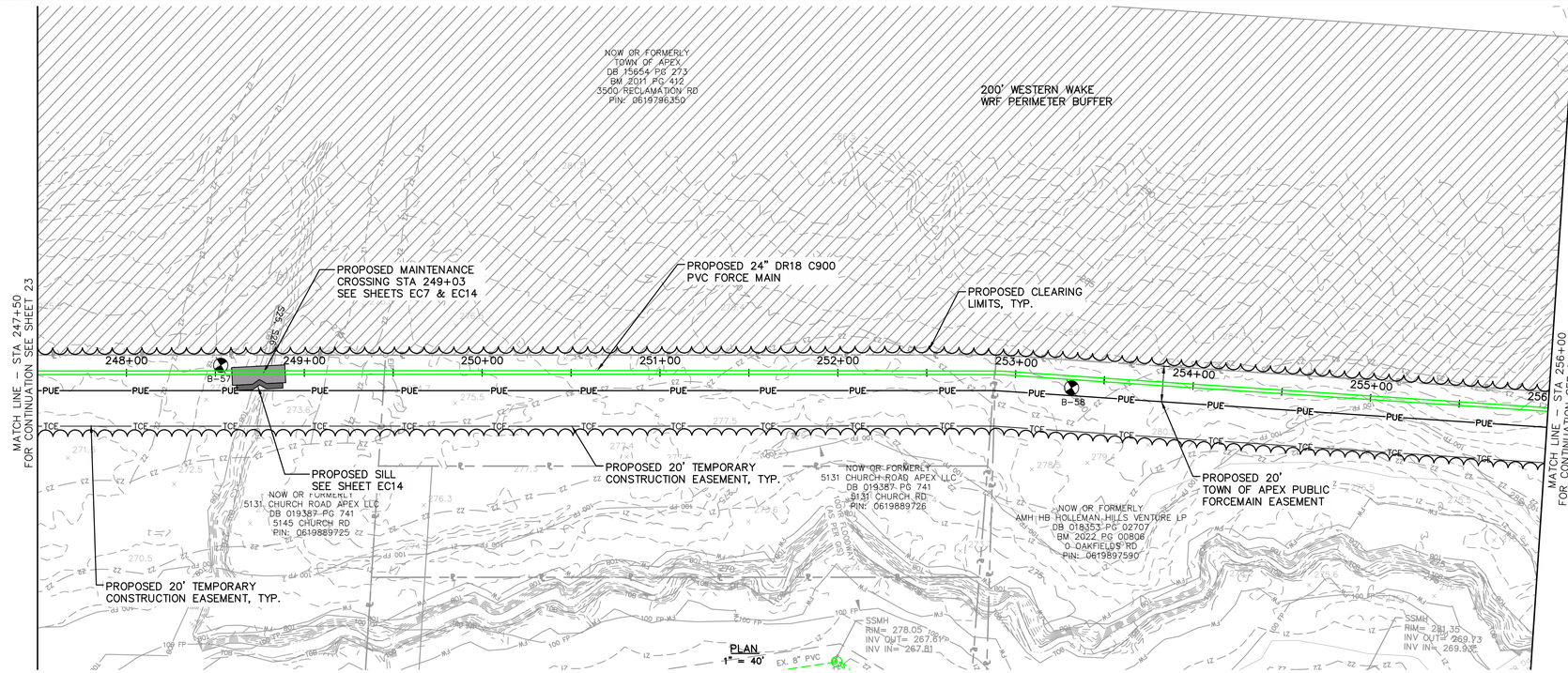
CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

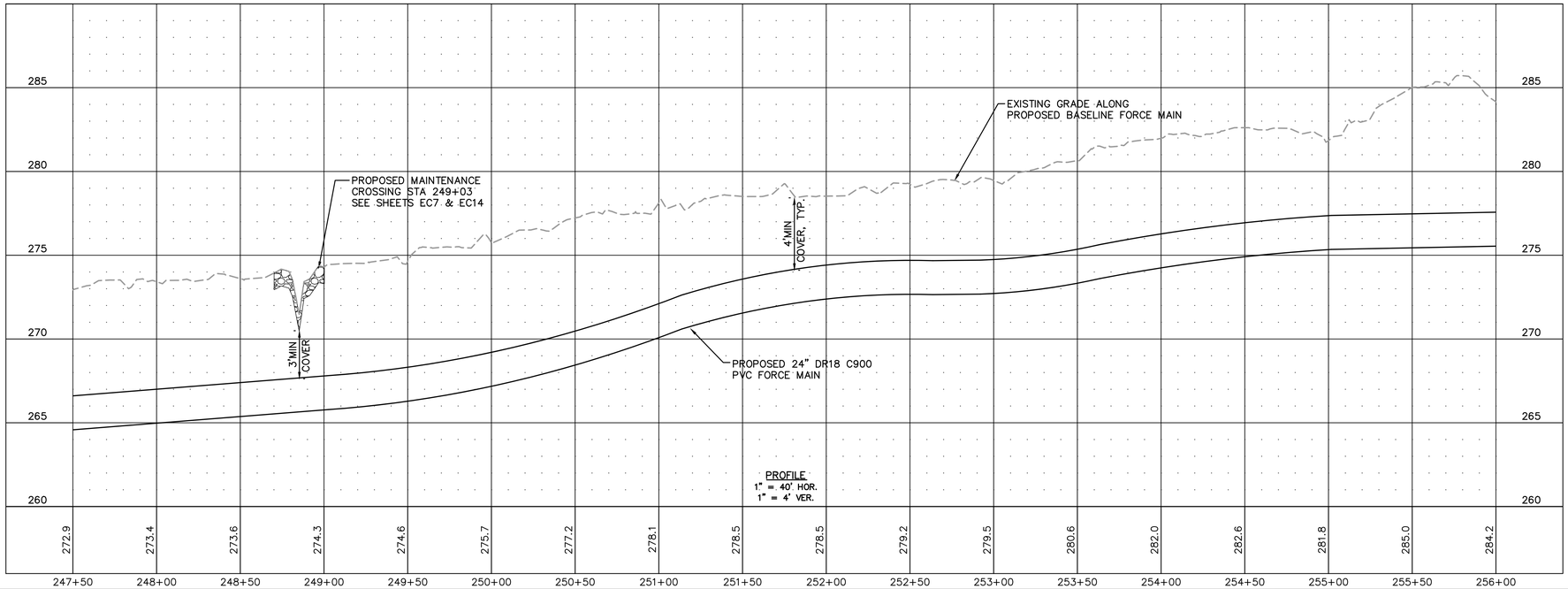
C21

SHEET NUMBER 23 OF 56

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	





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Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

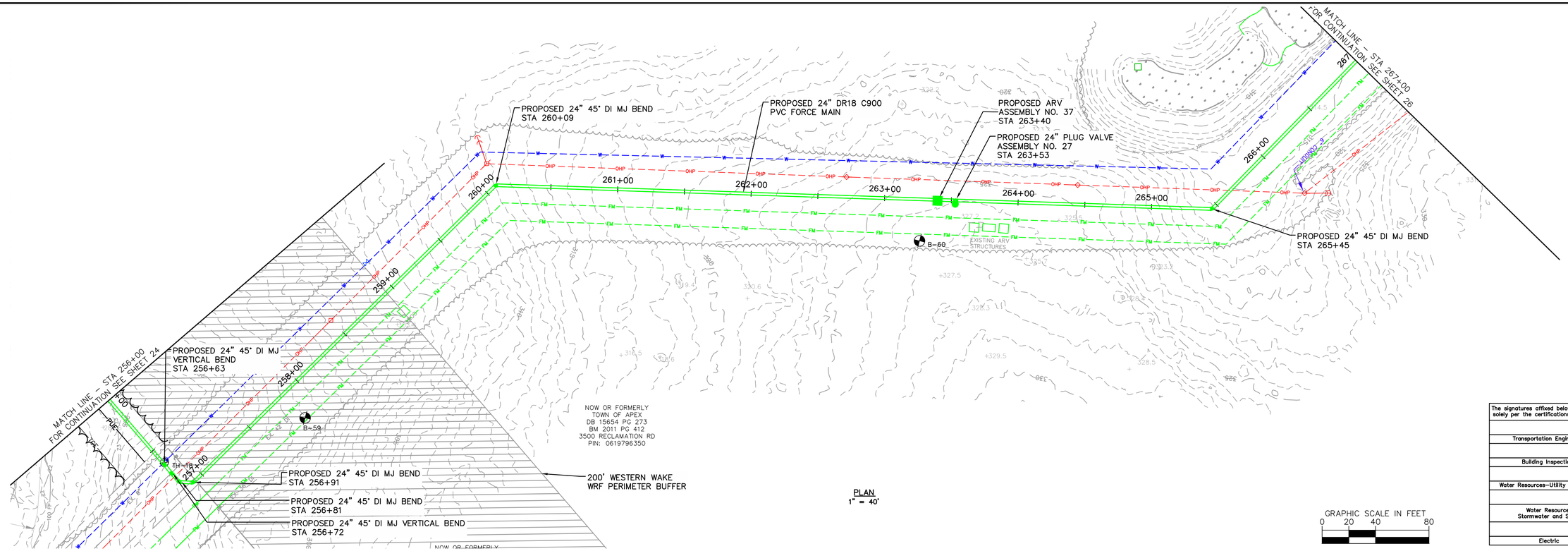
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 247+50 TO STA 256+00

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C22

SHEET NUMBER
24 OF 56



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Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

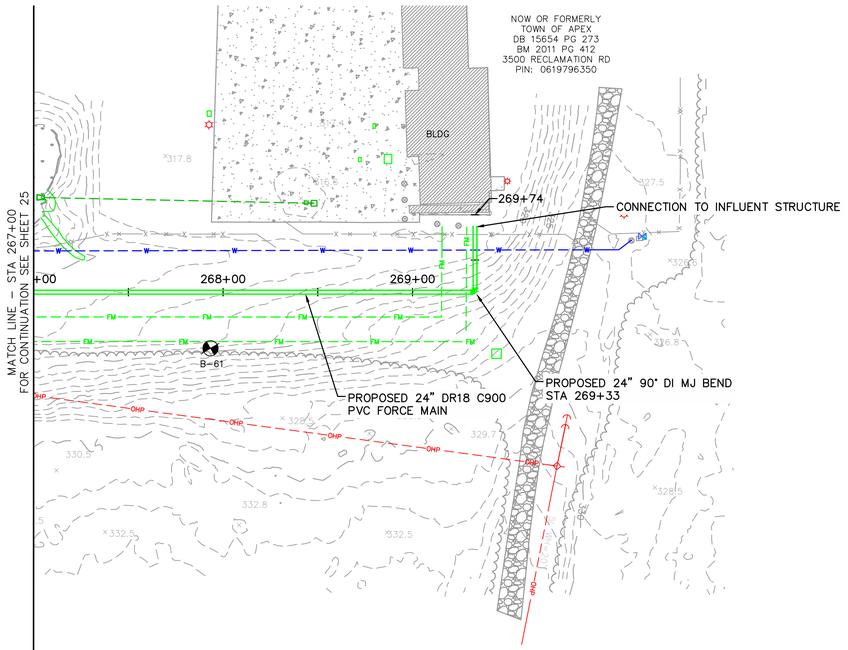
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 256+00 TO STA 267+00

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 20'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C23

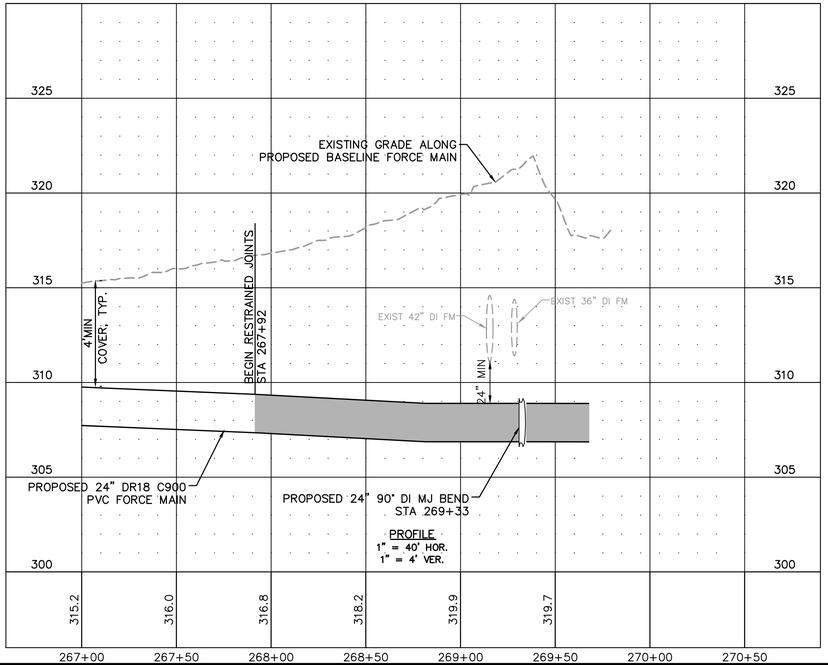
SHEET NUMBER
25 OF 56



PLAN
1" = 40'

GRAPHIC SCALE IN FEET
0 20 40 80

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



PROFILE
1" = 40' HOR.
1" = 4' VER.

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

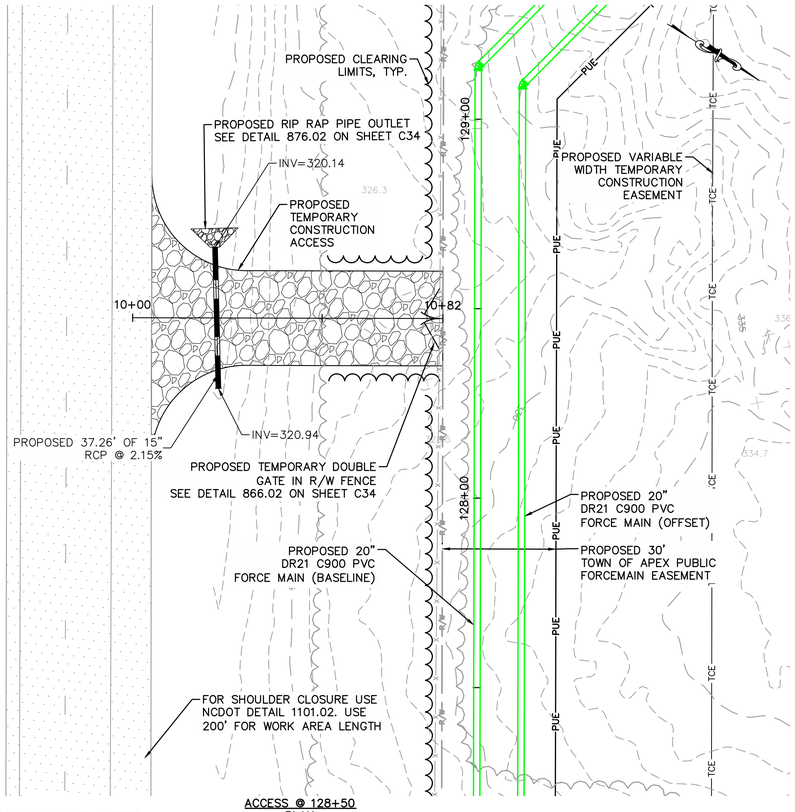
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FORCE MAIN PLAN AND PROFILE
STA 267+00 TO END

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

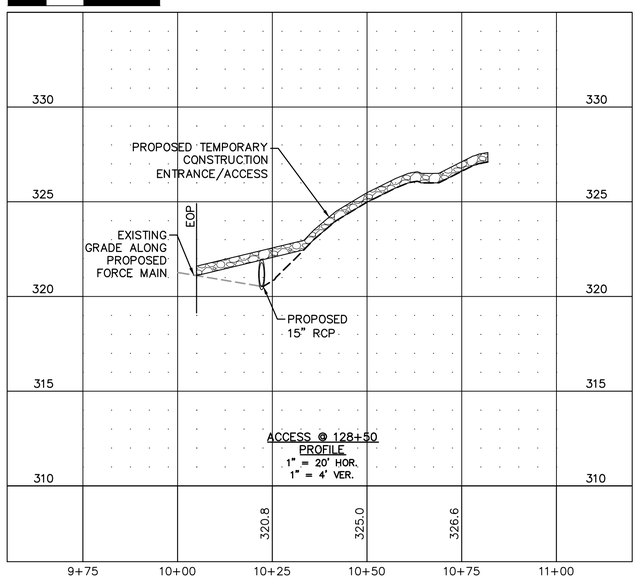
C24

SHEET NUMBER
26 OF 56



ACCESS @ 128+50
PLAN
1" = 20'

GRAPHIC SCALE IN FEET
0 10 20 40

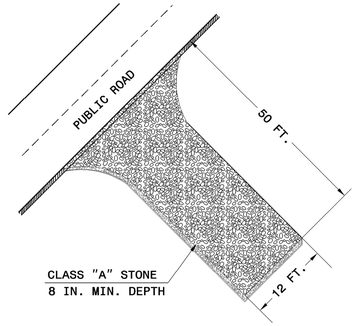


ACCESS @ 128+50
PROFILE
1" = 20' HOR.
1" = 4' VER.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
7-06

ENGLISH STANDARD DRAWING FOR
GRAVEL CONSTRUCTION ENTRANCE

SHEET 1 OF 1
1607.01



NOTES:
1. PROVIDE TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS.
2. LOCATE ENTRANCE(S) TO PROVIDE FOR UTILIZATION BY ALL CONSTRUCTION VEHICLES.
3. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOPDRESSING WITH STONE WILL BE NECESSARY.
4. ANY MATERIAL TRACKED ONTO THE ROADWAY MUST BE CLEANED UP IMMEDIATELY.
5. LOCATE GRAVEL CONSTRUCTION ENTRANCE AT ALL POINTS OF INGRESS AND EGRESS UNTIL SITE IS STABILIZED. PROVIDE FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE.
6. NUMBER AND LOCATION OF CONSTRUCTION ENTRANCES TO BE DETERMINED BY THE ENGINEER.
7. USE CLASS 'A' STONE OR OTHER COARSE AGGREGATE APPROVED BY THE ENGINEER.

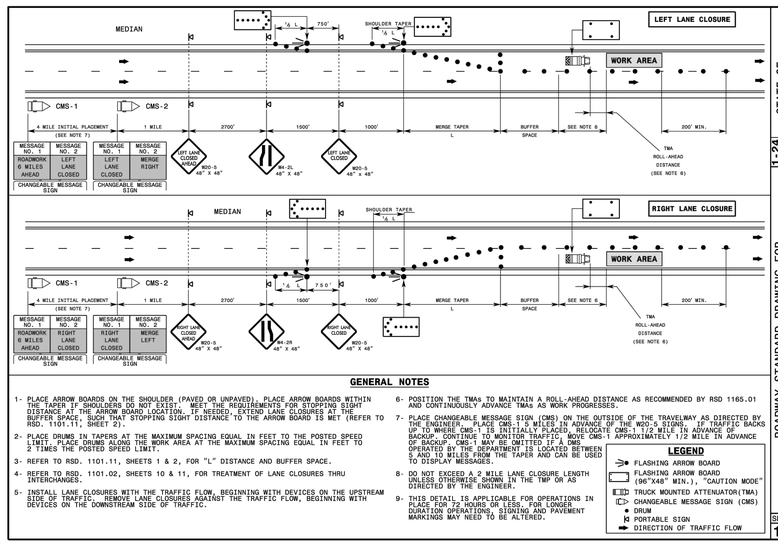
NOTE: PLACE FILTER FABRIC BENEATH STONE

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
7-06

ENGLISH STANDARD DRAWING FOR
GRAVEL CONSTRUCTION ENTRANCE

SHEET 1 OF 1
1607.01

NOTES:
1. LANE CLOSURE WILL ONLY BE ALLOWED BETWEEN THE HOURS OF 9 AM AND 3 PM.
2. ANY MOVEMENT OF MATERIAL OR EQUIPMENT INTO OR OUT OF THE PROJECT WILL REQUIRE A LANE CLOSURE PER THE DETAIL ON THIS SHEET AND ANY OTHER APPLICABLE NCDOT STANDARDS.
3. STORAGE OF EQUIPMENT AND MATERIALS SHALL NOT BE WITHIN 40 FEET OF THE RIGHT-OF-WAY.
4. SERVICE TRUCKS, FUEL TRUCKS, AND CARPOOLING EMPLOYEES WILL NOT HAVE TO ENTER/EXIT VIA LANE CLOSURE.



GENERAL NOTES

1- PLACE ARROW BOARDS ON THE SHOULDER (PAVED OR UNPAVED). PLACE ARROW BOARDS WITHIN THE TAPER IF SHOULDERS DO NOT EXIST, MEET THE REQUIREMENTS FOR STOPPING SIGHT DISTANCE AT THE ARROW BOARD LOCATION. IF NEEDED, EXTEND LANE CLOSURES AND SHIFT BUFFER SPACE, SUCH THAT STOPPING SIGHT DISTANCE TO THE ARROW BOARD IS MET (REFER TO RSD. 1101.11, SHEET 2).

2- PLACE DRUMS IN TAPERS AT THE MAXIMUM SPACING EQUAL IN FEET TO THE POSTED SPEED LIMIT. PLACE DRUMS ALONG THE WORK AREA AT THE MAXIMUM SPACING EQUAL IN FEET TO 2 TIMES THE POSTED SPEED LIMIT.

3- REFER TO RSD. 1101.11, SHEETS 1 & 2, FOR "L" DISTANCE AND BUFFER SPACE.

4- REFER TO RSD. 1101.02, SHEETS 10 & 11, FOR TREATMENT OF LANE CLOSURES THRU INTERCHANGES.

5- INSTALL LANE CLOSURES WITH THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE UPSTREAM SIDE OF TRAFFIC. REMOVE LANE CLOSURES AGAINST THE TRAFFIC FLOW, BEGINNING WITH DEVICES ON THE DOWNSTREAM SIDE OF TRAFFIC.

6- POSITION THE TMAs TO MAINTAIN A ROLL-AHEAD DISTANCE AS RECOMMENDED BY RSD 1165.01 AND CONTINUOUSLY ADVANCE TMAs AS WORK PROGRESSES.

7- PLACE CHANGEABLE MESSAGE SIGN (CMS) ON THE OUTSIDE OF THE TRAVELWAY AS DIRECTED BY THE ENGINEER. PLACE CMS-1 5 MILES IN ADVANCE OF THE W20-5 SIGNS. IF TRAFFIC BACKS UP TO WHERE CMS-1 IS INITIALLY PLACED, RELOCATE CMS-1 1/2 MILE IN ADVANCE OF BACKUP. CONTINUE TO MONITOR TRAFFIC, MOVE CMS-1 APPROXIMATELY 1/2 MILE IN ADVANCE OF BACKUP. CMS-1 MAY BE OMITTED IF A CMS OPERATED BY THE DEPARTMENT IS LOCATED BETWEEN 5 AND 10 MILES FROM THE TAPER AND CAN BE USED TO DISPLAY MESSAGES.

8- DO NOT EXCEED A 2 MILE LANE CLOSURE LENGTH UNLESS OTHERWISE SHOWN IN THE TMP OR AS DIRECTED BY THE ENGINEER.

9- THIS DETAIL IS APPLICABLE FOR OPERATIONS IN PLACE FOR 72 HOURS OR LESS. FOR LONGER DURATION OPERATIONS, SIGNING AND PAVEMENT MARKINGS MAY NEED TO BE ALTERED.

LEGEND
- FLASHING ARROW BOARD
- FLASHING ARROW BOARD (96"X48" MIN.), "CAUTION MODE"
- TRUCK MOUNTED ATTENUATOR(TMA)
- CHANGEABLE MESSAGE SIGN (CMS)
- DRUM
- PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
1-24

ROADWAY STANDARD DRAWING FOR
TEMPORARY LANE CLOSURES
DIVIDED MULTI-LANE ROADWAY-1 LANE CLOSED
(FOR ROADWAYS ≥ 60 MPH)

SHEET 4 OF 19
1101.02

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Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

US 1 TEMPORARY ACCESS ENTRANCE

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 20'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C25

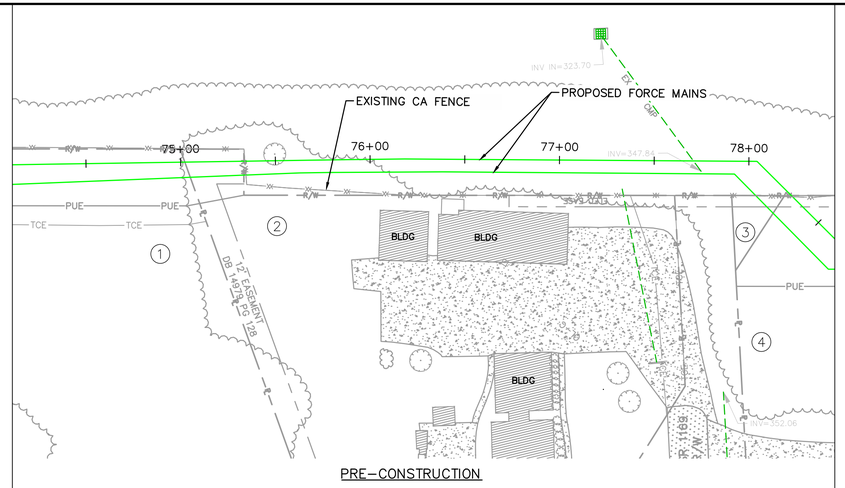
SHEET NUMBER 27 OF 56

Plotted By: Jason Spears Layout: 26 ACCESS ENTRANCE January 14, 2025 01:47:08pm S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PS\80 - Drawings\Plan Sheets\C-SHT-ACCESS.dwg

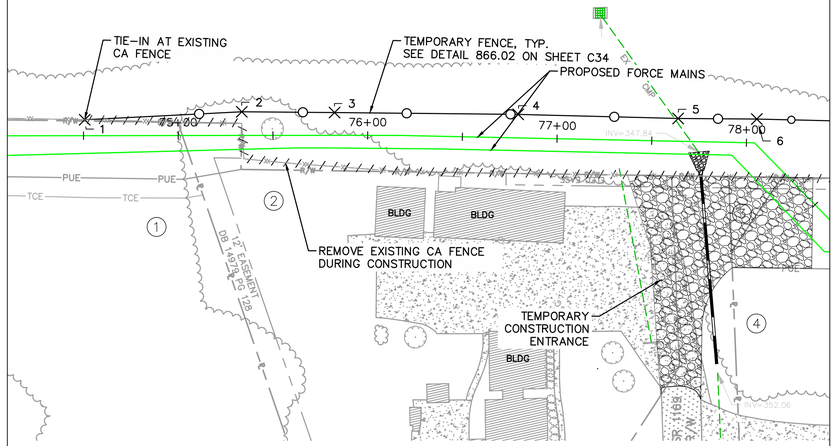
PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY NUMBER	PROPERTY NUMBER	PROPERTY NUMBER
1	SHENANDOAH HOMES LLC	3425 WINDING WAY	730269201
2	ELIZABETH R. STITT	3433 WINDING WAY	730252479
3	SHENANDOAH HOMES LLC	0 WINDING WAY	730252219
4	BENTLEY OLIVE	3426 WINDING WAY	730143907

TEMPORARY FENCING POINT TABLE			
Point #	Northing	Easting	Description
1	705448.42	2032537.72	TIE-IN TO EXISTING CA FENCE
2	705400.61	2032469.83	TEMPORARY CA FENCE
3	705374.81	2032428.20	TEMPORARY CA FENCE
4	705323.88	2032345.67	TEMPORARY CA FENCE
5	705280.65	2032273.14	TEMPORARY CA FENCE
6	705258.76	2032237.85	TEMPORARY CA FENCE

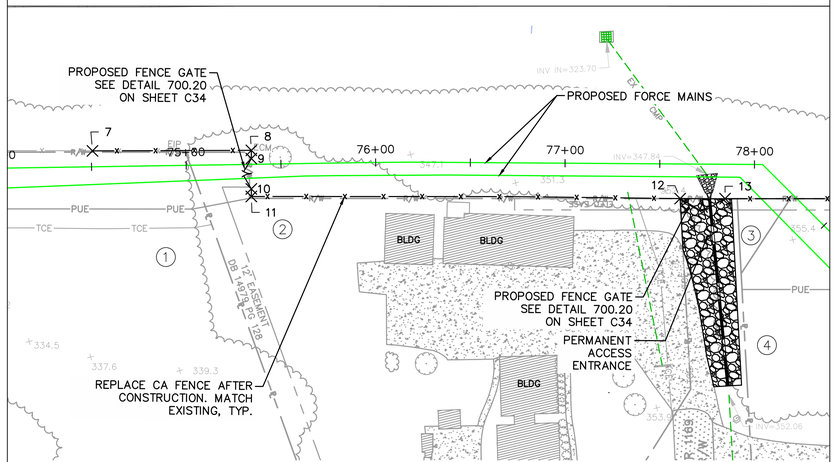
FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
7	705448.42	2032537.72	TIE-IN AT EXISTING CA FENCE
8	705404.43	2032466.31	PROPOSED CA FENCE
9	705408.13	2032464.05	TIE-IN TO PROPOSED CA FENCE GATE
10	705421.78	2032455.71	TIE-IN TO PROPOSED CA FENCE GATE
11	705425.20	2032453.62	PROPOSED CA FENCE
12	705308.03	2032259.89	TIE-IN TO PROPOSED CA FENCE GATE
13	705295.68	2032239.67	TIE-IN TO PROPOSED CA FENCE GATE



PRE-CONSTRUCTION



TEMPORARY FENCING DURING CONSTRUCTION



FINAL FENCING AFTER CONSTRUCTION

MATCH LINE- SEE SHEET C27 FOR CONTINUATION

MATCH LINE- SEE SHEET C27 FOR CONTINUATION

MATCH LINE- SEE SHEET C27 FOR CONTINUATION

NOTES:
1. CA FENCE SHALL BE INSTALLED PER NCDOT DETAIL 866.02 ON SHEET C34.
2. TEMPORARY FENCES SHALL BE INSTALLED PER DETAIL ON SHEET C34.
3. ALL FENCING OTHER THAN CA AND TEMPORARY FENCING SHALL MATCH EXISTING FENCING FOR EACH PARTICULAR PROPERTY.

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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

LEGEND	EXISTING	PROPOSED
NCDOT CA FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		

GRAPHIC SCALE IN FEET
0 20 40 80

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

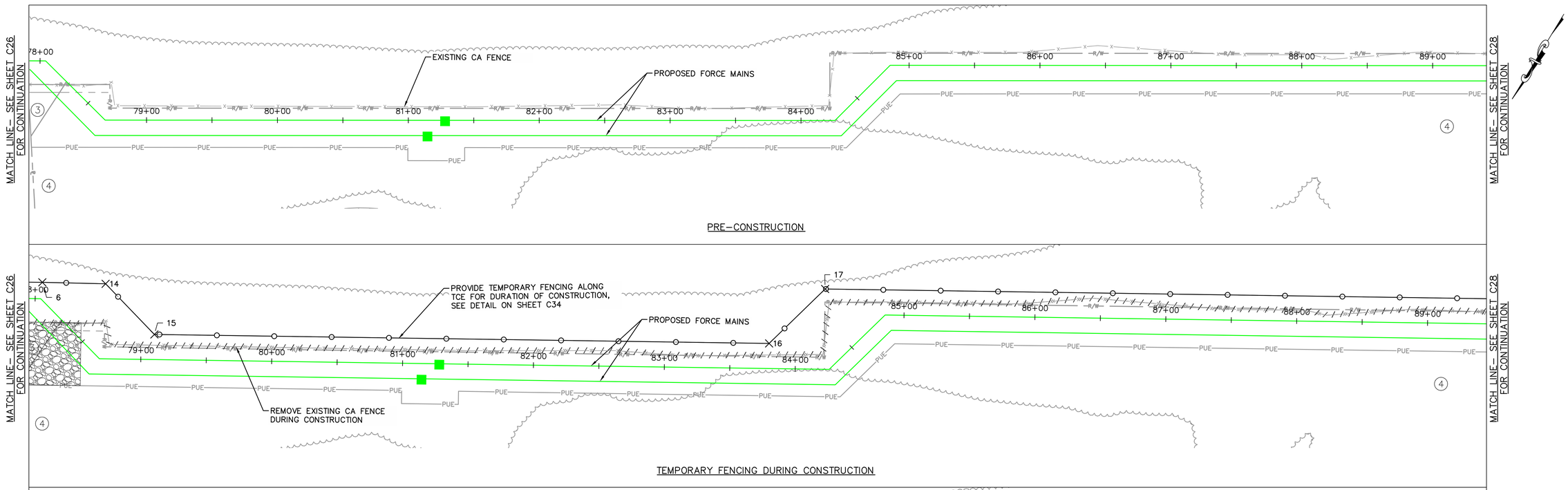
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FENCE DETAIL- STITT

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C26

SHEET NUMBER 28 OF 56



TEMPORARY FENCING POINT TABLE			
Point #	Northing	Easting	Description
6	705258.76	2032237.85	TEMPORARY CA FENCE
14	705233.91	2032196.35	TEMPORARY CA FENCE
15	705246.75	2032144.20	TEMPORARY CA FENCE
16	705001.91	2031743.37	TEMPORARY CA FENCE
17	704943.93	2031729.37	TEMPORARY CA FENCE

FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
18	705259.77	2032180.87	NEW CA FENCE
19	705275.13	2032171.48	NEW CA FENCE
20	704988.43	2031702.12	NEW CA FENCE
21	704952.38	2031724.14	NEW CA FENCE

PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
3	SHENANDOAH HOMES LLC	0 WINDING WAY	730252219
4	BENTLEY OLIVE	3426 WINDING WAY	730143907

NOTES:
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Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

LEGEND	EXISTING	PROPOSED
NCDOT CA FENCE		
TEMPORARY WOVEN WIRE NO–CLIMB FENCE		
PERMANENT WOVEN WIRE NO–CLIMB FENCE		
WIRE FENCE		
PVC 3–RAIL FENCE		
WOOD 3–RAIL FENCE		
WOOD PRIVACY FENCE		

GRAPHIC SCALE IN FEET
0 20 40 80

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FENCE DETAIL- OLIVE 1

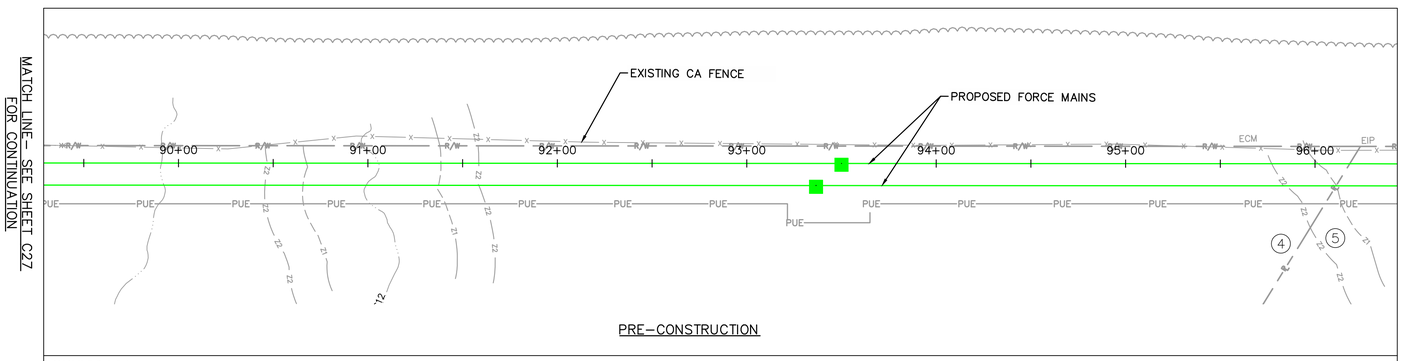
CJS PROJ. #:	100–005
DATE:	12–18–2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

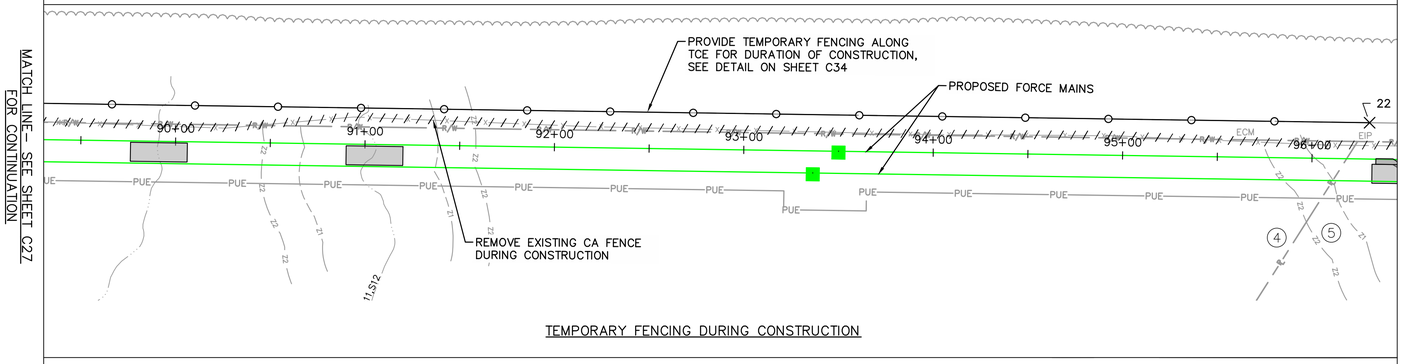
C27

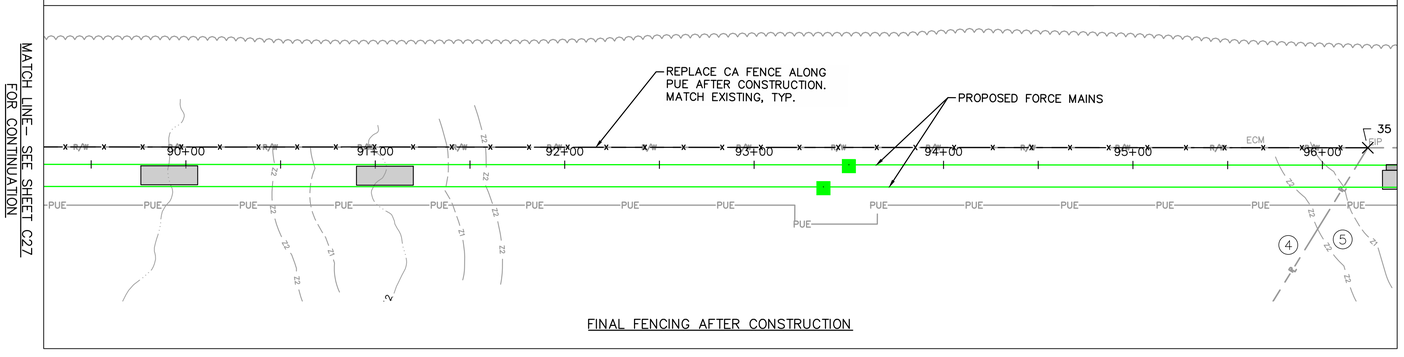
SHEET NUMBER 29 OF 56

TEMPORARY FENCING POINT TABLE			
Point #	Northing	Easting	Description
22	704323.28	2030713.21	END TEMPORARY FENCE

FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
23	704335.03	2030713.26	TIE–IN CA FENCE TO NEW CA FENCE







PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
4	BENTLEY OLIVE	3426 WINDING WAY	730143907
5	JEFFREY HASTINGS	3601 FRIENDSHIP RD	730043464

LEGEND	EXISTING	PROPOSED
NCDOT CA FENCE		
TEMPORARY WOVEN WIRE NO–CLIMB FENCE		
PERMANENT WOVEN WIRE NO–CLIMB FENCE		
WIRE FENCE		
PVC 3–RAIL FENCE		
WOOD 3–RAIL FENCE		
WOOD PRIVACY FENCE		

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GRAPHIC SCALE IN FEET
0 20 40 80

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Building Inspections	Planning–Transportation
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1	PERMIT SUBMITTAL	12/18/2024	SDL

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

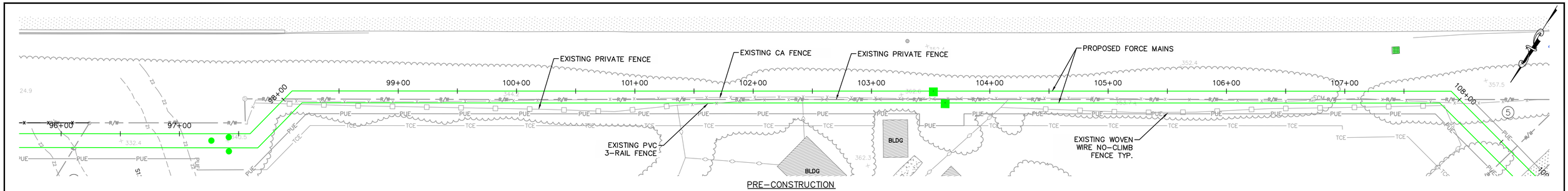
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FENCE DETAIL- OLIVE 2

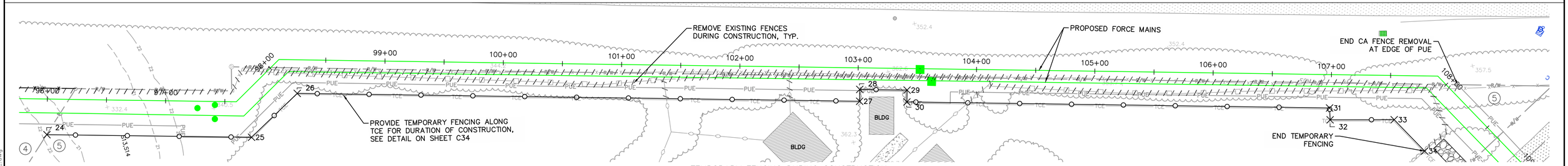
CJS PROJ. #:	100–005
DATE:	12–18–2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C28

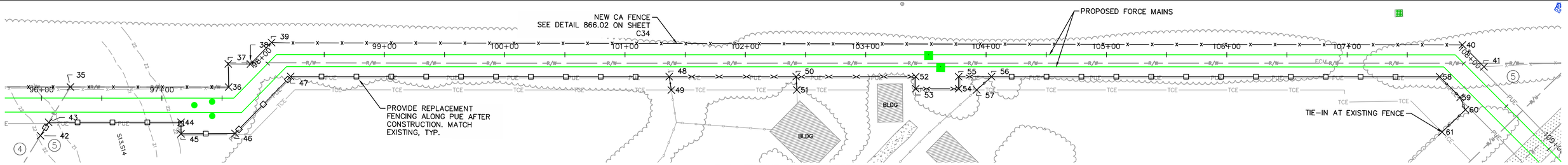
SHEET NUMBER 30 OF 56



PRE-CONSTRUCTION



TEMPORARY FENCING DURING CONSTRUCTION



FINAL FENCING AFTER CONSTRUCTION

TEMPORARY FENCING POINT TABLE			
Point #	Northing	Easting	Description
24	704380.94	2030713.20	BEGIN TEMPORARY FENCE
25	704290.51	2030565.80	TEMPORARY FENCE
26	704238.62	2030552.86	TEMPORARY FENCE
27	703990.58	2030147.36	TEMPORARY FENCE
28	703982.07	2030152.63	TEMPORARY FENCE
29	703961.20	2030118.50	TEMPORARY FENCE
30	703969.73	2030113.28	TEMPORARY FENCE
31	703783.41	2029808.47	TEMPORARY FENCE
32	703791.60	2029802.76	TEMPORARY FENCE
33	703762.64	2029757.01	TEMPORARY FENCE
34	703771.26	2029721.17	END TEMPORARY FENCE

FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
35	704335.03	2030713.26	TIE-IN CA FENCE TO NEW CA FENCE
36	704266.49	2030601.08	TIE-IN AT EXISTING CA FENCE
37	704250.28	2030611.33	NEW CA FENCE
38	704240.76	2030595.54	NEW CA FENCE
39	704216.38	2030589.91	NEW CA FENCE
40	703701.77	2029744.67	NEW CA FENCE
41	703707.90	2029719.97	TIE-IN TO EXISTING CA FENCE
42	704382.38	2030713.45	BEGIN WOVEN WIRE NO-CLIMB FENCE
43	704369.45	2030713.39	WOVEN WIRE NO-CLIMB FENCE

FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
44	704312.07	2030619.57	WOVEN WIRE NO-CLIMB FENCE
45	704320.13	2030614.65	WOVEN WIRE NO-CLIMB FENCE
46	704296.54	2030576.48	WOVEN WIRE NO-CLIMB FENCE
47	704232.12	2030561.68	WOVEN WIRE NO-CLIMB FENCE
48	704068.10	2030293.24	END WOVEN WIRE NO-CLIMB FENCE, BEGIN PVC 3-RAIL AND WOOD 3-RAIL FENCES
49	704076.66	2030285.96	TIE-IN WOOD 3- RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
50	704013.03	2030203.27	TIE-IN TO EXISTING WOOD 3-RAIL FENCE
51	704022.17	2030197.08	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
52	703961.20	2030118.50	PVC 3-RAIL FENCE

FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
53	703969.73	2030113.28	PVC 3-RAIL FENCE
54	703951.14	2030082.89	PVC 3-RAIL FENCE
55	703942.61	2030088.11	PVC 3-RAIL FENCE
56	703928.34	2030064.77	END PVC 3-RAIL FENCE, BEGIN WOVEN WIRE NO-CLIMB FENCE, TIE-IN TO WOOD 3-RAIL FENCE
57	703944.16	2030069.56	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
58	703734.15	2029747.03	END WOVEN WIRE NO-CLIMB FENCE, BEGIN WOOD 3-RAIL FENCE
59	703739.79	2029723.62	WOOD 3-RAIL FENCE
60	703746.29	2029714.47	WOOD 3-RAIL FENCE
61	703772.23	2029721.43	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE

LEGEND	EXISTING	PROPOSED
NCDOT CA FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		

GRAPHIC SCALE IN FEET
0 20 40 80

NOTES:
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2. TEMPORARY FENCES SHALL BE INSTALLED PER DETAIL ON SHEET C34.
3. ALL FENCING OTHER THAN CA AND TEMPORARY FENCING SHALL MATCH EXISTING FENCING FOR EACH PARTICULAR PROPERTY.

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Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
4	BENTLEY OLIVE	3426 WINDING WAY	730143907
5	JEFFREY HASTINGS	3601 FRIENDSHIP RD	730043464

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FENCE DETAIL- HASTINGS

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

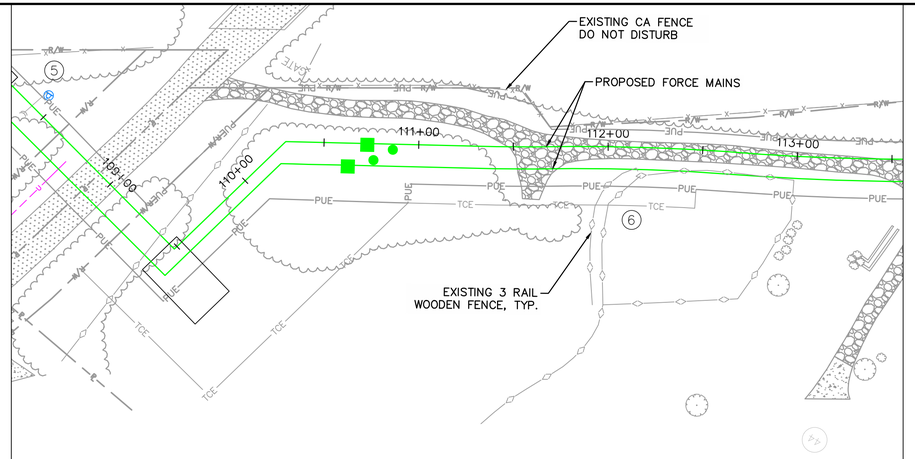
C29

SHEET NUMBER 31 OF 56

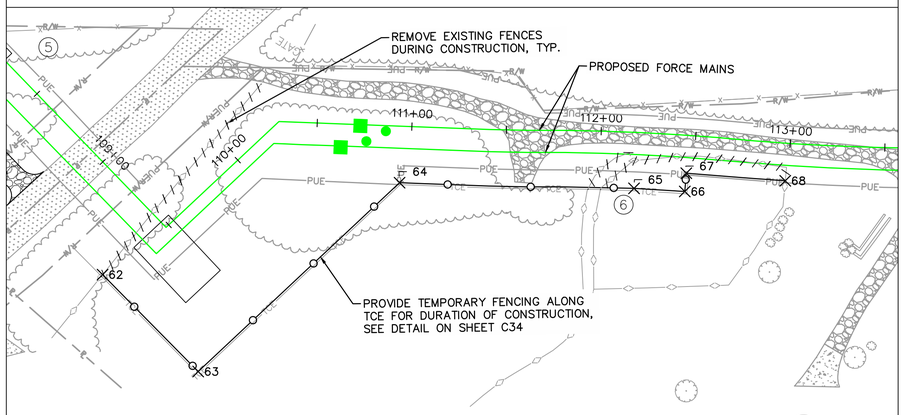
PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
5	JEFFREY HASTINGS	3601 FRIENDSHIP RD	730043464
6	THOMAS BLAND	3724 FRIENDSHIP RD	720931641

TEMPORARY FENCING POINT TABLE			
Point #	Northing	Easting	Description
62	703788.35	2029606.80	BEGIN TEMPORARY FENCE
63	703804.67	2029536.80	TEMPORARY FENCE
64	703663.64	2029500.11	TEMPORARY FENCE
65	703600.10	2029393.84	TEMPORARY FENCE
66	703587.21	2029370.32	TEMPORARY FENCE
67	703578.62	2029374.78	TEMPORARY FENCE
68	703554.14	2029328.47	END TEMPORARY FENCE

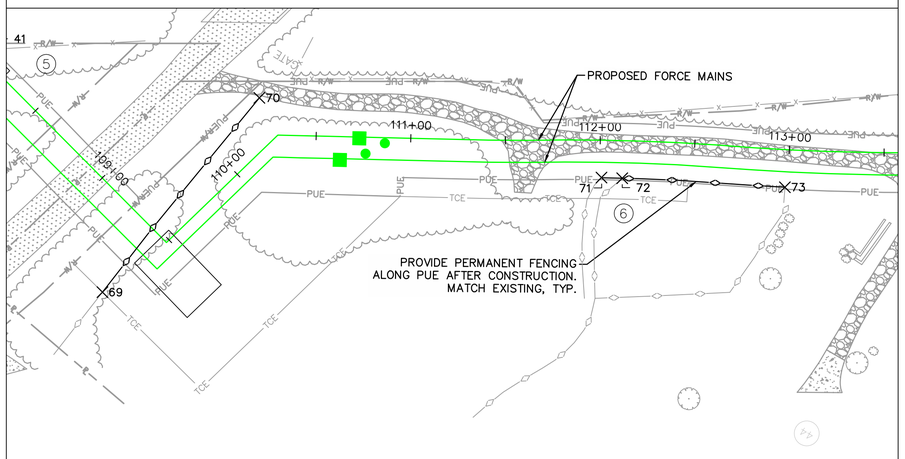
FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
69	703789.35	2029606.91	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
70	703658.63	2029589.76	END WOOD 3-RAIL FENCE
71	703600.31	2029413.74	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
72	703594.90	2029404.22	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE
73	703554.14	2029328.47	TIE-IN WOOD 3-RAIL FENCE TO EXISTING WOOD 3-RAIL FENCE



PRE-CONSTRUCTION



TEMPORARY FENCING DURING CONSTRUCTION



FINAL FENCING AFTER CONSTRUCTION

NOTES:
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Building Inspections		Planning-Transportation
Water Resources-Utility Engineering		Fire
Water Resources Stormwater and S&EC		Parks, Recreation & Cultural Resources
Electric		

LEGEND	EXISTING	PROPOSED
NCDOT CA FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		

GRAPHIC SCALE IN FEET
0 20 40 80

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FENCE DETAIL- BLAND

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

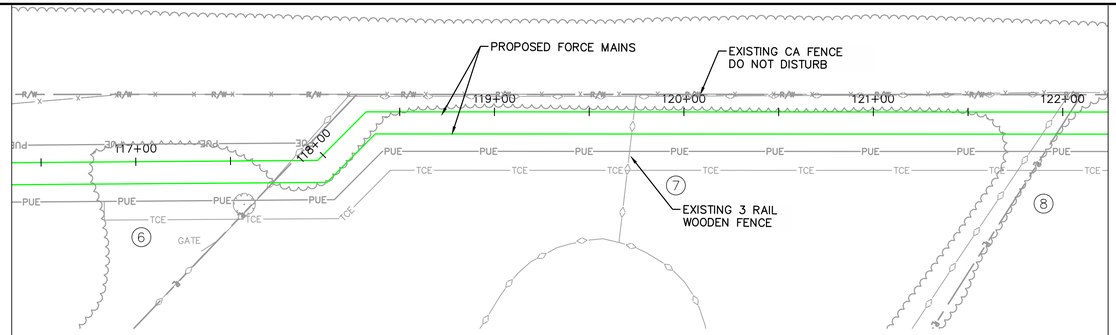
C30

SHEET NUMBER 32 OF 56

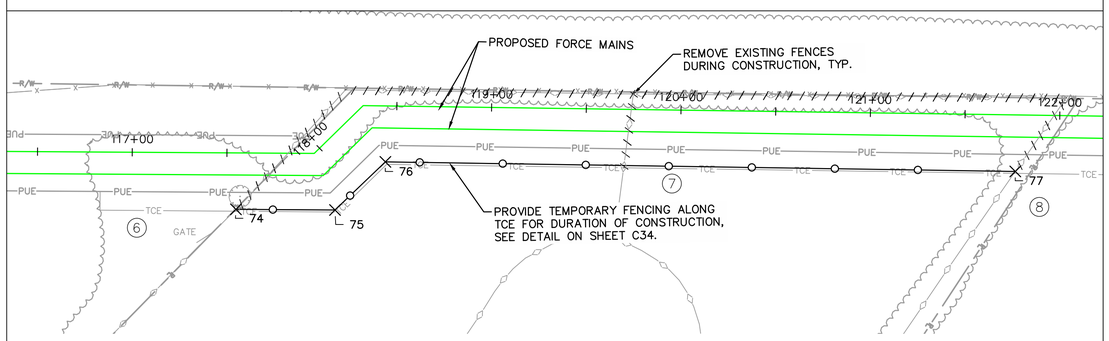
PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
6	THOMAS BLAND	3724 FRIENDSHIP RD	720931641
7	YATES FRIENDSHIP FARM LLC	3716 FRIENDSHIP RD	720838629
8	CHARLES BAUCOM	0 OLD US 1 HIGHWAY	720628996

TEMPORARY FENCING POINT TABLE			
Point #	Northing	Easting	Description
74	703323.39	2028933.32	BEGIN TEMPORARY FENCING
75	703295.75	2028888.91	TEMPORARY FENCE
76	703260.10	2028879.97	TEMPORARY FENCE
77	703086.89	2028596.03	END TEMPORARY FENCING

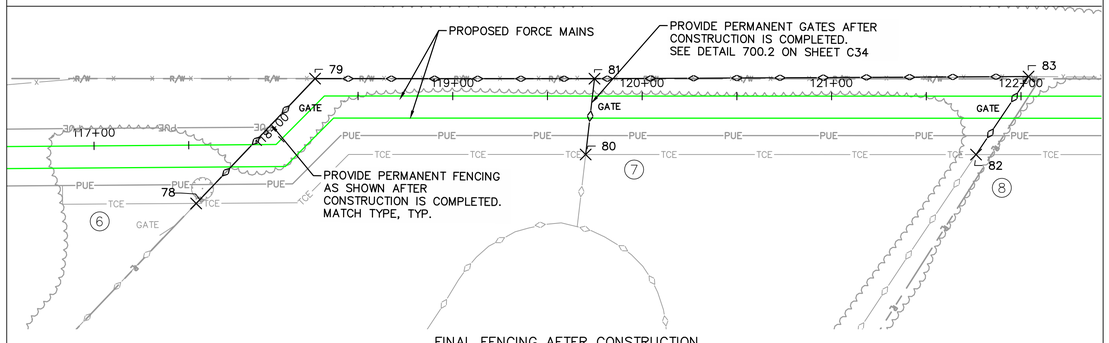
FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
78	703324.91	2028933.87	TIE-IN WOOD 3-PANEL FENCE TO EXISTING WOOD 3-PANEL FENCE
79	703235.97	2028914.69	TIE-IN WOOD 3-PANEL FENCE TO WOOD 3-PANEL FENCE
80	703195.59	2028771.93	TIE-IN WOOD 3-PANEL FENCE TO EXISTING WOOD 3-PANEL FENCE
81	703159.02	2028788.81	TIE-IN WOOD 3-PANEL FENCE TO WOOD 3-PANEL FENCE
82	703088.10	2028596.08	TIE-IN WOOD 3-PANEL FENCE TO EXISTING WOOD 3-PANEL FENCE
83	703038.49	2028593.93	TIE-IN WOOD 3-PANEL FENCE TO WOOD 3-PANEL FENCE



PRE-CONSTRUCTION



TEMPORARY FENCING DURING CONSTRUCTION



FINAL FENCING AFTER CONSTRUCTION

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Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

LEGEND	EXISTING	PROPOSED
NCDOT R/W FENCE		
TEMPORARY WOVEN WIRE NO-CLIMB FENCE		
PERMANENT WOVEN WIRE NO-CLIMB FENCE		
WIRE FENCE		
PVC 3-RAIL FENCE		
WOOD 3-RAIL FENCE		
WOOD PRIVACY FENCE		

GRAPHIC SCALE IN FEET
0 20 40 80

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

FENCE DETAIL- YATES FRIENDSHIP FARM LLC

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

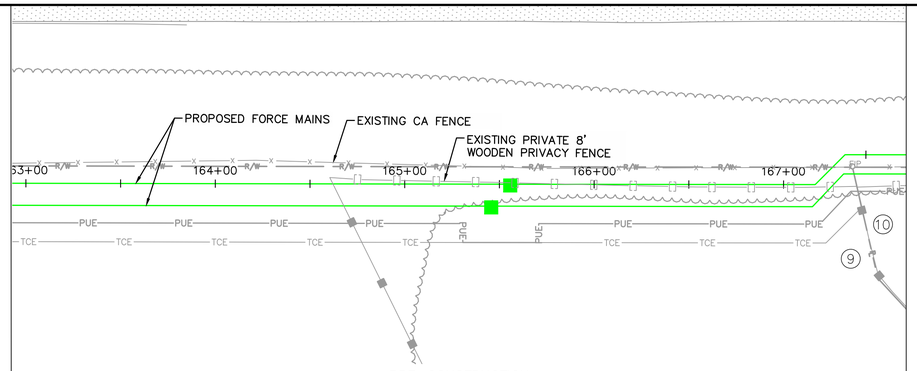
C31

SHEET NUMBER 33 OF 56

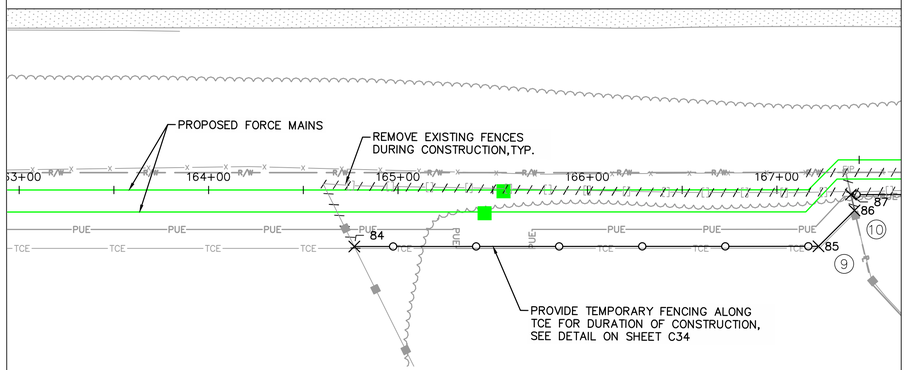
PROPERTY TABLE			
PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
9	3837 BOSCO ROAD LLC	3837 BOSCO RD	720407997
10	ASHLEY NICHOLS	3901 BOSCO RD	720401633

TEMPORARY FENCING POINT TABLE			
Point #	Northing	Easting	Description
84	700859.06	2024947.83	BEGIN TEMPORARY FENCE
85	700731.51	2024738.56	TEMPORARY FENCE
86	700705.44	2024732.18	TEMPORARY FENCE
87	700699.32	2024738.17	TEMPORARY FENCE

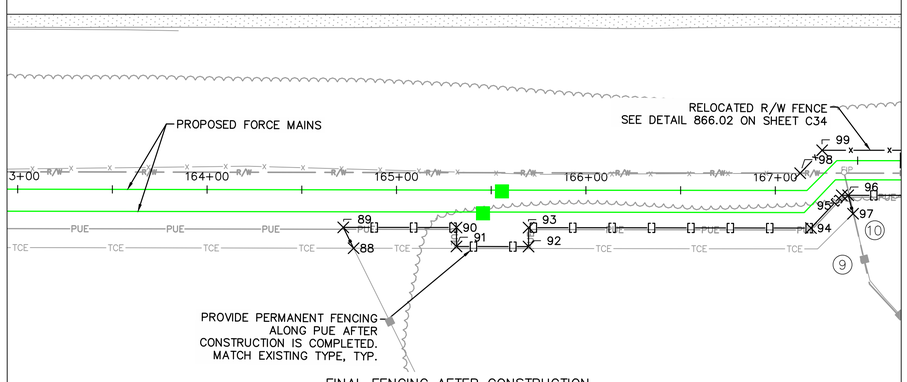
FINAL FENCING POINT TABLE			
Point #	Northing	Easting	Description
88	700859.66	2024946.88	TIE–IN WIRE FENCE TO EXISTING WIRE FENCE
89	700853.11	2024957.27	END WIRE FENCE, BEGIN 8' WOOD PRIVACY FENCE
90	700821.99	2024906.23	8' WOOD PRIVACY FENCE
91	700830.53	2024901.02	8' WOOD PRIVACY FENCE
92	700810.73	2024868.54	8' WOOD PRIVACY FENCE
93	700802.19	2024873.74	8' WOOD PRIVACY FENCE
94	700724.61	2024746.46	8' WOOD PRIVACY FENCE
95	700701.35	2024741.57	8' WOOD PRIVACY FENCE
96	700699.59	2024738.69	TIE–IN CHICKEN WIRE FENCE TO 8' WOOD PRIVACY FENCE
97	700706.56	2024731.43	TIE–IN WIRE FENCE TO EXISTING WIRE FENCE
98	700702.85	2024766.39	TIE–IN AT EXISTING CA FENCE
99	700686.49	2024762.82	NEW CA FENCE



PRE–CONSTRUCTION



TEMPORARY FENCING DURING CONSTRUCTION



FINAL FENCING AFTER CONSTRUCTION

MATCH LINE– SEE SHEET C33 FOR CONTINUATION

MATCH LINE– SEE SHEET C33 FOR CONTINUATION

MATCH LINE– SEE SHEET C33 FOR CONTINUATION

NOTES:
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Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

LEGEND	EXISTING	PROPOSED
NCDOT CA FENCE		
TEMPORARY WOVEN WIRE NO–CLIMB FENCE		
PERMANENT WOVEN WIRE NO–CLIMB FENCE		
WIRE FENCE		
PVC 3–RAIL FENCE		
WOOD 3–RAIL FENCE		
WOOD PRIVACY FENCE		

GRAPHIC SCALE IN FEET
0 20 40 80

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LELICH

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320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P–1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

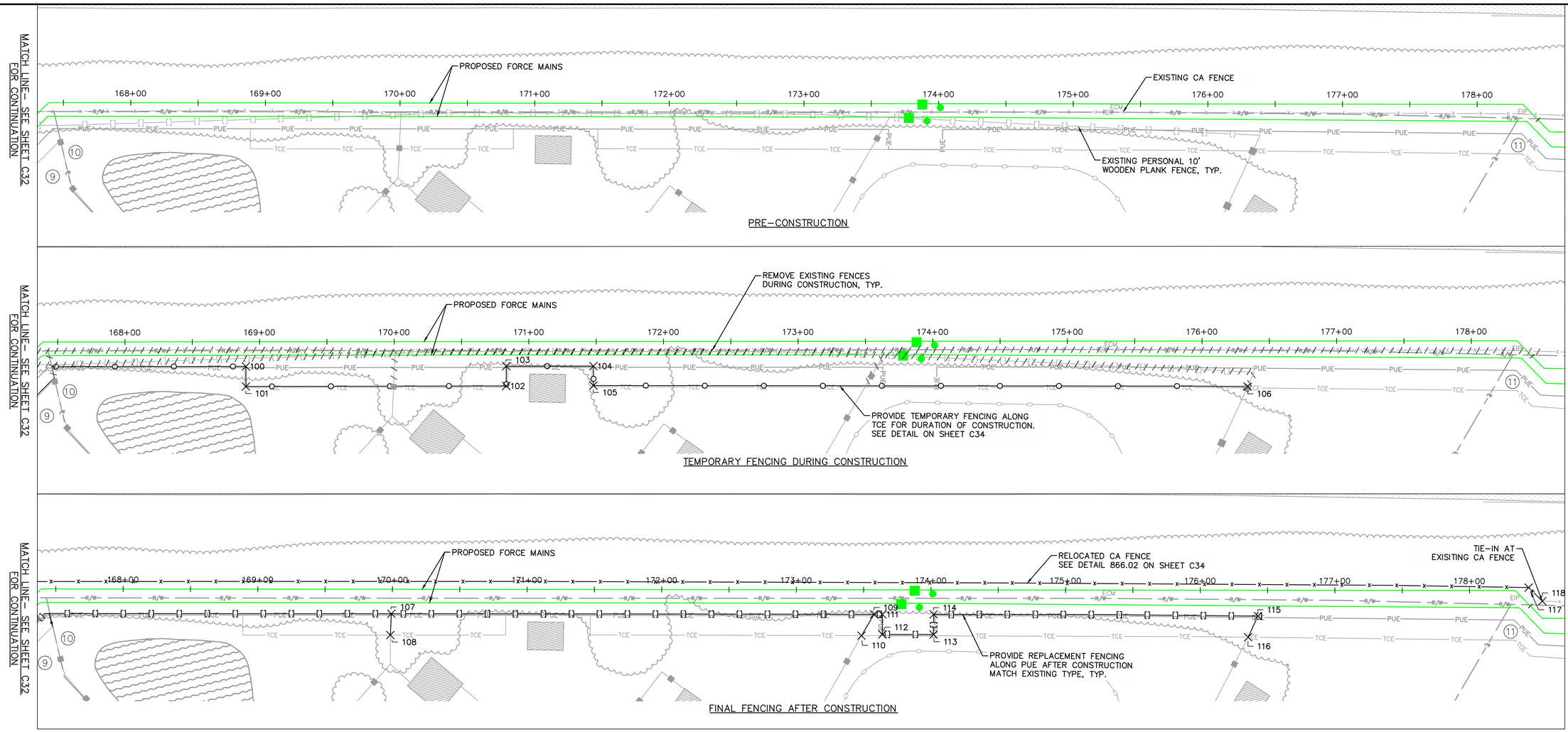
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FENCE DETAIL- 3837 BOSCO ROAD LLC

CJS PROJ. #:	100–005
DATE:	12–18–2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C32

SHEET NUMBER 34 OF 56



TEMPORARY FENCING POINT TABLE

Point #	Northing	Easting	Description
100	700624.16	2024615.09	TEMPORARY FENCE
101	700636.89	2024607.30	TEMPORARY FENCE
102	700535.95	2024442.35	TEMPORARY FENCE
103	700523.42	2024450.02	TEMPORARY FENCE
104	700489.72	2024394.74	TEMPORARY FENCE
105	700502.05	2024387.20	TEMPORARY FENCE
106	700249.98	2023971.80	END TEMPORARY FENCE

FINAL FENCING POINT TABLE

Point #	Northing	Easting	Description
107	700567.09	2024521.74	TIE–IN WIRE FENCE TO 10' PRIVACY FENCE
108	700580.98	2024514.11	TIE–IN WIRE FENCE TO EXISTING WIRE FENCE
109	700380.42	2024215.69	TIE–IN WIRE FENCE TO 10' PRIVACY FENCE
110	700398.79	2024215.36	TIE–IN WIRE FENCE TO EXISTING WIRE FENCE
111	700377.19	2024210.38	10' WOOD PRIVACY FENCE
112	700389.90	2024202.65	10' WOOD PRIVACY FENCE
113	700370.12	2024170.12	10' WOOD PRIVACY FENCE
114	700357.37	2024177.88	10' WOOD PRIVACY FENCE
115	700232.78	2023971.72	END 10' WOOD PRIVACY FENCE, TIE–IN WIRE FENCE
116	700249.91	2023969.74	TIE–IN WIRE FENCE TO EXISTING WIRE FENCE
117	700109.75	2023811.22	NEW CA FENCE
118	700113.08	2023797.30	TIE–IN TO EXISTING CA FENCE

PROPERTY TABLE

PROPERTY NUMBER	PROPERTY OWNER	PROPERTY ADDRESS	PIN NUMBER
9	3837 BOSCO ROAD LLC	3837 BOSCO RD	720407997
10	ASHLEY NICHOLS	3901 BOSCO RD	720401633
11	JON BRUCE	8164 PROVIDENCE OAK PATH	720301467

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Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

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LEGEND	EXISTING	PROPOSED
NCDOT CA FENCE		
TEMPORARY WOVEN WIRE NO–CLIMB FENCE		
PERMANENT WOVEN WIRE NO–CLIMB FENCE		
WIRE FENCE		
PVC 3–RAIL FENCE		
WOOD 3–RAIL FENCE		
WOOD PRIVACY FENCE		

GRAPHIC SCALE IN FEET
0 20 40 80

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

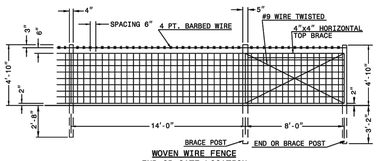
BIG BRANCH 2 PUMP STATION - FORCE MAIN

FENCE DETAIL- NICHOLS

CJS PROJ. #:	100–005
DATE:	12–18–2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

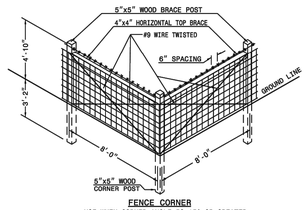
C33

SHEET NUMBER 35 OF 56

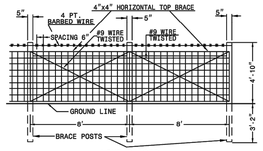


WOVEN WIRE FENCE
END OR GATE LOCATION

ERECT LINE BRACES BETWEEN END, CORNER OR GATE POSTS AT INTERVALS NOT EXCEEDING 324 FEET. THIS MAXIMUM INTERVAL MAY BE REDUCED BY THE ENGINEER ON CURVES WHERE THE DEGREE OF CURVATURE IS GREATER THAN 3 DEGREES.
PLACE LINE BRACES AT THE END OF EACH ROLL OR PIECE OF WOVEN WIRE.

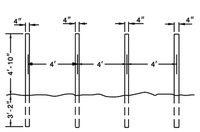


FENCE CORNER
USE WHEN CORNER ANGLE IS 15° OR GREATER



LINE BRACES
(MAXIMUM SPACING 324')

PLACE THE BRACE WIRE AROUND THE POST. DRAW WIRE TAUT BY TWISTING BETWEEN EACH POST. THIS APPLIES TO ALL BRACE WIRES. NOTCH POSTS FOR BRACES.
PLACE TWO GALVANIZED 12G OR THREE GALVANIZED 10G ON ALL BRACES AT EACH END.



POST FOR BLOCKING DRIVEWAYS
OR OTHER ENTRANCES

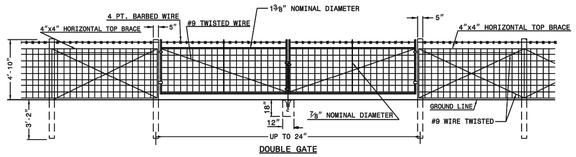
INSTALL IN ADDITION TO FENCE WHERE SHOWN IN PLANS OR WHERE DIRECTED BY THE ENGINEER

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

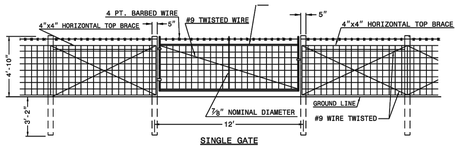
1-23

ROADWAY STANDARD DRAWING FOR
WOVEN WIRE FENCE
WITH WOOD POST

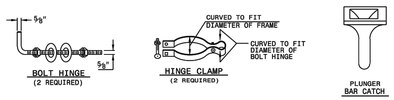
SHEET 1 OF 4
866.02



DOUBLE GATE



SINGLE GATE



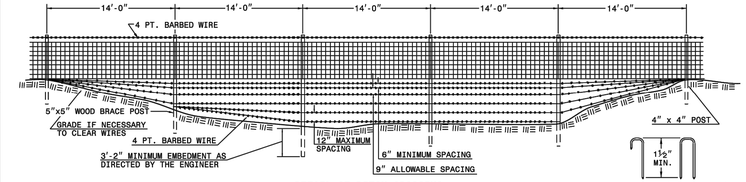
USE LATCH DEVICE APPROVED BY THE ENGINEER. HINGE ASSEMBLY, AS DETAILED, IS SUGGESTED. SUBSTITUTION MAY BE MADE SUBJECT TO APPROVAL BY THE ENGINEER. USE 19⅜" DIAMETER GALVANIZED STEEL PIPE GATE FRAME EXCEPT AS SHOWN HERE.

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

1-23

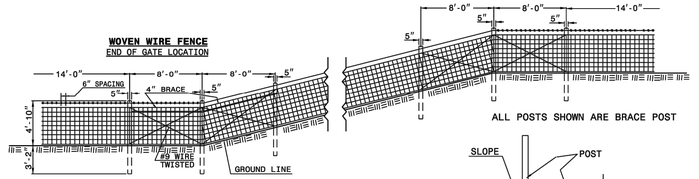
ROADWAY STANDARD DRAWING FOR
WOVEN WIRE FENCE
WITH WOOD POST

SHEET 2 OF 4
866.02

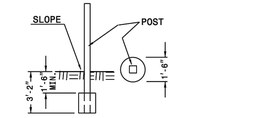


DETAIL OF DITCH CROSSING

ALTERNATE TYPES OF STAPLES
USE ONE #9 STAPLE OR TWO #16 STAPLES AT EACH POINT OF ATTACHMENT.



DETAIL SHOWING METHOD OF
CONSTRUCTING FENCE ON SHARP BREAK IN GRADE



DETAIL OF POST ANCHOR

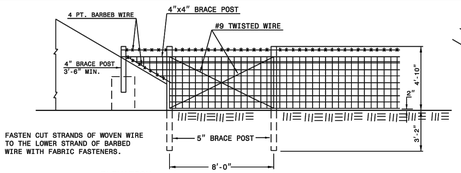
USE AT GATE POSTS OR WHERE REQUIRED BY SOIL CONDITIONS. MAY ALSO BE USED IN LIEU OF SETTING POSTS TO A DEPTH OF 3'-2".

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-23

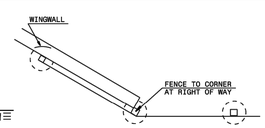
ROADWAY STANDARD DRAWING FOR
WOVEN WIRE FENCE
WITH WOOD POST

SHEET 3 OF 4
866.02



FASTEN CUT STRANDS OF WOVEN WIRE TO THE LOWER STRAND OF BARBED WIRE WITH FABRIC FASTENERS.

ELEVATION



PLAN

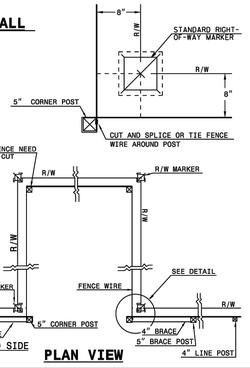
METHOD OF TYING FENCE TO HEADWALL

GENERAL NOTES:
ALL POSTS AND BRACES MAY BE EITHER ROUND OR SQUARE AT THE OPTION OF THE CONTRACTOR, PROVIDED THE SAME TYPE IS USED THROUGHOUT THE PROJECT FOR POST AND BRACE.

DIMENSIONS SHOWN ARE THE DIAMETER OF ROUND POSTS OR EDGE DIMENSIONS OF SQUARE POSTS.

INSTALL THE FENCE FACING THE PROPERTY OWNER EXCEPT THAT ON HORIZONTAL CURVES GREATER THAN THREE DEGREES; INSTALL THE FENCE TO PULL AGAINST ALL POSTS.

METHOD OF ERECTING FENCE FOR FILL SLOPE



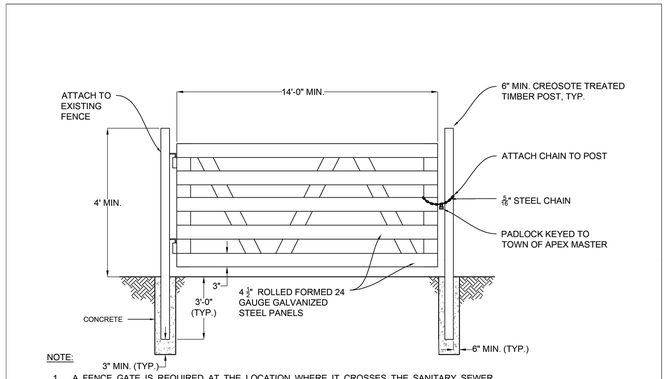
PLAN VIEW

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-23

ROADWAY STANDARD DRAWING FOR
WOVEN WIRE FENCE
WITH WOOD POST

SHEET 4 OF 4
866.02



NOTE:
1. A FENCE GATE IS REQUIRED AT THE LOCATION WHERE IT CROSSES THE SANITARY SEWER EASEMENT. GATE MUST BE CENTERED ON THE SEWER PIPE. OWNER MUST APPLY FOR ENCROACHMENT AGREEMENT PRIOR TO INSTALLATION.
2. IN RESIDENTIAL AREAS, ALTERNATE FENCE GATES MATCHING EXISTING FENCES MAY BE USED AS APPROVED BY THE WATER RESOURCES DIRECTOR.
3. GATES MAY BE SINGLE OR DOUBLE PANEL AS LONG AS CENTERED ON THE PIPE.
4. FOR COMMERCIAL SITES, THE GATE WIDTH MUST BE AT LEAST 20'-0".

TOWN OF APEX STANDARDS	TYPICAL EASEMENT FENCE GATE	STD. NO. 700.20
EFFECTIVE: APRIL 12, 2022		SHEET 1 OF 1

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

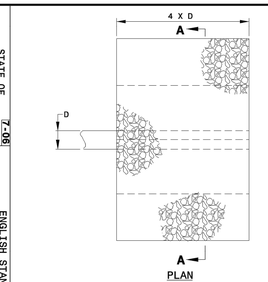
7-08

ENGLISH STANDARD DRAWING FOR
GUIDE FOR RIP RAP AT PIPE OUTLETS

SHEET 1 OF 1
876.02

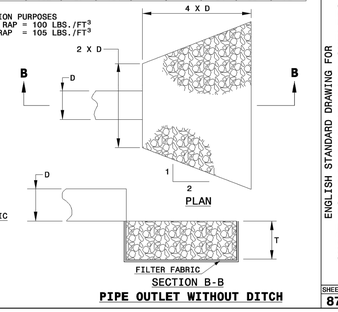
D	OUTLET W/DITCH				OUTLET W/O DITCH			
	CLASS 'B' RIP RAP		CLASS I RIP RAP		CLASS 'B' RIP RAP		CLASS I RIP RAP	
	TONS	FILTER FABRIC S.Y.	S.Y.	FILTER FABRIC S.Y.	TONS	FILTER FABRIC S.Y.	S.Y.	TONS	FILTER FABRIC S.Y.
12"	2	5	5	2	5	1	4	2	1	4
15"	2	7	7	3	7	1	5	3	2	6
18"	3	10	9	4	10	2	7	4	2	8
24"	5	14	15	7	15	3	11	7	4	12
30"	8	21	21	11	22	5	16	11	7	17
36"	11	28	29	15	30	7	22	16	10	23
42"	15	37	39	20	39	10	28	22	13	30
48"	-	-	49	26	50	-	-	28	17	38
54"	-	-	60	33	62	-	-	36	21	47
60"	-	-	73	40	75	-	-	44	26	56
66"	-	-	87	48	89	-	-	54	32	67
72"	-	-	102	57	104	-	-	64	38	78

NOTE:
FOR CALCULATION PURPOSES
CLASS 'B' RIP RAP = 100 LBS./FT³
CLASS I RIP RAP = 105 LBS./FT³



SECTION A-A
PIPE OUTLET WITH DITCH

H= RIP RAP TO TOP OF PIPE (MAX. H = D + T)
T= 15" CLASS I RIP RAP, UNLESS OTHERWISE SHOWN ON PLANS
T= 12" CLASS 'B' RIP RAP, UNLESS OTHERWISE SHOWN ON PLANS



SECTION B-B
PIPE OUTLET WITHOUT DITCH

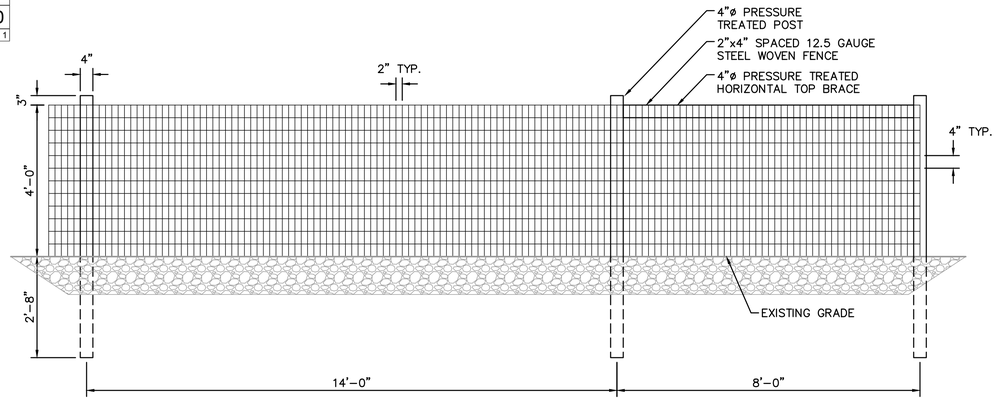
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

7-06

ENGLISH STANDARD DRAWING FOR
GUIDE FOR RIP RAP AT PIPE OUTLETS

SHEET 1 OF 1
876.02

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	



TEMPORARY FENCE DETAIL
SCALE: NTS

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

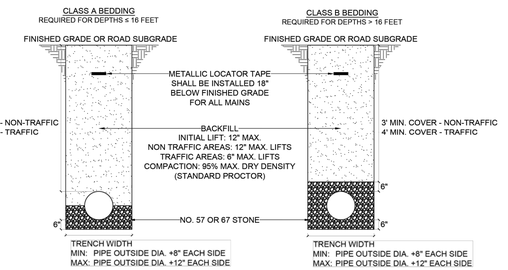
NCDOT AND TEMPORARY FENCE DETAILS

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

C34

SHEET NUMBER
36 OF 56

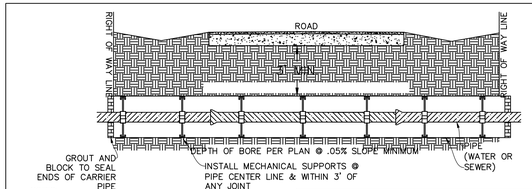
Plotted By: J Speers Layout: NCDOT AND TEMPORARY FENCE DETAILS January 14, 2025 01:51:01pm S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PS\80 - Drawings\Plan Sheets\C-SHT-FENCE.dwg



NOTES:

1. FOR TRENCHES REQUIRING SHORING & BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING & BRACING.
2. FLOWABLE FILL MAY BE REQUIRED AT THE DIRECTION OF THE WATER RESOURCES DIRECTOR.
3. NO STONES SHALL BE INCLUDED IN THE BACKFILL MATERIAL FOR AT LEAST 2 FEET ABOVE THE TOP OF THE PIPE.
4. PROVIDE RECESSES TO RECEIVE PIPE BELL.
5. UNDERCUT UNSUITABLE MATERIAL AS DIRECTED BY THE ENGINEER AND BACKFILL WITH APPROVED MATERIAL.
6. WHERE NECESSARY, TEMPORARILY DIVERT SURFACE WATER TO MAINTAIN A DRY CONDITION IN THE PIPE FOUNDATION. DIRECT THIS TEMPORARY FLOW INTO SUITABLE EROSION CONTROL DEVICES.
7. NO ORGANIC MATERIAL PERMITTED FOR BACKFILLING.

TOWN OF APEX STANDARDS	SANITARY SEWER PIPE BEDDING & BACKFILLING	STD. NO. 450.02
EFFECTIVE: MARCH 23, 2021		SHEET 1 OF 1

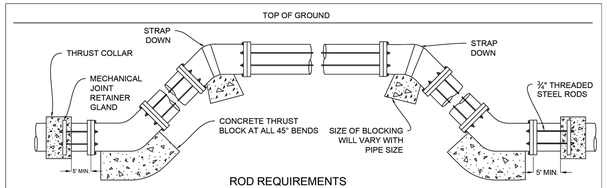


NOTES:

1. CASING SHALL BE UNCOATED SPIRAL WELDED STEEL MEETING ASTM A-139, GRADE B WITH A YIELD STRENGTH OF 35,000 PSI.
2. CROSSINGS ON NCDOT MAINTAINED ROADS TO BE IN ACCORDANCE WITH CURRENT NCDOT STANDARDS AND APPROVED ENCROACHMENT AGREEMENT.
3. RESTRAINED JOINT PIPE ONLY. MEGE-LUGS ARE NOT PERMITTED.
4. SUPPORTS SHALL BE MANUFACTURED BY ADVANCE PRODUCTS & SYSTEMS, INC, PIPELINE SEAL AND INSULATOR LTD, OR BWM COMPANY.
5. THREE SUPPORTS SHALL BE INSTALLED ON EACH PIPE SEGMENT.
6. LARGER ENCASEMENT SIZES MAY BE UTILIZED AT THE DISCRETION OF THE DESIGN ENGINEER AND/OR CONTRACTOR FOR EASE OF INSTALLATION AS LONG AS ALL OTHER DESIGN CRITERIA IS MET.
7. ALL PIPES 36" AND LARGER SHALL REQUIRE 4 SUPPORTS.

Carrier Pipe Nominal Diameter (inches)	Casing Minimum Inside Diameter (inches)	Casing Nominal Wall Thickness (inches)
6	14	0.375
8	16	0.375
10	18	0.375
12	20	0.375
14	24	0.375
16	30	0.500
18	30	0.500
20	36	0.500
24	36	0.625
30	42	0.625
36	48	0.750
42	54	0.875

TOWN OF APEX STANDARDS	BORE & JACK	STD. NO. 450.06
EFFECTIVE: MARCH 23, 2021		SHEET 1 OF 1



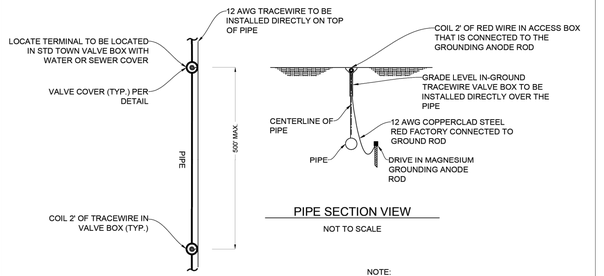
ROD REQUIREMENTS

SIZE OF 45 BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	2
8"	7,694	4
10"	12,503	4
12"	17,312	4
14"	24,046	6
16"	30,779	8
18"	50,016	8
24"	69,252	8

NOTES:

1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
3. RESTRAINED MECHANICAL GLANDS TO BE USED AT ALL FITTINGS.
4. MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY.
5. 3' MINIMUM COVER MUST BE MAINTAINED ON ALL MAINS.
6. ADD MECHANICAL JOINT RETAINER GLANDS THROUGHOUT ASSEMBLY.

TOWN OF APEX STANDARDS	VERTICAL BEND	STD. NO. 450.08
EFFECTIVE: MARCH 23, 2021		SHEET 1 OF 1



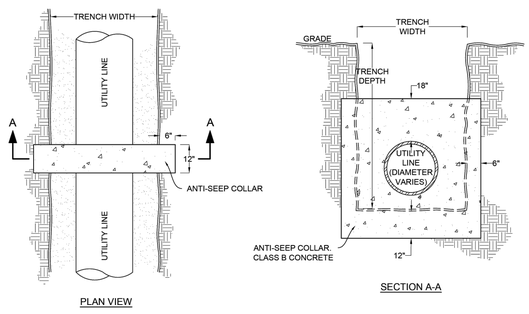
OVERALL PIPE VIEW
NOT TO SCALE

PIPE SECTION VIEW
NOT TO SCALE

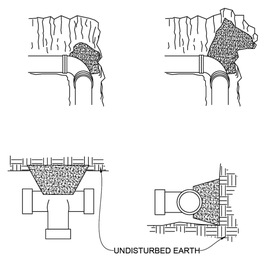
NOTE:

1. TRACER WIRE AND ACCESSORIES SHALL BE BLUE FOR WATER INSTALLATIONS AND GREEN FOR WASTEWATER INSTALLATIONS.
2. TEST STATIONS SHALL BE 2.5" DIAMETER WITH 2 TERMINALS, GREEN OR BLUE TOP AND BE EQUIVALENT TO BINGHAM AND TAYLOR MODEL P-225SR OR COPPERHEAD MODEL LD12TP AND SHALL BE INSTALLED IN A TOWN STANDARD VALVE BOX PER STANDARD DETAIL.

TOWN OF APEX STANDARDS	TRACER WIRE	STD. NO. 450.13
EFFECTIVE: MARCH 23, 2021		SHEET 1 OF 1



TOWN OF APEX STANDARDS	ANTI-SEEP COLLAR	STD. NO. 450.10
EFFECTIVE: MARCH 23, 2021		SHEET 1 OF 1



MINIMUM CONCRETE BLOCKING (C.Y.)*

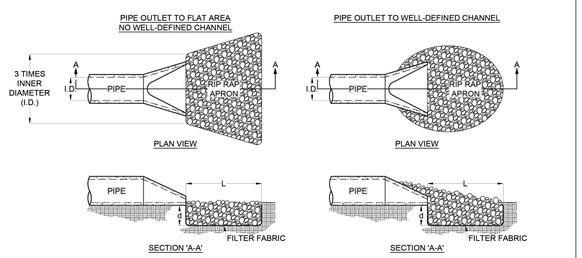
NOM. PIPE DIA. (INCHES)	TEES & DEAD ENDS	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND
4	0.1	0.1	0.1	0.1	0.1
6	0.2	0.2	0.1	0.1	0.1
8	0.2	0.3	0.2	0.1	0.1
10	0.3	0.5	0.3	0.2	0.2
12	0.4	0.6	0.5	0.3	0.3
14	0.7	0.9	0.6	0.5	0.5
16	0.7	0.9	0.6	0.5	0.5
18	0.9	1.2	0.7	0.6	0.6
20	1.1	1.6	1.1	0.7	0.7
24	1.7	2.3	1.6	0.9	0.9

* CONCRETE SHALL BE 3000 PSI

NOTES:

1. WRAP FITTINGS IN 6 MIL PLASTIC BEFORE POURING CONCRETE. (NO CONCRETE SHALL COVER BOLTS OR GLANDS).
2. ALL BLOCKING SHALL BE PLACED SO THAT THE PIPE END FITTING JOINTS WILL BE ACCESSIBLE FOR REPAIRS.
3. REACTION BLOCKING SHALL BE TO SUFFICIENT SIZE TO PREVENT THE FITTING FROM BLOWING OFF THE MAIN A MAXIMUM TEST PRESSURE.
4. FITTINGS SHALL BE BLOCKED TO SOLID , UNDISTURBED EARTH WITH CONCRETE.

TOWN OF APEX STANDARDS	REACTION BLOCKING	STD. NO. 600.13
EFFECTIVE: MARCH 23, 2021		SHEET 1 OF 1



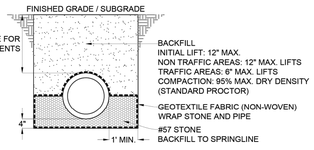
GENERAL NOTES:

1. L = THE LENGTH OF THE RIPRAP APRON
2. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 12 INCHES
3. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIP RAP AND SOIL FOUNDATION.
4. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO 6 INCHES ABOVE THE MAXIMUM TAILWATER DEPTH OR THE TOP OF THE BANK, WHICHEVER IS LESS.

MAINTENANCE NOTES:

1. INSPECT OUTLET WEEKLY AND AFTER RUNOFF-PRODUCING EVENTS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS OCCURRED, OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

TOWN OF APEX STANDARDS	PIPE OUTLET	STD. NO. 400.18
EFFECTIVE: JUNE 11, 2024		SHEET 1 OF 1



CLASS	RCP MIN (ft)	RCP MAX (ft)
III	2	20
IV	1	30

Pipe Diameter (in)	PP MIN (in)	PP MAX (ft)	CSP MIN (in)	CSP MAX (ft)	CAAP MIN (in)	CAAP MAX (ft)
15	12	28	12	158	12	98
18	12	28	12	131	12	81
21			12	113	12	69
24	12	26	12	98	12	60
30	12	26	12	79	12	57
36	12	20	12	65	12	47
42	12	20	12	55	12	40
48	12	20	12	48	12	35
54			12	56	15	31
60	24	20	12	50	15	28

NOTES:

1. EXCAVATE TO 4 INCHES BELOW THE PROPOSED PIPE ELEVATION.
2. PROVIDE 4 INCHES STONE BEDDING AND STONE BACKFILL TO SPRINGLINE.
3. WHERE BELL AND SPIGOT PIPE IS USED, PROVIDE RECESSES TO RECEIVE PIPE BELL.
4. UNDERCUT UNSUITABLE MATERIAL AS DIRECTED BY THE ENGINEER AND BACKFILL WITH STONE OR OTHER APPROVED MATERIAL.
5. BACKFILL MATERIAL SHALL BE APPROVED SUITABLE MATERIAL.
6. WHERE NECESSARY, TEMPORARILY DIVERT SURFACE WATER TO MAINTAIN A DRY CONDITION IN THE PIPE FOUNDATION. DIRECT THIS TEMPORARY FLOW INTO SUITABLE EROSION CONTROL DEVICES.

TOWN OF APEX STANDARDS	STORM DRAIN PIPE BEDDING & BACKFILLING	STD. NO. 500.09
EFFECTIVE: JUNE 11, 2024		SHEET 1 OF 1

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

TOWN OF APEX
WATER RESOURCES DEPARTMENT

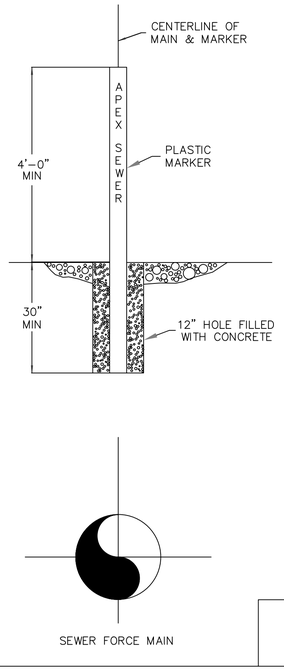
BIG BRANCH 2 PUMP STATION - FORCE MAIN

TOWN OF APEX STANDARD DETAILS

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	N/A
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

D1

SHEET NUMBER 37 OF 56



NOTES:
1. PLASTIC MARKER SHALL BE GREEN IN COLOR.
2. MARKERS SHALL BE LABELED "APEX SEWER"
3. TO BE SPACED EVERY 1,000 FEET ALONG THE FORCE MAIN.
4. MARKERS SHALL BE ROUND 4" IN DIAMETER.

SEWER FORCE MAIN MARKER

MAIN MARKER LOCATIONS

BASELINE			OFFSET		
Sheet	Main Marker Type	Stationing	Sheet	Main Marker Type	Stationing
C1	45° Bend	1019	C1	45° Bend	1019
C1	45° Bend	1185	C1	45° Bend	1180
C1	22.5° Bend	1606	C1	22.5° Bend	1613
C1	11.25° Bend	1624	C1	11.25° Bend	1625
C1	22.5° Bend	1886	C1	22.5° Bend	1882
C1	90° Bend	1892	C1	45° Bend	1886
C2	11.25° Bend	2750	C1	45° Bend	1892
C3	Force Main	3700	C2	11.25° Bend	2750
C3	11.25° Bend	4423	C3	Force Main	3700
C4	Tee	4541	C3	11.25° Bend	4424
C4	22.5° Bend	4707	C4	Tee	4541
C4	90° Bend	4982	C4	22.5° Bend	4704
C5	Force Main	5900	C4	90° Bend	4982
C6	Force Main	6900	C5	Force Main	5900
C6	45° Bend	7809	C6	Force Main	6900
C6	45° Bend	7874	C6	45° Bend	7798
C7	45° Bend	8431	C6	45° Bend	7874
C7	45° Bend	8491	C7	45° Bend	8431
C8	Force Main	9400	C7	45° Bend	8496
C8	Tee	9735	C8	Force Main	9400
C8	45° Bend	9765	C8	Tee	9735
C8	45° Bend	9816	C8	45° Bend	9765
C9	45° Bend	10795	C8	45° Bend	9824
C9	90° Bend	10953	C9	45° Bend	10785
C9	45° Bend	11035	C9	90° Bend	10953
C10	45° Bend	11801	C9	45° Bend	11025
C10	45° Bend	11837	C10	45° Bend	11808
C10	Force Main	12300	C10	45° Bend	11842
C11	45° Bend	12919	C10	Force Main	12300
C11	45° Bend	12963	C11	45° Bend	12914
C11	45° Bend	13371	C11	45° Bend	12963
C11	45° Bend	13413	C11	45° Bend	13371
C12	Force Main	14400	C11	45° Bend	13408
C13	Force Main	15100	C12	Force Main	14400
C13	Tee	15751	C13	Force Main	15100
C14	45° Bend	16722	C13	Tee	15751
C14	45° Bend	16744	C14	45° Bend	16720
C15	Force Main	17600	C14	45° Bend	16736
C15	45° Bend	17839	C15	Force Main	17600
C15	45° Bend	17868	C15	45° Bend	17850
C16	45° Bend	18724	C15	45° Bend	17869
C16	45° Bend	18780	C16	45° Bend	18729
C16	45° Bend	19158	C16	45° Bend	18780
C16	45° Bend	19214	C16	45° Bend	19157
C17	45° Bend	19988	C16	45° Bend	19219
C17	45° Bend	20016	C17	45° Bend	19993
C17	45° Bend	20324	C17	45° Bend	20016
C17	45° Bend	20352	C17	45° Bend	20324
C18	45° Bend	20672	C17	45° Bend	20357
C18	45° Bend	20718	C18	45° Bend	20676
C18	Tee	21577	C18	45° Bend	20709
C18	45° Bend	21589	C18	Tee	21577
C19	11.25° Bend	21728	C18	45° Bend	21589
C19	11.25° Bend	22212	C19	11.25° Bend	21729
C20	45° Bend	22945	C19	11.25° Bend	22210
C20	45° Bend	23120	C20	45° Bend	22949
C20	45° Bend	23138	C20	45° Bend	23115
C20	45° Bend	23528	C20	45° Bend	23143
C20	45° Bend	23591	C20	45° Bend	23523
C20	45° Bend	23689	C20	45° Bend	23591
C20	45° Bend	23704	C20	45° Bend	23689
C20	Reducer	23725	C20	45° Bend	23704
C20	Tee	23733	C20	45° Bend	23729
C21	45° Bend	24127	C20	45° Bend	23733
C21	45° Bend	24139			
C21	11.25° Bend	24153			
C21	45° Bend	24384			
C21	45° Bend	24396			
C21	45° Bend	24632			
C21	45° Bend	24648			
C22	Force Main	25200			
C23	45° Bend	25686			
C23	45° Bend	25696			
C23	45° Bend	26014			
C23	45° Bend	26551			
C24	90° Bend	26938			

TRACER WIRE LOCATIONS

BASELINE			OFFSET		
Sheet	Stationing	Distance From Last Tracer Wire	Sheet	Stationing	Distance From Last Tracer Wire
C1	1185	185	C1	1180	180
C1	1624	439	C1	1625	445
C1	1892	268	C1	1892	267
C2	2321	429	C2	2313	421
C2	2750	429	C2	2750	437
C2	3100	350	C2	3100	350
C3	3600	500	C3	3590	490
C3	4000	400	C3	4000	410
C3	4423	423	C3	4423	423
C4	4707	284	C4	4704	281
C4	4982	275	C4	4982	278
C4	5450	468	C4	5450	468
C5	5900	450	C5	5900	450
C5	6136	236	C5	6126	226
C5	6600	464	C5	6600	474
C6	6860	260	C6	6850	250
C6	7350	490	C6	7350	500
C6	7809	459	C6	7798	448
C7	8133	324	C7	8120	322
C7	8491	358	C7	8431	311
C7	8900	409	C7	8900	469
C8	9355	455	C8	9342	442
C8	9765	410	C8	9747	405
C8	10100	335	C8	10100	353
C9	10357	257	C9	10367	267
C9	10795	438	C9	10785	418
C9	11092	297	C9	11081	296
C10	11500	408	C10	11500	419
C10	11837	337	C10	11842	342
C11	12300	463	C11	12300	458
C11	12800	500	C11	12800	500
C11	13045	245	C11	13035	235
C11	13413	368	C11	13408	373
C12	13900	487	C12	13900	492
C12	14077	177	C12	14067	167
C12	14400	323	C12	14400	333
C13	14898	498	C13	14888	488
C13	15300	402	C13	15300	412
C13	15764	464	C13	15764	464
C14	16163	399	C14	16153	389
C14	16561	398	C14	16551	398
C14	16744	183	C14	16736	185
C15	17100	356	C15	17100	364
C15	17407	307	C15	17397	297
C15	17868	461	C15	17869	472
C16	18300	432	C16	18300	431
C16	18724	424	C16	18729	429
C16	18984	260	C16	18974	245
C16	19214	230	C16	19219	245
C17	19700	486	C17	19700	481
C17	19988	288	C17	19993	293
C17	20352	364	C17	20357	364
C18	20718	366	C18	20676	319
C18	20962	244	C18	20952	276
C18	21400	438	C18	21400	448
C18	21567	167	C18	21567	167
C19	21728	161	C19	21729	162
C19	22212	484	C19	22210	481
C19	22461	249	C19	22451	241
C20	22945	484	C20	22949	498
C20	23138	193	C20	23143	194
C20	23591	453	C20	23591	448
C20	23733	142	C20	23733	142
C21	24177	444			
C21	24396	219			
C21	24632	236			
C22	25100	468			
C22	25500	400			
C23	25686	186			
C23	26014	328			
C23	26358	344			
C23	26700	342			
C24	26938	238			

BIG BRANCH 2 PS - FORCE MAIN THRUST RESTRAINT TABLE

SIZE (IN)	FITTING/ APPURTENANCE	THRUST RESTRAINT DISTANCE (LF)
20	11.25°	12
20	11.25° VERT	22
20	22.5°	24
20	22.5° VERT	45
20	45°	49
20	45° VERT	92
20	90°	118
20	PLUG VALVE	222
24x20	REDUCER	78
24	11.25°	14
24	11.25° VERT	26
24	22.5°	27
24	22.5° VERT	52
24	45°	57
24	45° VERT	107
24	90°	136
24	PLUG VALVE	258

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

TOWN OF APEX
WATER RESOURCES DEPARTMENT

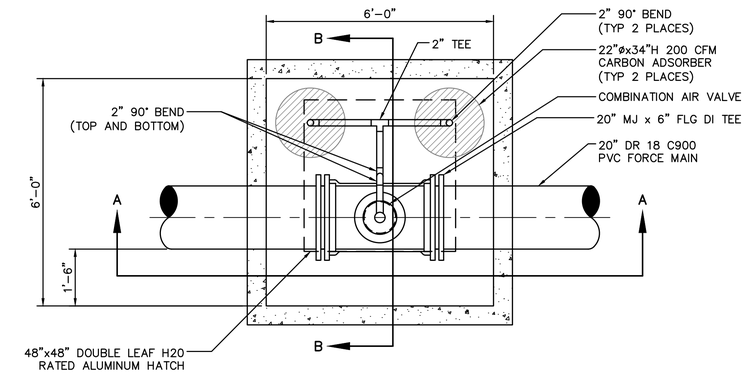
BIG BRANCH 2 PUMP STATION - FORCE MAIN

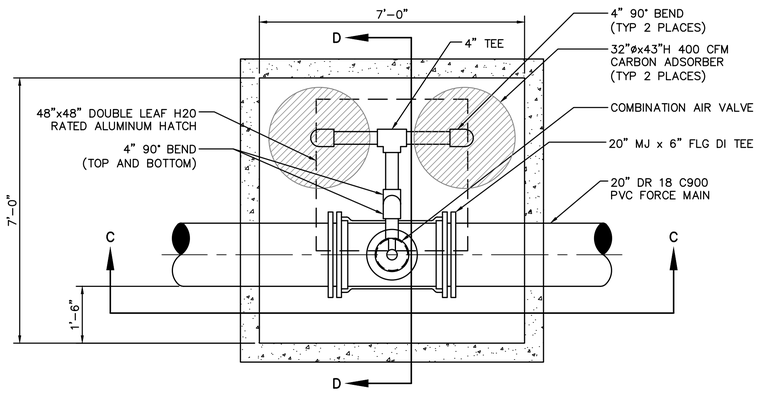
TOWN OF APEX STANDARD DETAILS

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	N/A
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

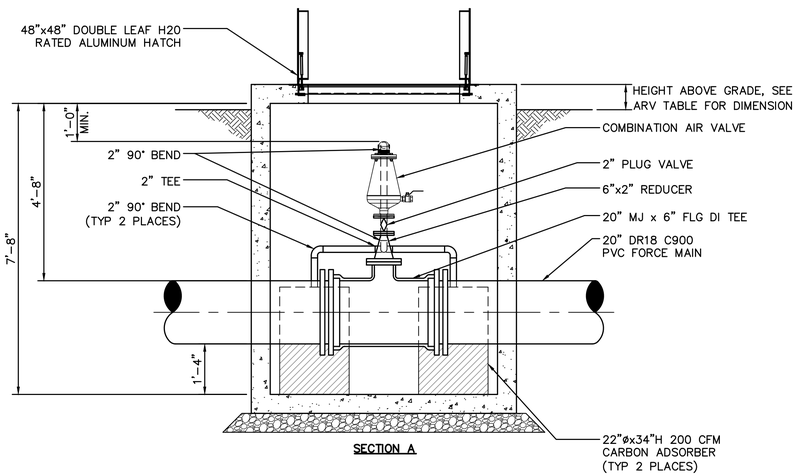
D2

SHEET NUMBER 38 OF 56

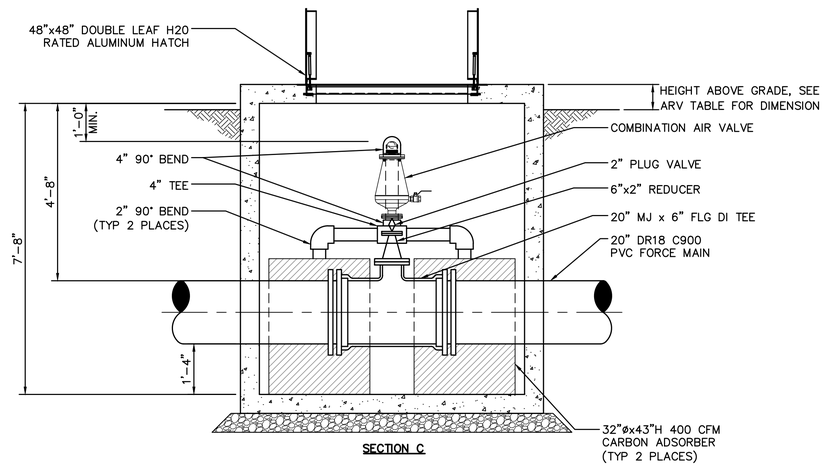




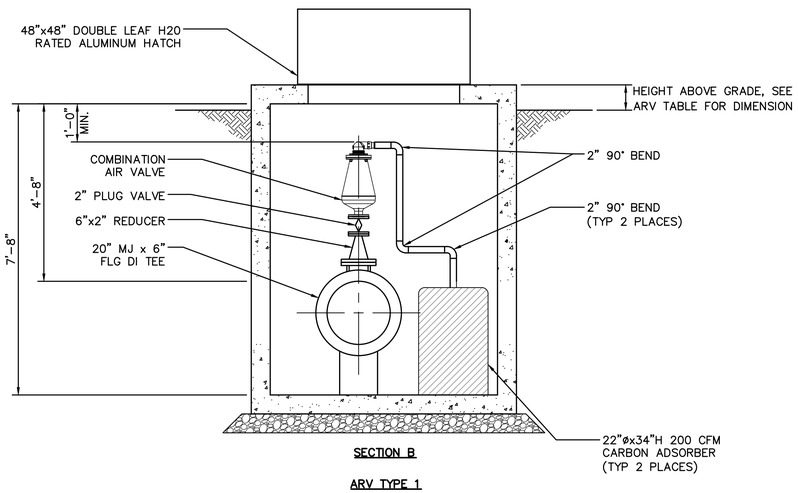
ARV TABLE						
ARV NO.	STA	BASELINE/OFFSET	FORCE MAIN SIZE (IN)	DETAIL TYPE	ORIENTATION LOOKING DOWNSTREAM	HEIGHT ABOVE GRADE
1	23+16	BASELINE	20	2	LEFT	3'-0"
2	23+06	OFFSET	20	2	LEFT	3'-0"
3	36+94	BASELINE	20	1	LEFT	3'-0"
4	37+04	OFFSET	20	1	LEFT	3'-0"
5	45+09	BASELINE	20	2	LEFT	3'-0"
6	44+99	OFFSET	20	2	LEFT	3'-0"
7	61+31	BASELINE	20	2	LEFT	3'-0"
8	61+21	OFFSET	20	2	LEFT	3'-0"
9	68+68	BASELINE	20	2	LEFT	3'-0"
10	68+58	OFFSET	20	2	LEFT	3'-0"
11	81+28	BASELINE	20	1	LEFT	3'-0"
12	81+15	OFFSET	20	1	LEFT	3'-0"
13	93+50	BASELINE	20	1	LEFT	3'-0"
14	93+37	OFFSET	20	1	LEFT	3'-0"
15	103+52	BASELINE	20	1	LEFT	AT GRADE
16	103+62	OFFSET	20	1	LEFT	3'-0"
17	110+73	BASELINE	20	1	LEFT	AT GRADE
18	110+63	OFFSET	20	1	LEFT	AT GRADE
19	130+40	BASELINE	20	1	LEFT	3'-0"
20	130+30	OFFSET	20	1	LEFT	3'-0"
21	140+83	BASELINE	20	1	LEFT	3'-0"
22	140+73	OFFSET	20	1	LEFT	3'-0"
23	148+93	BASELINE	20	1	LEFT	3'-0"
24	148+83	OFFSET	20	1	LEFT	3'-0"
25	161+58	BASELINE	20	1	LEFT	3'-0"
26	161+48	OFFSET	20	1	LEFT	3'-0"
27	165+56	BASELINE	20	1	LEFT	3'-0"
28	165+46	OFFSET	20	1	LEFT	3'-0"
29	173+88	BASELINE	20	1	LEFT	AT GRADE
30	173+78	OFFSET	20	1	LEFT	3'-0"
31	189+65	BASELINE	20	1	LEFT	3'-0"
32	189+55	OFFSET	20	1	LEFT	3'-0"
33	209+57	BASELINE	20	1	LEFT	3'-0"
34	209+47	OFFSET	20	1	LEFT	3'-0"
35	224+56	BASELINE	20	1	LEFT	3'-0"
36	224+46	OFFSET	20	1	LEFT	3'-0"
37	263+40	BASELINE	24	1	LEFT	3'-0"



SECTION A

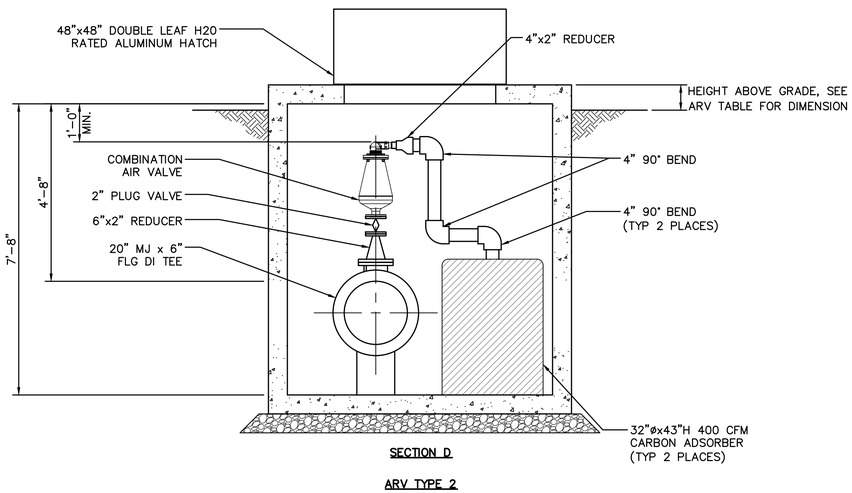


SECTION C



SECTION B

ARV TYPE 1



SECTION D

ARV TYPE 2

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

TOWN OF APEX
WATER RESOURCES DEPARTMENT

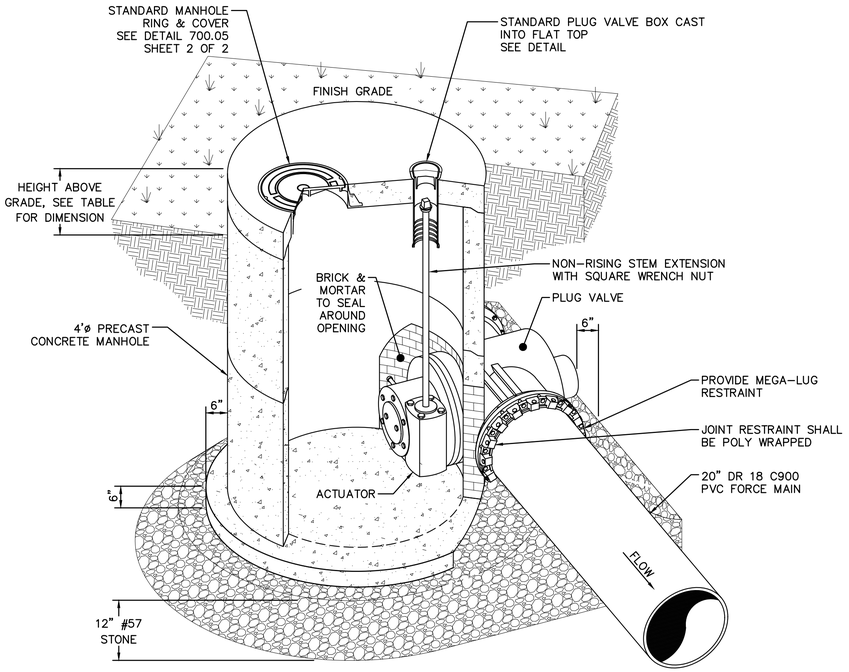
BIG BRANCH 2 PUMP STATION - FORCE MAIN

ARV DETAIL

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	N/A
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

D3

SHEET NUMBER
39 OF 56



NOTE:
1. 50% OR LESS OF THE PIPE SHOULD BE IN THE MANHOLE.
2. PROVIDE 4' COVER OVER VALVE MINIMUM.
3. REFER TO PLANS FOR ARRANGEMENT AT EACH LOCATION.

PLUG VALVE

PLUG VALVE TABLE					
NO.	STA	BASELINE/OFFSET	VALVE SIZE (in)	ORIENTATION LOOKING DOWNSTREAM	HEIGHT ABOVE GRADE
1	23+03	BASELINE	20	RIGHT	3'-0"
2	22+93	OFFSET	20	LEFT	3'-0"
3	45+43	BASELINE	20	RIGHT	3'-0"
4	45+36	OFFSET	20	LEFT	3'-0"
5	45+43	OFFSET	20	LEFT	3'-0"
6	68+54	BASELINE	20	RIGHT	3'-0"
7	68+45	OFFSET	20	LEFT	3'-0"
8	97+42	BASELINE	20	RIGHT	3'-0"
9	97+30	OFFSET	20	LEFT	3'-0"
10	97+42	OFFSET	20	LEFT	3'-0"
11	110+86	BASELINE	20	RIGHT	AT GRADE
12	110+76	OFFSET	20	LEFT	AT GRADE
13	140+71	BASELINE	20	RIGHT	3'-0"
14	140+61	OFFSET	20	LEFT	3'-0"
15	157+59	BASELINE	20	RIGHT	3'-0"
16	157+46	OFFSET	20	LEFT	3'-0"
17	157+59	OFFSET	20	LEFT	3'-0"
18	174+01	BASELINE	20	RIGHT	AT GRADE
19	173+91	OFFSET	20	LEFT	3'-0"
20	189+78	BASELINE	20	RIGHT	3'-0"
21	189+68	OFFSET	20	LEFT	3'-0"
22	215+62	BASELINE	20	RIGHT	3'-0"
23	215+72	OFFSET	20	LEFT	3'-0"
24	215+62	OFFSET	20	LEFT	3'-0"
25	237+09	BASELINE	20	RIGHT	3'-0"
26	237+28	OFFSET	20	LEFT	3'-0"
27	263+53	BASELINE	24	RIGHT	3'-0"

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

TOWN OF APEX
WATER RESOURCES DEPARTMENT

BIG BRANCH 2 PUMP STATION - FORCE MAIN

PLUG VALVE DETAIL

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	N/A
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

D4

SHEET NUMBER 40 OF 56

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

PROPOSED SILL, SEE DETAIL SHEET EC14

TEMPORARY SUPER SILT FENCE, TYP

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

PROPOSED MAINTENANCE CROSSING STA 13+34 (60'L x 10'W x 1'–4"T) CENTERED ON DITCH; SEE FORD CROSSING DETAIL SHEET EC14

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

PROPOSED PERMIT BOX AND RAIN GAUGE

NOW OR FORMERLY
HH TRINITY APEX INVESTMENTS LLC
DB 12651 PG 1128
BM 2006 PG 416
0 OLD HOLLY SPRINGS APEX RD
PIN: 0730852539

NOW OR FORMERLY
HH TRINITY APEX INVESTMENTS LLC
DB 12651 PG 1128
BM 2006 PG 416
0 OLD HOLLY SPRINGS APEX RD
PIN: 0730852539

NOW OR FORMERLY
BARBARA BEREMAN TRUSTEE
DB 12650 PG 2542
BM 1979 PG 686
2900 WOODFIELD DEAD END RD
PIN: 0730666867

50' CARDINAL EXTENSION COMPANY, LLC RIGHT-OF-WAY DB 8102 PG 446

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.95 AC

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

MATCH LINE – STA 28+50 FOR CONTINUATION SEE SHEET 41

PLAN
1" = 60'

GRAPHIC SCALE IN FEET
0 30 60 120

NOW OR FORMERLY
A. PAUL MAHOUTCHIAN
MARYANN MAHOUTCHIAN
DB 8273 PG 1697
BM 1974 PG 228
2812 WOODFIELD DEAD END RD
PIN: 0730654754

NOW OR FORMERLY
INNA DENG TRUSTEE
INNA DENG FAMILY TRUST 2
DB 17029 PG 832
BM 1974 PG 228
2828 WOODFIELD DEAD END RD
PIN: 0730650989

NOW OR FORMERLY
HORACE MURRAY, JR
GLORIA G. MURRAY
DB 4759 PG 558
2837 WOODFIELD DEAD END RD
PIN: 0730566176

NOW OR FORMERLY
HORACE MURRAY, JR
GLORIA G. MURRAY
DB 12438 PG 381
2917 WOODFIELD DEAD END RD
PIN: 0730562178

NOW OR FORMERLY
NAMEJOHN W. BURRELL
MARY L. BURRELL
BETTY SNEED
DB 19048 PG 2571
2921 WOODFIELD DEAD END RD
PIN: 0730466163

TEMPORARY SUPER SILT FENCE, TYP

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

PROPOSED SILL, SEE DETAIL SHEET EC14

TEMPORARY COIR MATTING, TYP

PROPOSED MAINTENANCE CROSSING STA 32+44 (30'L x 10'W x 1'–4"T) CENTERED ON DITCH; INSTALL AT EXISTING GRADE; SEE FORD CROSSING DETAIL SHEET EC14

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.77 AC

WOODFIELD DEAD END ROAD SR 1155 BM 1979 PG 686

NOW OR FORMERLY
ROBERT BEREMAN
BARBARA JO BEREMAN
DB 15223 PG 1152
BM 1979 PG 686
2901 WOODFIELD DEAD END RD
PIN: 0730563510

NOW OR FORMERLY
JAMES R. BAKER
FAYE H. BAKER
DB 3254 PG 753
2925 WOODFIELD DEAD END RD
PIN: 0730468499

PROPOSED 25' X 20' RECEIVING PIT

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

MATCH LINE – STA 28+50 FOR CONTINUATION SEE SHEET 41

MATCH LINE – STA 47+50 FOR CONTINUATION SEE SHEET 42

PLAN
1" = 60'

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P–1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL STA 10+00 TO STA 47+50

CJS PROJ. #:	100–005
DATE:	12–18–2024
SCALE:	1" = 60'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC1

SHEET NUMBER 41 OF 56

MATCH LINE – STA 47+50
FOR CONTINUATION SEE SHEET 41

NEW US 1
VARIABLE WIDTH PUBLIC
RIGHT–OF–WAY

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT–OF–WAY

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT–OF–WAY (C/A)

PROPOSED MAINTENANCE CROSSING STA 51+40 (110'L x 10'W x 1'–4"T) CENTERED ON DITCH; SEE FORD CROSSING DETAIL SHEET EC14

PROPOSED MAINTENANCE CROSSING STA 54+74 (30'L x 10'W x 12"T) CENTERED ON DITCH; INSTALL AT EXISTING GRADE; SEE FORD CROSSING DETAIL SHEET EC14

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

TEMPORARY SUPER SILT FENCE, TYP

PROPOSED MAINTENANCE CROSSING STA 63+74 (30'L x 10'W x 1'–4"T) CENTERED ON DITCH; INSTALL AT EXISTING GRADE; SEE FORD CROSSING DETAIL SHEET EC14

MATCH LINE – STA 66+50
FOR CONTINUATION SEE SHEET 42

NOW OR FORMERLY
TONY K. EDWARDS
MARTHA B. EDWARDS
DB 3492 PG 00459
BM 1985 PG 661
3005 PLEASANT PLAINS RD
PIN: 0730478097

PROPOSED 25' X 40' BORE PIT

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

PROPOSED SILL, SEE DETAIL SHEET EC14

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

TEMPORARY CONST ENTRANCE SEE DETAIL 400.06

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.83 AC

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

NOW OR FORMERLY
ELIZABETH R. STITT
DB 19054 PG 1714
3009 PLEASANT PLAINS RD
PIN: 0730461622

NOW OR FORMERLY
SHENANDOAH HOMES LLC
DB 17612 PG 1912
BM 2019 PG 1777–1782
3425 WINDING WAY
PIN: 0730269201

PLAN
1" = 60'

GRAPHIC SCALE IN FEET
0 30 60 120

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

MATCH LINE – STA 66+50
FOR CONTINUATION SEE SHEET 42

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT–OF–WAY (C/A)

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT–OF–

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

TEMPORARY SUPER SILT FENCE, TYP

PROPOSED MAINTENANCE CROSSING STA 72+22 (50'L x 10'W x 1'–8"T) CENTERED ON DITCH; SEE FORD CROSSING DETAIL SHEET EC14

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.86 AC

NOW OR FORMERLY
SHENANDOAH HOMES LLC
DB 17612 PG 1912
BM 2019 PG 1777–1782
3425 WINDING WAY
PIN: 0730269201

POND
W.E. 332.8

NOW OR FORMERLY
SHENANDOAH HOMES LLC
DB 17612 PG 1912
BM 2019 PG 1777–1782
0 WINDING WAY
PIN: 0730252219

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

PROVIDE/EXTEND DRAINAGE AS NECESSARY DURING CONSTRUCTION TO ALLOW APPROPRIATE DRAINAGE

TEMPORARY CONST ENTRANCE SEE DETAIL 400.06

WINDING WAY
60' PUBLIC R/W

NOW OR FORMERLY
GREGORY MOORE
JENNIFER MOORE
DB 14979 PG 128
3433 WINDING WAY
PIN: 0730252479

TREE AND VEGETATION PROTECTION ZONE SCALED FROM BM 2007 PG 2325 BM 2016 PG 1496

NOW OR FORMERLY
BENTLEY OLIVE
LEANNE OLIVE
DB 16236 PG 2557
BM 2016 PG 1496
3426 WINDING WAY
PIN: 0730143907

PLAN
1" = 60'

MATCH LINE – 85+50
FOR CONTINUATION SEE SHEET 43

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL STA 47+50 TO STA 85+50

CJS PROJ. #:	100–005
DATE:	12–18–2024
SCALE:	1" = 60'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC2

SHEET NUMBER 42 OF 56

MATCH LINE – STA 85+50
FOR CONTINUATION SEE SHEET 42

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT-OF-WAY (C/A)

PROPOSED MAINTENANCE CROSSING STA 89+96 (30'L x 10'W x 12"T) CENTERED ON DITCH; INSTALL AT EXISTING GRADE, SEE FORD CROSSING DETAIL SHEET EC14

PROPOSED MAINTENANCE CROSSING STA 91+10 (30'L x 10'W x 1'-4"T) CENTERED ON DITCH; INSTALL AT EXISTING GRADE, SEE FORD DETAIL SHEET EC14

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

PROPOSED SILL, SEE DETAIL SHEET EC14

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.75 AC

TREE AND VEGETATION PROTECTION ZONE SCALED FROM BM 2007 PG 2325 BM 2016 PG 1496

TEMPORARY COIR MATTING, TYP

TEMPORARY SUPER SILT FENCE, TYP

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

MAINTENANCE CROSSING (30'L x 10'W x 1'-8"T) CENTERED ON DITCH; INSTALL AT EXISTING GRADE, SEE FORD DETAIL SHEET EC14

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

NOW OR FORMERLY
BENTLEY OLIVE
LEANNE OLIVE
DB 16236 PG 2557
BM 2016 PG 1496
3426 WINDING WAY
PIN: 0730143907

NOW OR FORMERLY
JEFFREY HASTINGS
DB 14587 PG 1572
BM 1911 PG 2
3601 FRIENDSHIP RD
PIN: 0730043464

PLAN
1" = 60'

GRAPHIC SCALE IN FEET
0 30 60 120

MATCH LINE – STA 104+50
FOR CONTINUATION SEE SHEET 43

MATCH LINE – STA 104+50
FOR CONTINUATION SEE SHEET 43

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT-OF-WAY (C/A)

FRIENDSHIP ROAD SR 1149
66' PUBLIC RIGHT-OF-WAY

TEMPORARY CONST ENTRANCE SEE DETAIL 400.06

LIMIT OF DISTURBANCE, DISTURBED AREA = 0.41 AC

PROPOSED 25' X 20' RECEIVING PIT

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

PROPOSED 25' X 40' BORE PIT

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

NOW OR FORMERLY
THOMAS BLAND
BETH BLAND
DB 16919 PG 2596
BM 1986 PG 1223
3724 FRIENDSHIP RD
PIN: 0720931641

TEMPORARY SILT FENCE, TYP SEE DETAIL 400.01

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.44 AC

NOW OR FORMERLY
YATES FRIENDSHIP FARM LLC
DB 19552 PG 185
BM 2004 PG 1386
3716 FRIENDSHIP RD
PIN: 0720835629

NOW OR FORMERLY
CHARLES BAUCOM
DB 18961 PG 2496
BM 2022 PG 334
0 OLD US 1 HWY
PIN: 0720628996

PLAN
1" = 60'

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL STA 85+50 TO STA 123+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 60'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC3

SHEET NUMBER 43 OF 56

MATCH LINE – STA 123+50
FOR CONTINUATION SEE SHEET 43

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT–OF–WAY (C/A)

PROPOSED SILL, SEE DETAIL SHEET EC14

SEE SHEET EC9 FOR CONTINUATION

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

PROPOSED 15' MAINTAINED CORRIDOR SEE DETAIL SHEET EC14

LIMIT OF DISTURBANCE, DISTURBED AREA = 2.21 AC

TEMPORARY COIR MATTING, TYP

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

TEMPORARY SUPER SILT FENCE, TYP

PROPOSED MAINTENANCE CROSSING STA 126+61 (30'L x 10'W x 1'–8"T) CENTERED ON DITCH; INSTALL AT EXISTING GRADE, SEE FORD DETAIL SHEET EC14

TEMPORARY CONST ENTRANCE SEE DETAIL 400.06

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

NOW OR FORMERLY
CHARLES BAUCOM
DB 18961 PG 2496
BM 2022 PG 334
0 OLD US 1 HWY
PIN: 0720628996

SOUTHERN PIPELINE COMPANY EASEMENT
DB 5715 PG 577
BM 2022 PG 334

PLAN
1" = 60'

GRAPHIC SCALE IN FEET
0 30 60 120

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Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

MATCH LINE – STA 142+50
FOR CONTINUATION SEE SHEET 44

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT–OF–WAY (C/A)

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT–OF–WAY (C/A)

TEMPORARY SUPER SILT FENCE, TYP

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

NOW OR FORMERLY
DUKE ENERGY PROGRESS
DB 2070 PG 417

PROPOSED MAINTENANCE CROSSING STA 147+14 (70'L x 10'W x 12"T) CENTERED ON DITCH; SEE FORD CROSSING DETAIL SHEET EC14

PROPOSED SILL, SEE DETAIL SHEET EC14

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.68 AC

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

TEMPORARY SILT FENCE, TYP SEE DETAIL 400.01

NOW OR FORMERLY
CHARLES BAUCOM
DB 18961 PG 2496
BM 2022 PG 334
0 OLD US 1 HWY
PIN: 0720628996

NOW OR FORMERLY
CHARLES BAUCOM
DB 18961 PG 2496
BM 2022 PG 334
0 OLD US 1 HWY
PIN: 0720628996

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

NOW OR FORMERLY
RICHARD STONE
JEANNE STONE
DB 6618 PG 579
BM 1995 PG 1170
3817 BOSCO RD
PIN: 0720512303

NOW OR FORMERLY
DANNY WILLIAMS
LAUREN WILLIAMS
DB 17189 PG 493
BM 2018 PG 598
3837 BOSCO RD
PIN: 0720407997

TREE AND VEGETATION PROTECTION ZONE SCALED FROM BM 2007 PG 2325 BM 2016 PG 1496

MATCH LINE
FOR CONTINUATION SEE SHEET 45

PLAN
1" = 60'

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL STA 123+50 TO STA 161+50

CJS PROJ. #:	100–005
DATE:	12–18–2024
SCALE:	1" = 60'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC4

SHEET NUMBER 44 OF 56

MATCH LINE – STA 161+50
FOR CONTINUATION SEE SHEET 44

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT-OF-WAY (C/A)

PROPOSED MAINTENANCE CROSSING STA 167+98 (30'L x 10'W x 1'-4"T) CENTERED ON DITCH; INSTALL AT EXISTING GRADE, SEE FORD CROSSING DETAIL SHEET EC14

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

MATCH LINE – STA 180+50
FOR CONTINUATION SEE SHEET 45

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.71 AC

TREE AND VEGETATION PROTECTION ZONE
BM 2018 PG 974

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

NOW OR FORMERLY
DANNY WILLIAMS
LAUREN WILLIAMS
DB 17189 PG 493
BM 2018 PG 598
3837 BOSCO RD
PIN: 0720407997

NOW OR FORMERLY
DANNY WILLIAMS
LAUREN WILLIAMS
DB 17189 PG 476
BM 2018 PG 598
3901 BOSCO RD
PIN: 0720401633

NOW OR FORMERLY
JON BRUCE
TINA BRUCE
DB 15134 PG 1792
BM 1996 PG 393
BM 2014 PG 974
8164 PROVIDENCE OAK PATH
PIN: 0720301467

PLAN
1" = 60'

GRAPHIC SCALE IN FEET
0 30 60 120

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

MATCH LINE – STA 180+50
FOR CONTINUATION SEE SHEET 45

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT-OF-WAY (C/A)

PROPOSED 15' MAINTAINED CORRIDOR SEE DETAIL SHEET EC14

TEMPORARY COIR MATTING, TYP

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

PROPOSED MAINTENANCE CROSSING STA 198+71 (55'L x 10'W x 12"T); SEE FORD CROSSING DETAIL SHEET EC14

PROPOSED SILL, SEE DETAIL SHEET EC14

MATCH LINE – STA 199+50
FOR CONTINUATION SEE SHEET 46

TEMPORARY SUPER SILT FENCE, TYP

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.79 AC

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

PROPOSED MAINTENANCE CROSSING STA 196+36 (40'L x 10'W x 12"T) CENTERED ON DITCH; SEE FORD CROSSING DETAIL ON SHEET EC14

NOW OR FORMERLY
DUKE ENERGY PROGRESS
DB 15289 PG 2437

NOW OR FORMERLY
JON BRUCE
TINA BRUCE
DB 15134 PG 1792
BM 1996 PG 393
BM 2014 PG 974
8164 PROVIDENCE OAK PATH
PIN: 0720301467

NOW OR FORMERLY
DUKE ENERGY PROGRESS INC
DB 15289 PG 2437
PIN: 0629626959

NOW OR FORMERLY
DUKE ENERGY PROGRESS INC
DB 15289 PG 2437
PIN: 0629626959

PLAN
1" = 60'

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL STA 161+50 TO STA 199+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 60'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC5

SHEET NUMBER 45 OF 56

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT-OF-WAY (C/A)

MATCH LINE – STA 199+50
FOR CONTINUATION SEE SHEET 45

MATCH LINE – STA 219+50
FOR CONTINUATION SEE SHEET 46

PROPOSED MAINTENANCE CROSSING STA 202+19 (30'L x 10'W x 12"T) CENTERED ON DITCH; INSTALL AT EXISTING GRADE, SEE FORD CROSSING DETAIL SHEET EC14

TEMPORARY PUMP AROUND, TYP SEE DETAIL 400.23

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

PROPOSED SILL, SEE DETAIL SHEET EC14

TEMPORARY SUPER SILT FENCE, TYP

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.83 AC

PROPOSED 25' X 40' BORE PIT

TEMPORARY CONST ENTRANCE SEE DETAIL 400.06

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

LIMIT OF DISTURBANCE, DISTURBED AREA = 0.44 AC

PROPOSED 25' X 20' RECEIVING PIT

NOW OR FORMERLY
DUKE ENERGY PROGRESS INC
DB 15289 PG 2437
PIN: 0629626959

NOW OR FORMERLY
NEW HILL PLAZA LLC
DB 019382 PG 2509
BM 2023 PG 2112
0 NEW HILL HOLLEMAN RD
PIN: 0629098497

NOW OR FORMERLY
TKC CCCXIX LLC
DB 19480 PG 866
31 NEW HILL HOLLEMAN RD
PIN: 0619986598

PLAN
1" = 60'

GRAPHIC SCALE IN FEET
0 30 60 120

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

NEW US 1
VARIABLE WIDTH PUBLIC RIGHT-OF-WAY (C/A)

MATCH LINE – STA 219+50
FOR CONTINUATION SEE SHEET 46

TEMPORARY SILT/TREE PROTECTION FENCE, TYP

TEMPORARY SILT FENCE OUTLET, TYP SEE DETAIL 400.02

LIMIT OF DISTURBANCE, DISTURBED AREA = 1.44 AC

TREE PROTECTION FENCE, TYP SEE DETAIL 200.06

NOW OR FORMERLY
TKC CCCXIX LLC
DB 19480 PG 866
31 NEW HILL HOLLEMAN RD
PIN: 0619986598

NOW OR FORMERLY
TOWN OF APEX
DB 15654 PG 223
BM 2011 PG 412
3500 RECLAMATION RD
PIN: 0619796350

MATCH LINE – STA 235+00
FOR CONTINUATION SEE SHEET 47

PLAN
1" = 60'

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

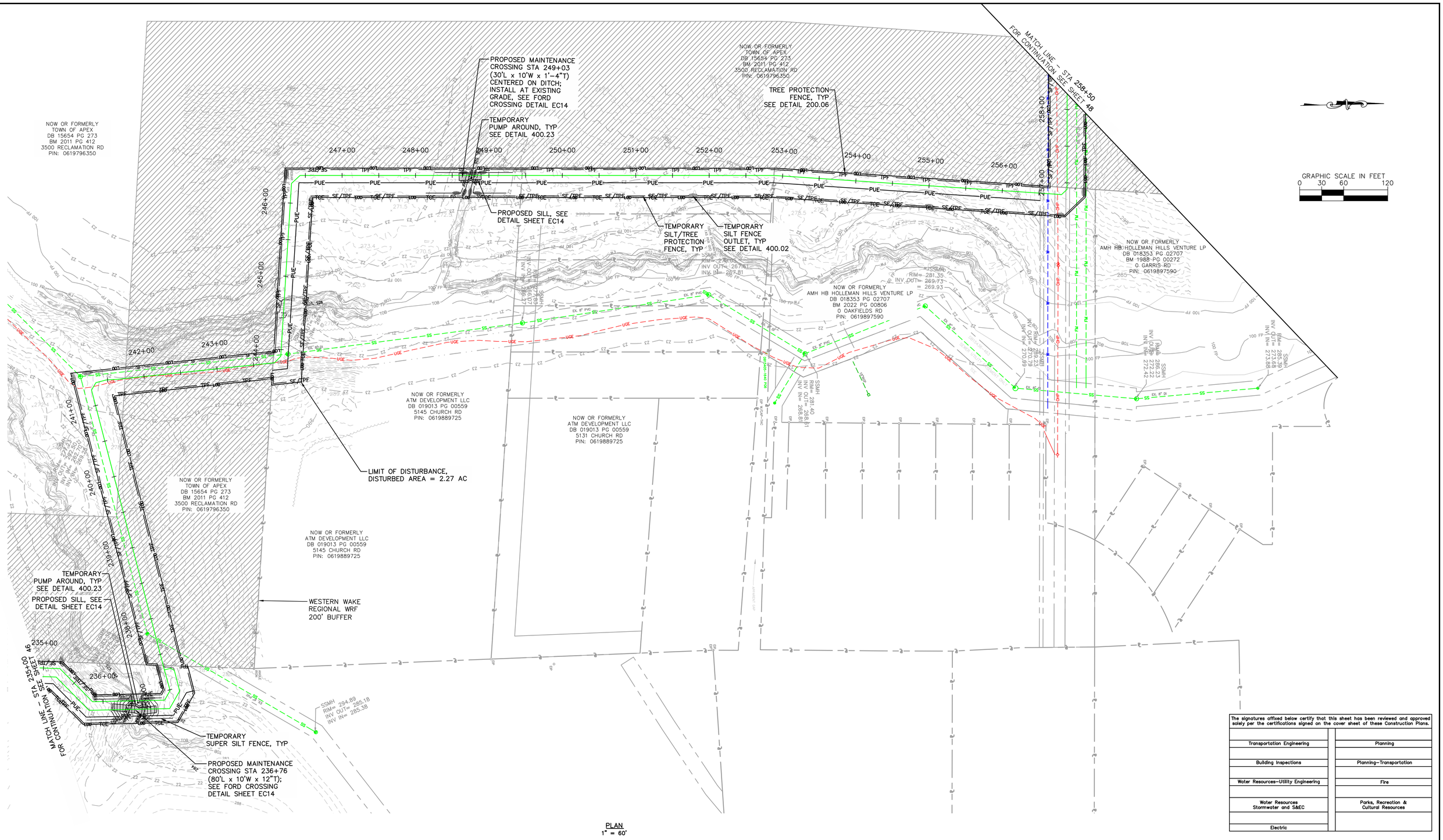
EROSION CONTROL STA 199+50 TO STA 235+00

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 60'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC6

SHEET NUMBER 46 OF 56

Plotted By: Spears Layout:EC6 January 14, 2025 01:53:26pm S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PS\80 Drawings\Plan Sheets\C-SHT-BIG BRANCH EROS-1.dwg



PLAN
1" = 60'

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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CARY, NC 27511
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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

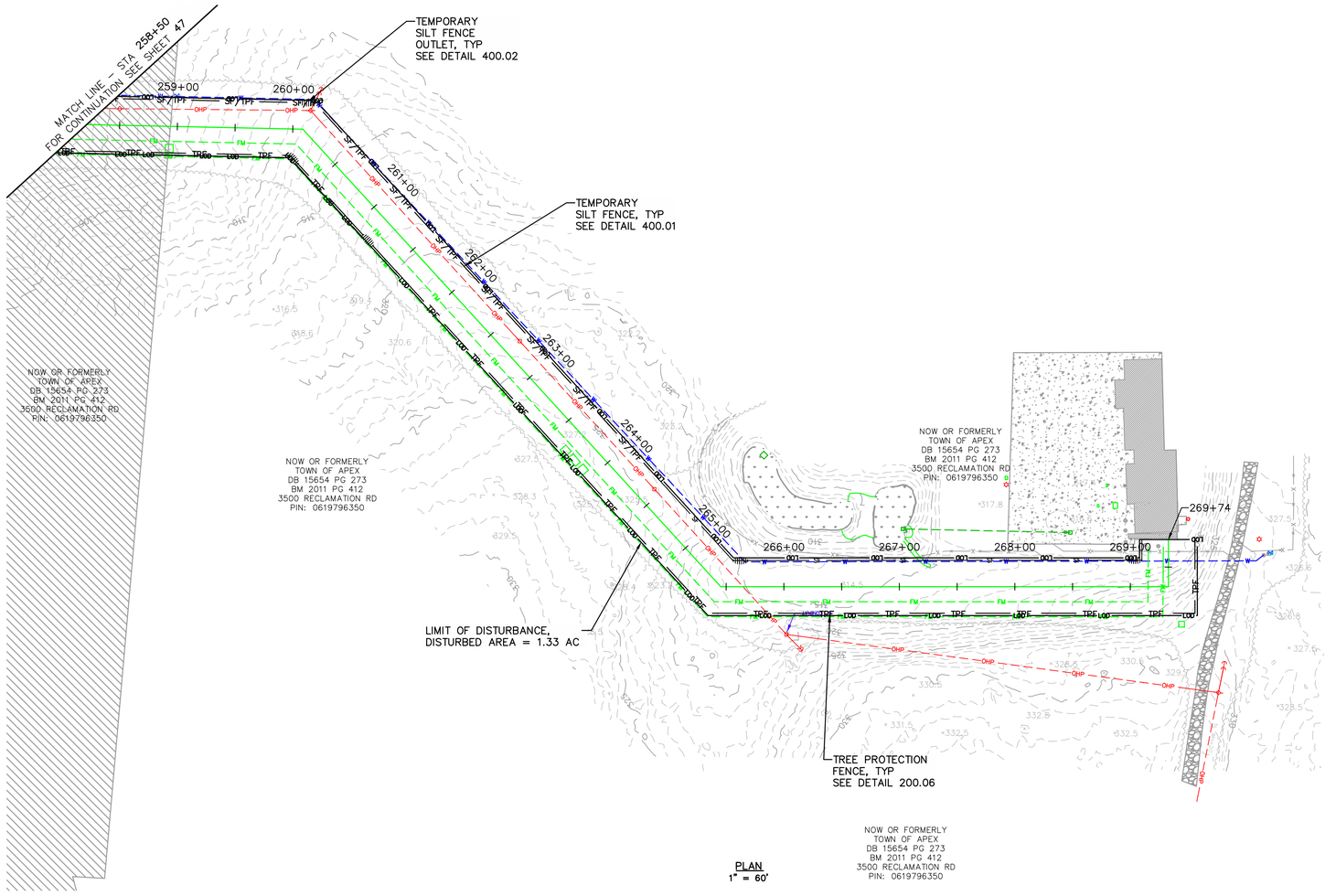
EROSION CONTROL STA 235+00 TO STA 258+50

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 60'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC7

SHEET NUMBER 47 OF 56

Plotted By: J Speare Layout: EC7 January 14, 2025 01:53:36pm S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PS\60 - Drawings\Plan Sheets\C-SHT-BIG BRANCH EROS-1.dwg



PLAN
1" = 60'

PLAN
1" = 60'

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
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CARY, NC 27511
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WATER RESOURCES DEPARTMENT
TOWN OF APEX

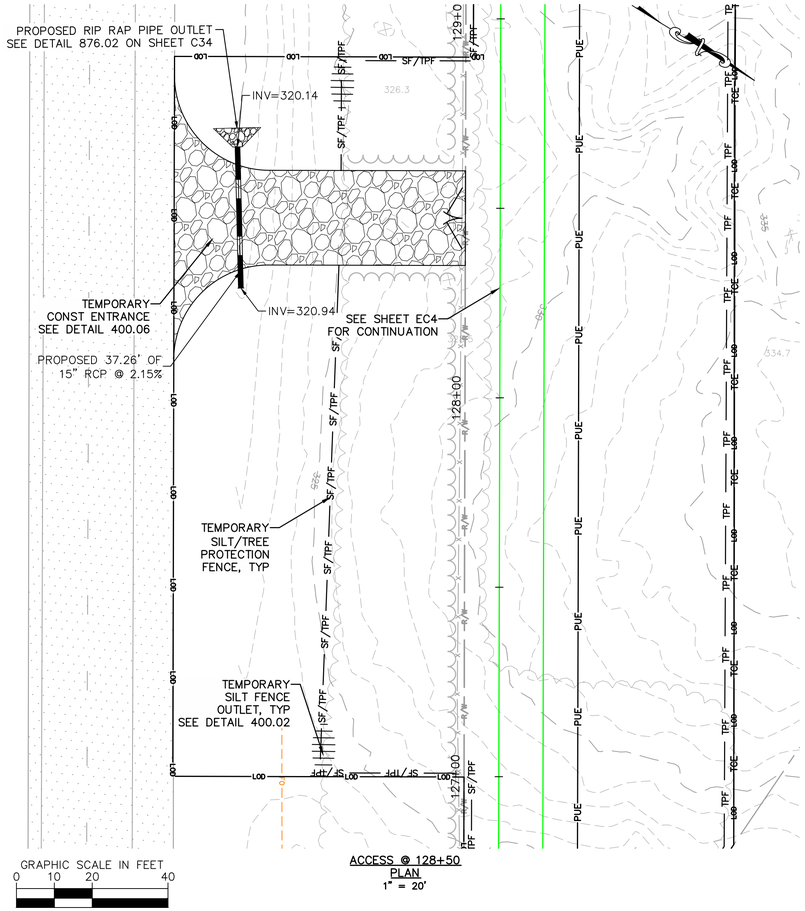
BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL
STA 258+50 TO END

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 60'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC8

SHEET NUMBER
48 OF 56



The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.	
Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL US1
TEMPORARY ACCESS ENTRANCE

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 20'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC9

SHEET NUMBER
49 OF 56

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

1. UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE NORTH CAROLINA EROSION AND SEDIMENTATION CONTROL HANDBOOK.
2. THE CONTRACTOR SHALL NOTIFY PLAN APPROVING AUTHORITY ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO FINAL INSPECTION.
3. ALL EROSION AND SEDIMENTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO CLEARING AND/OR LAND DISTURBANCE.
4. PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THE PLANS (INCLUDING, BUT NOT LIMITED TO OFF-SITE BORROW OR WASTE AREAS, STAGING OR STORAGE AREAS), THE CONTRACTOR SHALL PREPARE AND SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND NCDENR REGIONAL OFFICE FOR APPROVAL. CONTRACTOR SHALL PAY ALL FEES REQUIRED AND SHALL INSTALL NECESSARY MEASURES AT NO SEPARATE PAYMENT. THE CONTRACTOR SHALL PROVIDE THE OWNER AND THE OWNER'S REPRESENTATIVE A COPY OF THE AMENDED PERMIT.
5. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES, OTHER THAN THOSE SHOWN ON PLANS, NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY EITHER NCDENR OR THE OWNER'S REPRESENTATIVE. (NO SEPARATE PAYMENT).
6. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.
7. ALL AREAS DISTURBED BY CONSTRUCTION UNLESS OTHERWISE IMPROVED SHALL BE SODDED OR SEEDED AS INDICATED AND STABILIZED.
8. UNLESS A STREAM CROSSING IS PROPOSED, THE CONTRACTOR IS NOT PERMITTED TO CROSS ANY STREAM WITH ANY VEHICLE OR PIECE OF EQUIPMENT. CONTRACTOR TO NOTE THAT RIP RAP BANK STABILIZATION IS NOT CONSIDERED A STREAM CROSSING. IF A STREAM CROSSING IS NOT SHOWN, BUT ENCOUNTERED, CONTRACTOR MUST USE A BACK AND OUT APPROACH.
9. DURING DE-WATERING OPERATIONS, WATER SHALL BE PUMPED INTO AN APPROVED FILTERING DEVICE PRIOR TO DISCHARGE TO RECEIVING OUTLET.
10. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING EVENT. ANT NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.
11. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED BY CONTRACTOR ONCE STABILIZATION OR A SUFFICIENT GROUND COVER HAS BEEN ESTABLISHED OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. (NO SEPARATE PAYMENT).
12. TEMPORARY GRAVEL CONSTRUCTION ENTRANCE SHALL BE REQUIRED AT ALL CONSTRUCTION STAGING AREA ENTRANCES AND ALL CONSTRUCTION ACCESS LOCATIONS INTO NON-PAVED AREA. (NO SEPARATE PAYMENT).
13. WHEN CROSSING CREEK OR DRAINAGE-WAY, THE CONTRACTOR SHALL INSTALL RIP-RAP WITH FABRIC ON DISTURBED BANKS AND CHANNELS AND RESTORE SLOPES TO ORIGINAL CONTOURS, BUT NOT STEEPER THAN 2:1 MAXIMUM. DISTURBED CREEK AREA SHALL BE STABILIZED IMMEDIATELY.
14. LIMITS OF CONSTRUCTION ARE AS SHOWN ON PLANS FOR PAVEMENT REPAIR WHEN INSIDE PAVEMENT AND EDGE OF PAVEMENT TO RIGHT-OF-WAY WHEN OUTSIDE PAVEMENT, UNLESS STATED OTHERWISE. CONTRACTOR SHALL BE MINDFUL THAT TOTAL PROJECT LIMITS OF DISTURBANCE IS INTENDED TO BE UNDER 1 ACRE AND WILL BE REQUIRED APPLY FOR AND OBTAIN A PERMIT FOR ADDITIONAL DISTURBED AREA INCLUDING BUT NOT LIMITED TO TRENCHED CONSTRUCTION AREAS, SPOIL PILES, MATERIAL LAYDOWN, AND EROSION CONTROL MEASURES.
15. ANY AREAS WITHIN THE 15 FOOT BUFFER ZONE OF A CREEK OR NATURAL WATER COURSE MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER LINE INSTALLATION IS COMPLETED WITHIN THE BUFFER ZONE.
16. NO BORROW OR SPOIL AREAS LOCATED ON SITE. ALL SPOIL SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF-SITE DAILY.
17. CONTRACTOR SHALL RESTORE THE DISTURBED AREA TO EXISTING GRADE UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
18. CONCRETE MIXERS SHALL NOT RINSE OUT ON PROJECT SITE UNLESS A CONCRETE WASHOUT EXISTS PER DETAIL.

EROSION CONTROL MAINTENANCE PLAN

1. ALL EROSION CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
2. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES ABOUT 0.5 FT DEEP AT THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER.
3. ALL UTILITY TRENCHES ARE TO BE PROTECTED FROM WATER INFILTRATION.
4. SPOIL PILES ARE TO BE CONTAINED AT ALL TIMES.
5. ALL SEEDED AREAS WILL BE FERTILIZED, RE-SEEDED AS NECESSARY, AND MULCHED ACCORDING TO THE SPECIFICATIONS TO MAINTAIN A VIGOROUS, DENSE VEGETATION COVER. IF SEEDING FAILURE OCCUR, THOSE AREAS SHALL BE RE-SEEDED WITH ANNUAL VEGETATION, SUITABLE FOR THE TIME OF YEAR FOR TEMPORARY STABILIZATION AND PREPARED FOR FOR PERMANENT SEEDING. SEEDING AND MULCHING WILL BE IN ACCORDANCE WITH SPECIFICATIONS.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF ALL EROSION CONTROL MEASURES AT ALL TIMES, WHETHER INSTALLED ACCORDING TO PLAN OR AS DIRECTED BY THE NCDENR REPRESENTATIVE OR THE OWNER'S REPRESENTATIVE (NO SEPARATE PAYMENT).

GROUND COVER STATUTES

PURSUANT TO G.S. 113A-57(3), PROVISIONS FOR PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION MUST BE ACCOMPLISHED FOR ALL DISTURBED AREAS (SEE TABLE THIS SHEET FOR TIME FRAMES) FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT.

PLANNED SEDIMENTATION AND EROSION CONTROL PRACTICES

THE FOLLOWING EROSION CONTROL ITEMS WILL BE CONSTRUCTED AS SHOWN ON THE ATTACHED EROSION CONTROL DETAILS AND PLAN:

6.10 TEMPORARY SEEDING: TO BE INSTALLED AS PER SEEDING SPECIFICATIONS.

6.11 PERMANENT SEEDING: TO BE INSTALLED AS PER SEEDING SPECIFICATIONS. FERTILIZER, SEEDING AND MULCHING: TO BE INSTALLED AS PER TEMPORARY AND PERMANENT SEEDING SPECIFICATIONS.

6.12 SODDING: TO PREVENT EROSION AND DAMAGE FROM SEDIMENT AND RUNOFF BY STABILIZING THE SOIL SURFACE WITH PERMANENT VEGETATION.

MAINTENANCE: AFTER THE FIRST WEEK WATER AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE IN THE ROOT ZONE AND PREVENT DORMANCY OF THE SOD. DO NOT REMOVE MORE THAN ONE-THIRD OF THE SHOOT IN ANY MOWING. GRASS HEIGHT SHOULD BE MAINTAINED BETWEEN 2 AND 3 INCHES. AFTER THE FIRST GROWING SEASON, ESTABLISHED SOD REQUIRES FERTILIZATION, AND MAY ALSO REQUIRE LIME. FOLLOW SOIL TEST RECOMMENDATIONS WHEN POSSIBLE.

6.14 MULCHING: TO PROTECT THE SOIL SURFACE FROM THE FORCES OF RAINDROP IMPACT AND OVERLAND FLOW. MULCH FOSTERS THE GROWTH OF VEGETATION, REDUCES EVAPORATION, INSULATES THE SOIL, AND SUPPRESSES WEED GROWTH. MULCH IS FREQUENTLY USED TO ACCENT LANDSCAPE PLANTINGS.

MAINTENANCE:
INSPECT ALL MULCHES PERIODICALLY, AND AFTER RAINSTORMS TO CHECK FOR RILL EROSION, DISLOCATION OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED AND REINSTALL MULCH. CONTINUE INSPECTIONS UNTIL VEGETATION IS FIRMLY ESTABLISHED.

6.41 OUTLET STABILIZATION STRUCTURE: TO BE INSTALLED AS A PERMANENT STABILIZATION MEASURE AT THE OUTLET OF A CHANNEL OR CONDUIT BY REDUCING THE VELOCITY OF FLOW AND DISSIPATING ENERGY. THESE MEASURES WILL BE LOCATED PER PLANS AND CONSTRUCTED PER THE DETAIL.

MAINTENANCE: INSPECT THE RIP-RAP OUTLET STRUCTURES WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER) TO SEE IF ANY EROSION AROUND OR BELOW THE RIP-RAP HAS TAKEN PLACE, OR IF THE STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

6.52 INLET PROTECTION: TEMPORARY INLET PROTECTION WILL BE INSTALLED AROUND THOSE INLETS, EITHER EXISTING OR PROPOSED, WHERE THERE IS POTENTIAL FOR SEDIMENT TO REACH THE INLET AND THEREFORE THE DOWNSTREAM SECTIONS. THESE MEASURES WILL BE LOCATED PER THE PLANS AND CONSTRUCTED PER THE DETAIL.

MAINTENANCE: INSPECT THE BARRIER WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER) AND MAKE REPAIRS AS NEEDED. REMOVE SEDIMENT AS NECESSARY TO PROVIDE ADEQUATE VOLUME FOR SUBSEQUENT RAINS. WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN ADEQUATELY STABILIZED, REMOVE ALL MATERIALS AND ANY UNSTABLE SOIL, AND EITHER SALVAGE OR DISPOSE OF IT PROPERLY. BRING THE DISTURBED AREA TO PROPER GRADE, THEN SMOOTH AND COMPACT IT. APPROPRIATELY STABILIZE ALL BARE AREAS AROUND THE INLET.

6.55 ROCK PILE INLET PROTECTION: SIMILAR TO BLOCK AND GRAVEL INLET PROTECTION, THIS MEASURE IS USED TO HELP PREVENT SEDIMENT FROM ENTERING, ACCUMULATING IN AND BEING TRANSFERRED BY A STORM DRAINAGE SYSTEM PRIOR TO STABILIZATION OF DISTURBED DRAINAGE AREA. THIS MEASURE ALLOWS EARLY USE OF THE STORM DRAINAGE SYSTEM.

MAINTENANCE: INSPECT THE ROCK PIPE INLET PROTECTION AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER) AND REPAIR IMMEDIATELY. REMOVE SEDIMENT AND RESTORE THE SEDIMENT STORAGE AREA TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-HALF THE DESIGN DEPTH OF THE TRAP. PLACE THE SEDIMENT THAT IS REMOVED IN THE DESIGNATED DISPOSAL AREA AND REPLACE THE CONTAMINATED PART OF THE GRAVEL FACING. CHECK THE STRUCTURE FOR DAMAGE. ANY RIP-RAP DISPLACED FROM THE STONE HORSESHOE MUST BE REPLACED IMMEDIATELY. AFTER ALL THE SEDIMENT PRODUCING AREAS HAVE BEEN STABILIZED, REMOVE THE STRUCTURE AND ALL THE UNSTABLE SEDIMENT. SMOOTH THE AREA TO BLEND WITH THEADJOINING AREAS AND PROVIDE PERMANENT GROUND COVER.

6.62 TEMPORARY SILT FENCE: WILL RETAIN SEDIMENT FROM SMALL DISTURBED AREAS. SILT FENCE WILL BE PLACED ALONG SLOPES AS SHOWN ON CONSTRUCTION DETAILS.

MAINTENANCE: INSPECT SEDIMENT FENCES AT LEAST WEEKLY AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY. SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEA, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEAN OUT. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

6.83 CHECK DAM: WILL BE INSTALLED TO REDUCE EROSION BY REDUCING THE VELOCITY OF THE FLOW.

MAINTENANCE: INSPECT CHECK DAMS AND CHANNELS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER) AND REPAIR IMMEDIATELY. CLEAN OUT SEDIMENT, STRAW, LIMBS, OR OTHER DEBRIS THAT COULD CLOG THE CHANNEL WHEN NEED.

ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE CHECK DAM AND EROSION FROM HIGH FLOWS AROUND THE EDGES OF THE DAM. CORRECT ALL DAMAGE IMMEDIATELY. IF SIGNIFICANT EROSION OCCURS BETWEEN DAMS, ADDITIONAL MEASURES CAN BE TAKEN SUCH AS, INSTALLING A PROTECTIVE RIP-RAP LINER IN THE PORTION OF THE CHANNEL.

REMOVE SEDIMENT ACCUMULATED BEHIND THE DAMS AS NEEDED TO PREVENT DAMAGE TO CHANNEL VEGETATION, ALLOW THE CHANNEL TO DRAIN THROUGH THE STONE CHECK DAM, AND PREVENT LARGE FLOWS FROM CARRYING SEDIMENT OVER THE DAM. ADD STONES TO DAMS AS NEEDED TO MAINTAIN DESIGN HEIGHT AND ACROSS SECTION.

SEEDING SCHEDULE

TO BE IN ACCORDANCE WITH CONTRACT SPECIFICATIONS:

SEED SHALL BE SEED CERTIFIED TO BE THE LATEST SEASON'S CROP AND SHALL BE DELIVERED IN ORIGINAL SEALED PACKAGES BEARING THE PRODUCER'S GUARANTEED ANALYSIS FOR PERCENTAGES OF MIXTURES AND PURE LIVE SEED. THE PRODUCER'S SEED LABEL SHALL INDICATE IT THE MINIMUM PERCENT OF PURE LIVE SEED (WHICH SHALL BE 82.45 FOR BERMUDA, 88 FOR RYE GRAIN), THE MINIMUM PERCENT OF GERMINATION IN HARD SEED AND MAXIMUM PERCENT OF WEED SEED (NO MORE THAN 1 PERCENT FOR BERMUDA, 0.5 PERCENT FOR RYE GRAIN). SEED SHALL BE LABELED IN CONFORMANCE WITH U.S. DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER THE FEDERAL SEED ACT AND APPLICABLE STATE SEED LAWS. SEED THAT HAS BECOME WET, MOLDY, OR OTHERWISE DAMAGED WILL NOT BE ACCEPTABLE.

THE FOLLOWING SEED MIXTURE SHALL BE USED:

TEMPORARY SEED MIXTURE

DATE	TYPE	PLANTING RATE
APRIL 15 - SEPT. 1	GERMAN MILLET	40 LBS/ACRE
AUG. 15 - NOV. 15	GRAIN RYE	120 LBS/ACRE
NOV. 1 - APRIL 1	GRAIN RYE	120 LBS/ACRE

PERMANENT SEED MIXTURE

DATE	TYPE	PLANTING RATE
APRIL 15 - SEPT. 1	K-31 FESCUE COMMON BERMUDA CENTIPEDE	80 LBS/ACRE 60 (HULLED) LBS/ACRE 5 LBS/ACRE
AUG. 15 - NOV. 15	K-31 FESCUE COMMON BERMUDA CENTIPEDE	120 LBS/ACRE 25 (HULLED) LBS/ACRE 5 LBS/ACRE
NOV. 1 - APRIL 1	K-31 FESCUE COMMON BERMUDA CENTIPEDE	120 LBS/ACRE 25 (HULLED) LBS/ACRE 5 LBS/ACRE

NOTES:

1. WHERE CONSTRUCTION CROSSES A PASTURE THAT HAS BEEN GRASSED, THE CONTRACTOR SHALL RE-SEED THE AREA WITH THE SAME TYPE OF GRASS AS FOUND ON THE SITE. ALL HIGHWAY RIGHTS-OF-WAY, AND PRIVATE YARDS DISTURBED SHALL ALSO BE RE-SEEDED OR WITH THE SAME TYPE OF GRASS PREVIOUSLY FOUND. THE SEED MIXTURE SPECIFICATION SHALL BE USED AS A GUIDE AND THE CONTRACTOR IS CHARGED WITH THE RESPONSIBILITY OF SEEDING AREAS WITH THE PROPER TYPE OF GRASS THAT MATCHES THE EXISTING.
2. CONSULT THE REGIONAL STATE EROSION CONTROL OFFICER 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.

SOIL AMENDMENTS

LIME SHALL BE APPLIED AT THE RATE OF 4000 LBS PER ACRE. 10-10-10 COMMERCIAL FERTILIZER SHALL BE APPLIED AT THE RATE OF 1,000 POUNDS PER ACRE AND WELL WORKED IN TO THE TOP FOUR INCHES (4") OF TOP SOIL. IF HYDROSEEDING, USE 500 POUNDS OF 10-10-10 FERTILIZER ON SLOPES STEEPER THAN 1/2 HORIZONTAL TO 1 VERTICAL. UNLESS A SOIL TEST INDICATES OTHERWISE.

MULCH

ALL SEEDED AREAS WILL BE MULCHED WITH TWO (2) TONS PER ACRE OF SMALL GRAIN STRAW OR WOOD CELLULOSE FIBER SPREAD UNIFORMLY, APPROXIMATELY 1/4 OF GROUND SHOULD BE VISIBLE TO AVOID SMOTHERING SEEDLINGS. ASPHALT EMULSION (ASTM D-977 AND ASTM D-2028) SHALL BE USED TO ANCHOR THE STRAW APPLIED AT 150 GALLONS PER TON OF STRAW, OR CRIMPED TO STABILIZE. ASPHALT EMULSION SHALL BE REQUIRED AT ALL TIMES. THE CONTRACTOR SHALL TAKE SUFFICIENT PRECAUTIONS TO PREVENT MULCH FROM ENTERING DRAINAGE STRUCTURES THROUGH DISPLACEMENT BY WIND, WATER OR OTHER CAUSES AND PROMPTLY REMOVE ANY BLOCKAGE WHICH MAY OCCUR.

MAINTENANCE

THE CONTRACTOR SHALL PROTECT AND MAINTAIN GRASSED AREAS AS NECESSARY TO ESTABLISH A UNIFORM TURF COMPOSED OF THE GRASSES SPECIFIED. THE CONTRACTOR SHALL RE-SEED ANY BARE AREAS AND REPAIR ALL ERODED AREAS.

WATERING OF SEEDED AREAS WILL BE REQUIRED DURING PERIODS OF DRY WEATHER TO PROMOTE MAXIMUM GROWTH. THE CONTRACTOR SHALL SUPPLEMENT NATURAL RAINFALL TO INSURE A MINIMUM OF ONE (1) INCH OF RAINFALL WEEKLY.

MAINTENANCE OF LAWNS BEGINS IMMEDIATELY AFTER THE AREA IS PLANTED AND CONTINUES FOR THE PERIOD REQUIRED TO ESTABLISH ACCEPTABLE LAWNS, BUT NOT LESS THAN SIXTY (60) DAYS AFTER INITIAL SEEDING, OR UNTIL PROVISIONAL ACCEPTANCE BY OWNER. MAINTAIN SEEDED AREAS BY WATERING, FERTILIZING, MOWING, WEEDING AND OTHER OPERATIONS SUCH AS ROLLING, RE-GRADING, REPLANTING, AERATING, AND MULCHING AS REQUIRED TO ESTABLISH AN ACCEPTABLE LAWN FREE OF ERODED OR BARE AREAS.

CHANNEL STABILIZATION AND OUTLET PROTECTION

1. UPON COMPLETION OF REACHING FINAL PREPARED SUB GRADE FOR AREAS (SLOPES, CHANNELS AND OUTLET PROTECTION) TO BE PROTECTED AS INDICATED ON DRAWINGS, INSTALL FILTER FABRIC, NCDOT NO. 57 STONE BEDDING LAYER, AND APPROPRIATE RIP RAP. PREPARED SUB GRADE SHALL BE FREE OF DEBRIS, STICKS AND OTHER DELETERIOUS MATERIAL THAT MAY BE INJURIOUS TO THE FABRIC OR PERFORMANCE OF THE SLOPE PROTECTION.
2. GEOTEXTILE FABRICS, COIR MATTING OR SPECIAL MULCH PROTECTION, SUCH AS FIBERGLASS ROVING OR STRAW AND NETTING, SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS TO PROVIDE STABILITY UNTIL THE VEGETATION IS FULLY ESTABLISHED. THESE REQUIREMENTS FOR SLOPE PROTECTION MAY INCLUDE AN ANCHOR TRENCH, SEAMING, STITCHING AND OVERLAPPING.
3. RIP RAP FOR USE OF DESIGNATED ON THE DRAWINGS SHALL CONFORM TO NCDOT REQUIREMENTS FOR THE SPECIFIED CLASS (CLASS II, B, ETC.) AS INDICATED ON THE DRAWINGS.

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 TO 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED 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 60% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT STATE INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZER AFTER PERMANENT COVER IS ESTABLISHED.

*APPLY AGRICULTURAL LIMESTONE-4,000 LBS/ACRE
FERTILIZER: 1000 LBS/ACRE 10-10-10
SUPER PHOSPHATE: 500 LBS/ACRE 20% ANALYSIS
MULCH: 2 TONS/ACRE SMALL GRAIN STRAW
ANOTHER: ASPHALT EMULSION @ 300 GALS/ACRE

MINIMUM REQUIREMENTS FOR SLOPE STABILIZATION

MINIMUM REQUIREMENTS	SLOPE
STABILIZED WITH GRASS	3:1 AND FLATTER
STABILIZED WITH SHRUBS OR VINES	3:1 TO 2:1
STABILIZED WITH RIP RAP	2:1
STABILIZED WITH RETAINING WALL	STEEPER THAN 1.5:1

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	**Stabilize within this many calendar days after ceasing land disturbance**	**Timeframe variations**
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GENERAL EROSION AND SEDIMENTATION CONTROL CONSTRUCTION SEQUENCE

1. OBTAIN ALL PERMITS AND PLAN APPROVALS FOR ANY ADDITIONAL CONSTRUCTION ENTRANCES AND STAGING STORAGE AREAS.
2. CONDUCT PRECONSTRUCTION CONFERENCE. CONTACT THE DEMLR RALEIGH REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO COMMENCING LAND-DISTURBING ACTIVITY. THE CONTACT NUMBER IS (919) 791- 4200.
3. INSTALL GRAVEL CONSTRUCTION ENTRANCES, SILT FENCING, TREE PROTECTION BARRICADES AND TEMPORARY INLET PROTECTION.
4. INSTALL TEMPORARY INLET PROTECTION FOR DRIVEWAY CULVERTS, STORM DRAIN PIPES, AND CURB/YARD INLETS.
5. CLEAR AND GRUB **ALL** PERMANENT EASEMENTS **WITHIN THE LIMITS OF DISTURBANCE** AND ONLY THOSE PORTIONS OF THE TEMPORARY CONSTRUCTION EASEMENTS NECESSARY FOR CONSTRUCTION (OR AT CONTRACTOR'S DISCRETION).
6. INSTALL WATER **AND SEWER** MAINS AS SHOWN. STRIP TOPSOIL DURING TRENCHING OPERATIONS AND SEPARATE FROM SUITABLE EXCAVATED MATERIAL. PROTECT STOCKPILED TOPSOIL FROM RUNOFF AND ANY STOCKPILED UNSUITABLE EXCAVATED MATERIAL IF SUCH MATERIAL IS NOT IMMEDIATELY DISPOSED OF OFFSITE. SUITABLE EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF THE EXCAVATION WITH THE TRENCH BETWEEN THE MATERIAL AND THE SILT FENCE.
7. INSPECT ALL EROSION AND SEDIMENT CONTROL DEVICES WEEKLY AND AFTER EVERY RAINFALL EVENT. PROVIDE APPROPRIATE MAINTENANCE MEASURES AFTER INSPECTION AND EACH RAIN EVENT.
8. FOR SEWER AND WATER MAIN CONSTRUCTION IN STREETS, REMOVE ASPHALT IN **TOWN-MAINTAINED** STREETS ALONG PROPOSED SEWER AND WATER MAIN ALIGNMENTS BY MILLING WITH ZIPPER TYPE EQUIPMENT (3,000' MAXIMUM DISTURBANCE). REPLACE MILLINGS BACK OR PROVIDE ABC ON ROAD AND COMPACT TO PROVIDE AN ALL WEATHER SURFACE UNTIL SEWER OR WATER LINE INSTALLATION IS INITIATED. **FOR SEWER AND WATER MAIN CONSTRUCTION IN NCDOT MAINTAINED ROADS, REMOVE ONLY PORTION OF PAVEMENT THAT CAN EITHER BE SAFELY PLATED AT END OF WORKING DAY OR PERMANENTLY PATCHED BY THE END OF EACH WORKING DAY.**
9. PROVIDE ABC STONE **IN DISTURBED AREAS WITHIN TOWN-MAINTAINED STREETS AND COMPACT TO PROVIDE AN ALL WEATHER SURFACE TO MATCH EXISTING** PAVEMENT SURFACE AS SEWER MAIN, LATERALS, WATER MAIN AND SERVICES (WHERE APPLICABLE) PROGRESSES IN **TOWN-MAINTAINED** STREETS. **CONTRACTOR SHALL MAINTAIN ALL WEATHER SURFACE UNTIL PAVEMENT IS REPLACED.**
10. TEST AND INSPECT SEWER MAIN AND LATERALS AND WATER MAIN AND SERVICES (WHERE APPLICABLE)
11. PATCH ALL PAVED SURFACES DISTURBED BY CONSTRUCTION ACTIVITIES WITH PERMANENT ASPHALT PATCH. OVERLAY PERMANENT PATCHED AREAS WHERE APPLICABLE OR DESIGNATED ON DRAWINGS.
12. SEED AND MULCH OR SOD ALL DISTURBED AREAS NOT OTHERWISE IMPROVED AND ESTABLISH PERMANENT GROUND COVER AS INDICATED. STABILIZATION OF DISTURBED AREA SHALL BE CONSISTENT WITH REQUIREMENTS AS INDICATED IN EROSION AND SEDIMENTATION CONTROL DETAILS.
13. PRELIMINARY FINAL INSPECTION BY CONTRACTOR.
14. PRELIMINARY FINAL INSPECTION BY OWNER AND CONTRACTOR TO CONFIRM PUNCH LIST.
15. FINAL INSPECTION BY NCDOT AND ATTENDED BY CONTRACTOR AND OWNER.
16. UPON APPROVAL FROM NCDOT AND OWNER, REMOVE TEMPORARY EROSION CONTROL MEASURES AND RESTABILIZE ANY DISTURBED AREAS.
17. CLOSE OUT PROJECT.
18. STOCKPILES, LAYDOWN, OR WASTE AREAS, CONCRETE WASHOUTS, PORTABLE TOILETS, AND FUELS MUST BE LOCATED AT LEAST 50 FEET AWAY FROM ANY OPEN WATER CONVEYANCES, SUCH AS BASINS, DITCHES, STORM DRAIN INLETS, ETC. THE LOCATION OF THESE ACTIVITIES MAY BE FIELD ADJUSTED IF THE DISTANCE REQUIREMENTS ARE MET.
19. WHEN THE PROJECT IS COMPLETE, AND PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION HAS BEEN ESTABLISHED, THE PERMITTEE SHALL CONTACT DEMLR TO CLOSE OUT THE E&SC PLAN. AFTER DEMLR INFORMS THE PERMITTEE OF THE PROJECT CLOSE OUT, VIA INSPECTION REPORT, THE PERMITTEE SHALL VISIT DEQ.NC.GOV/NCG01 TO SUBMIT AN ELECTRONIC NOTICE OF TERMINATION (E-NOT). A $120 ANNUAL GENERAL PERMIT FEE WILL BE CHARGED UNTIL THE E-NOT HAS BEEN FILLED OUT.
20. PER NPDES REQUIREMENTS, A RAIN GAUGE, SELF-INSPECTIONS RECORDS, PERMIT, CERTIFICATE OF COVERAGE, AND S&E PLAN ARE REQUIRED TO BE MAINTAINED ON SITE AND ACCESSIBLE DURING INSPECTION. IT IS RECOMMENDED THAT THESE ITEMS BE PLACED IN A PERMITS BOX AT THE BEGINNING OR ENTRANCE OF PROJECT.

TOWN OF APEX CONSTRUCTION SEQUENCE

1. THROUGH DEVELOPMENT SERVICES AT (919) 372-7467, SCHEDULE A PRE-CONSTRUCTION MEETING WITH TOWN STAFF.
2. REQUEST AN INVOICE FOR THE S&E PERFORMANCE GUARANTEE FROM DEVELOPMENT SERVICES AT (919) 249-3355.
3. SUBMIT THE APPLICABLE S&E PERFORMANCE GUARANTEE TO DEVELOPMENT SERVICES AS 105-B UPCHURCH STREET, APEX, NC 27502. THE EROSION CONTROL LETTER OF PLAN APPROVAL WILL NOT BE ISSUED UNTIL THE PERFORMANCE GUARANTEE HAS BEEN SUBMITTED.
4. REQUEST A LETTER OF PLAN APPROVAL FOR SEDIMENTATION AND EROSION CONTROL MEASURES FROM WATER RESOURCES STAFF AT (919) 372-7470. SUBMIT THE FINANCIAL RESPONSIBILITY/OWNERSHIP (FRO) FORM AND REQUEST FOR PLAN APPROVAL FORM AT OR WITHIN 7 DAYS PRIOR TO THE PRE-CONSTRUCTION MEETING.
5. COMPLETE AND SUBMIT AN ELECTRONIC NOTICE OF INTENT (e-NOI) FORM WITH NCDEMLR REQUESTING A CERTIFICATE OF COVERAGE (COC) UNDER NCG01 CONSTRUCTION STORMWATER GENERAL PERMIT. VISIT THE FOLLOWING WEBSITE: https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energymineral-land-permits/stormwater-permits/construction-sw
6. COMPLETE A GRADING PERMIT APPLICATION AND RECEIVE A GRADING PERMIT FROM THE BUILDING INSPECTIONS & PERMITTING DEPARTMENT AS REQUIRED BY THE NORTH CAROLINA BUILDING CODE APPENDIX J FOR GRADING. BOTH GRADING PERMIT AND COC FROM NCDEMLR MUST BE SUBMITTED TO THE ENVIRONMENTAL FIELD SERVICES SUPERVISOR PRIOR TO THE COMMENCEMENT OF ANY LAND DISTURBANCE ACTIVITY.
7. COMPLETE A TREE/PROTECTION FENCING INSTALLATION PERMIT APPLICATION THROUGH THE PLANNING DEPARTMENT.
8. HAVE A SURVEYOR FLAG PROPERTY LINES, EASEMENTS, BUFFERS, TREE PROTECTION AREAS, AND FLAG THE PROTECTION LIMITS.
9. CONTACT AN APEX PLANNING DEPARTMENT ZONING COMPLIANCE OFFICER AT (919) 249-3426 TO REQUEST APPROVAL FOR TREE PROTECTION FENCING LOCATIONS.
10. INSTALL APPROVED TREE PROTECTION FENCING, SIGNS, AND/OR ANY OTHER PROTECTION MEASURES THAT MAY BE REQUIRED. CALL PLANNING AT (919) 249-3426 FOR A FINAL INSPECTION OF PROTECTION MEASURES. PLANNING WILL FORWARD APPROVAL TO WATER RESOURCES EROSION CONTROL FIELD STAFF.
11. INSTALL GRAVEL CONSTRUCTION ENTRANCE, TEMPORARY DIVERSIONS, SILT FENCING, SEDIMENT BASINS, BYPASS CHANNELS, AND/OR OTHER MEASURES AS SHOWN ON THE APPROVED PLANS. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES.
12. WHEN COMPLETED, CALL WATER RESOURCES EROSION CONTROL FIELD STAFF AT (919) 372-7470 FOR AN ON-SITE INSPECTION AND TO REQUEST A CERTIFICATE OF COMPLIANCE. WATER RESOURCES WILL ALSO FORWARD A COPY TO THE BUILDING INSPECTIONS & PERMITTING DEPARTMENT.
13. POST GRADING PERMIT PROMINENTLY ON SITE AT ALL TIMES.
14. BEGIN CLEARING, LOGGING, GRUBBING, AND ROUGH GRADE OF THE SITE IN ACCORDANCE WITH THE APPROVED GRADING PLAN.
15. STOCKPILE A SUFFICIENT AMOUNT OF TOPSOIL TO COVER 3 INCHES OVER LANDSCAPED AREAS A THE END OF THE PROJECT.
16. INSTALL STORM SEWER, IF APPLICABLE, AND PROTECT INLETS WITH INLET PROTECTION DEVICES, SEDIMENT DEVICES, AND/OR OTHER APPROVED MEASURES AS SHOWN ON PLANS. MAINTAIN S&E MEASURES AS NEEDED.
17. AFTER COMPLETION OF ANY PHASE OF GRADING OR WHEN LAND-DISTURBING ACTIVITIES HAVE TEMPORARILY CEASED, ESTABLISH GROUNDCOVER ON SWALES AND DITCHES AND GRADED SLOPES STEEPER THAN 3:1 WITHIN 7 CALENDAR DAYS; SLOPES THAT ARE 3:1 OR FLATTER MUST ESTABLISH GROUNDCOVER WITHIN 14 CALENDAR DAYS.
18. STABILIZE SITE AS AREAS ARE BROUGHT UP TO FINISHED GRADE WITHIN VEGETATION OR PAVING.
19. PRIOR TO PLAT APPROVAL, ALL DISTURBED AREAS BOTH PUBLIC AND PRIVATE, MUST BE PROPERLY STABILIZED. ALL TEMPORARY EROSION CONTROL MEASURES MUST BE INSTALLED, BE FUNCTIONING PROPERLY, AND BE MAINTAINED FOR THE ENTIRE AREA CONTAINED WITHIN THE PLAT.
20. FLUSH AND CLEAN ALL STORMWATER SYSTEM PIPES. CLEAN AND REMOVE SEDIMENT FROM TEMPORARY SEDIMENT HOLDING DEVICES. FOLLOW THE SCM CONSTRUCTION SEQUENCE FOUND ON THE GRADING AND/OR SCM DETAIL SHEET ON THE CONSTRUCTION PLAN SET.
21. REMOVE ALL TEMPORARY DIVERSIONS, SILT FENCING, SEDIMENT BASINS, ETC. AND PROVIDE ADEQUATE COVER OR PAVE ANY RESULTING BARE AREAS. ALL PERMANENT EROSION CONTROL DEVICES SHOULD BE INSTALLED AT THIS POINT.

SEEDING MIXTURE	40 lbs/acre of: SEE CHART
SEEDING DATES	OPTIMAL SEEDING MONTHS: NOVEMBER, FEBRUARY, OR MARCH
SEEDING AMENDMENTS	Temporary seeding will be required on all stream restoration areas disturbed following all land disturbing activities. All soil in planting areas shall be tested and the rate of fertilization and lining shall be in accordance with the test results. The planting of any species of fescue grass along or adjacent to streams and channels is prohibited unless otherwise approved by the Engineer. All areas shall be mulched for erosion control upon completion of construction activities or as directed by the Engineer.

STREAM RESTORATION PERMANENT SEEDING

Scientific Name	Common Name	Seed %
Andropogon virginicus	Broomsedge	15
Carex vulpinoides	Fox Sedge	10
Chasmanthium laxa	Wood Oats	10
Coreopsis major	Tickseed	5
Elymus virginicus	Virginia Wildrye	15
Juncus effuses	Soft Rush	51
Leersia oryzoides	Rice Cut Grass	10
Panicum clandestinum	Switchgrass	10
Scirpus cyperinus	Woolgrass	10

NOTE: USE PERMANENT STREAM BANK STABILIZATION

NOTE 1
Ground Cover-- Wherever land disturbing activity is undertaken on a tract comprising more than one (1) acre, a ground cover sufficient to restrain erosion must be planted or provided within 21 calendar days.

NOTE 2
Graded slopes and fills-- Within 21 calendar days, or completion of any phase of grading, whichever period is shorter, slopes shall be planted or otherwise provided with ground cover, devices, or structures sufficient to restrain erosion.

USE PERMANENT SEEDING FOR STREAM BANK STABILIZATION UNLESS NOTED OTHERWISE IN STREAM CROSSING REQUIREMENTS.

PERMANENT SEEDING FOR STREAM BANK STABILIZATION

TEMPORARY SEEDING FOR SUMMER AND WINTER SEASONS

	SUMMER SEASON	WINTER SEASON
SEEDING MIXTURE	40 lbs/acre of: 50% Browntop Millet (Panicum ramosum) 50% Pearl Millet (Pennisetum glacum)	50 lbs/acre of: 50% Barley (*Horedum spp.*) 50% Winter Rye (*grain*)
SEEDING DATES	April 1 — October 1	October 1 — April 1
SEEDING AMENDMENTS	Temporary seeding will be required on all stream restoration areas disturbed following all land disturbing activities. All soil in planting areas shall be tested and the rate of fertilization and lining shall be in accordance with the test results. The planting of any species of fescue grass along or adjacent to streams and channels is prohibited unless otherwise approved by the Engineer. All areas shall be mulched for erosion control upon completion of construction activities or as directed by the Engineer.	Temporary seeding will be required on all stream restoration areas disturbed following all land disturbing activities. All soil in planting areas shall be tested and the rate of fertilization and lining shall be in accordance with the test results. The planting of any species of fescue grass along or adjacent to streams and channels is prohibited unless otherwise approved by the Engineer. All areas shall be mulched for erosion control upon completion of construction activities or as directed by the Engineer.

NOTE 1
Ground Cover-- Wherever land disturbing activity is undertaken on a tract comprising more than one (1) acre, a ground cover sufficient to restrain erosion must be planted or provided within 15 working days or 90 calendar days.

NOTE 2
Graded slopes and fills-- Within 21 calendar days, or completion of any phase of grading, whichever period is shorter, slopes shall be planted or otherwise provided with ground cover, devices, or structures sufficient to restrain erosion.

TEMPORARY SEEDING AND MULCHING FOR STREAM BANK STABILIZATION

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning—Transportation
Water Resources—Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:
029995
STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
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WATER RESOURCES DEPARTMENT
TOWN OF APEX

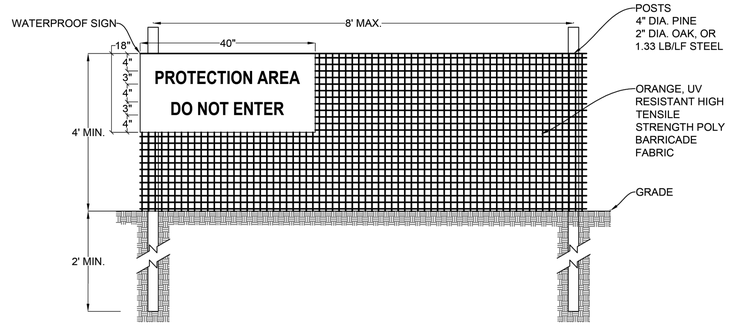
BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL NOTES

CJS PROJ. #:
DATE: 12-18-2024
SCALE: NTS
PROJECT ENGINEER: SDL
DESIGNED BY: JJS
DRAWN BY: JJS
CHECKED BY: SDL

EC10
SHEET NUMBER
50 OF 56

Plotted By: J. Spears Layout:49 EROSION CONTROL NOTES January 14, 2025 01:54:34pm S:\100 Hazen and Sawyer\100-005 Apex Big Branch 2 PS\80 - Drawings\Plan Sheets\C-SHT-BIG BRANCH APEX EC DETAILS.dwg



NOTES

1. WARNING SIGNS TO BE MADE OF DURABLE WATERPROOF MATERIAL.
2. ALL LETTERS TO BE AT LEAST 3-INCHES HIGH, CLEARLY LEGIBLE AND SPACED AS INDICATED ABOVE.
3. SIGNS TO BE PLACED 200-FEET ON CENTER, MAX.
4. SIGNS TO BE PLACED AT EACH END OF LINEAR TREE PROTECTION AREA AND 200-FEET ON CENTER THEREAFTER.
5. FOR TREE PROTECTION AREAS LESS THAN 200-FEET IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA AND/OR SIDE.
6. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC.
7. FABRIC MUST BE ATTACHED TO APPROVED POSTS ONLY. DO NOT ATTACH TO TREES.
8. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT - FENCING MUST REMAIN UPRIGHT AND SLACK FREE.
9. ADDITIONAL SIGNS AND/OR PROTECTION MEASURES MAY BE REQUIRED BY THE PLANNING DEPARTMENT BASED UPON ACTUAL FIELD CONDITIONS.
10. FAILING TO MAINTAIN TREE PROTECTION MEASURES MAY RESULT IN FINES AND/OR PERMIT REVOCATION.

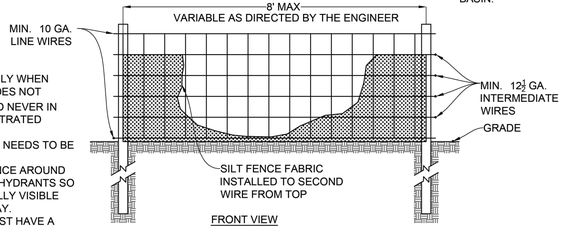
TOWN OF APEX STANDARDS	TREE PROTECTION FENCE	STD. NO. 200.06
EFFECTIVE: FEBRUARY 28, 2023		SHEET 1 OF 1

MAINTENANCE: CLEAN OUT AT 50% CAPACITY
LIFE OF FENCING: 6–9 MONTHS
SEE NC DEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL FOR CONDITIONS WHERE PRACTICE APPLIES; PLANNING CONSIDERATION & DESIGN CRITERIA

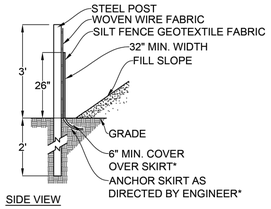
* USE #57 WASHED STONE FOR REPAIR OF SILT FENCE FAILURES, AND FOR ANCHOR WHEN SILT FENCE IS PROTECTING CATCH BASIN.

NOTES:

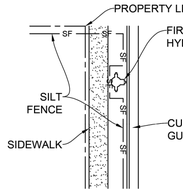
1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED ¼ ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
2. END OF SILT FENCE NEEDS TO BE TURNED UPHILL.
3. WRAP THE SILT FENCE AROUND ALL EXISTING FIRE HYDRANTS SO THAT THEY ARE FULLY VISIBLE FROM THE ROADWAY.
4. ALL SILT FENCE MUST HAVE A MINIMUM OF 5' OF CLEARANCE FROM THE FIRE HYDRANT.
5. MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT FENCE SHALL BE REPLACED EVERY 6 MONTHS AND POSTS SHALL BE INSPECTED TO ENSURE STRUCTURAL INTEGRITY. SILT FENCE SHALL BE INSPECTED WEEKLY AND ALL MAINTENANCE ISSUES SHALL BE CORRECTED AT THAT TIME.
6. SILT FENCE SHOULD BE A MINIMUM OF 5 FEET FROM THE TOE OF SLOPE.



FRONT VIEW



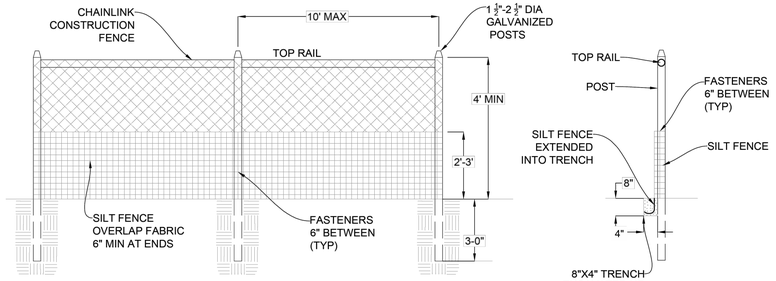
SIDE VIEW



FH INSTALLATION

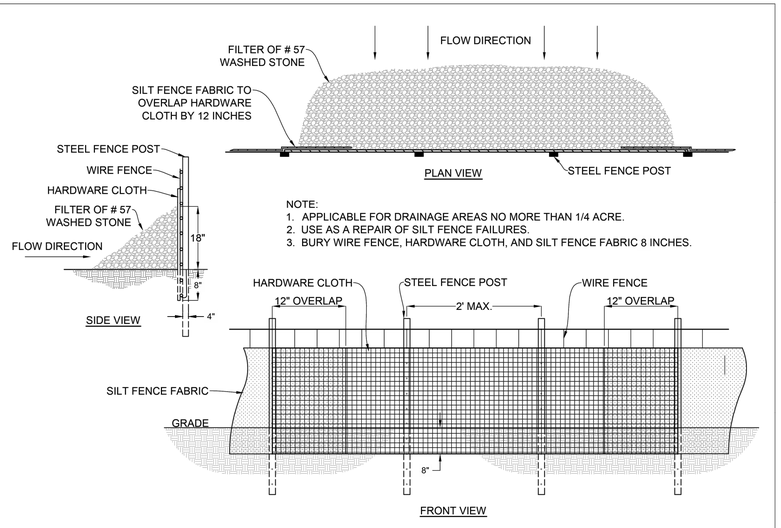
TOWN OF APEX STANDARDS	TEMPORARY SILT FENCE	STD. NO. 400.01
EFFECTIVE: MAY 5, 2020		SHEET 1 OF 2

* ALTERNATIVE SILT FENCE TO BE USED AT LOCATIONS WHERE STANDARD IS INADEQUATE, AS DIRECTED BY THE ENGINEER



MAINTENANCE: CLEAN OUT AT 50% CAPACITY
LIFE OF FENCING: 6–9 MONTHS
SEE NC DEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL FOR CONDITIONS WHERE PRACTICE APPLIES; PLANNING CONSIDERATION & DESIGN CRITERIA

TOWN OF APEX STANDARDS	TEMPORARY SILT FENCE	STD. NO. 400.01
EFFECTIVE: MAY 5, 2020		SHEET 2 OF 2



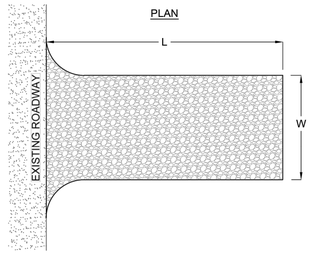
FRONT VIEW

NOTE:
1. APPLICABLE FOR DRAINAGE AREAS NO MORE THAN 1/4 ACRE.
2. USE AS A REPAIR OF SILT FENCE FAILURES.
3. BURY WIRE FENCE, HARDWARE CLOTH, AND SILT FENCE FABRIC 8 INCHES.

TOWN OF APEX STANDARDS	TEMPORARY SILT FENCE OUTLET	STD. NO. 400.02
EFFECTIVE: DECEMBER 21, 2010		SHEET 1 OF 1

SILT FENCE OUTLET MAINTENANCE NOTES:

1. INSPECT OUTLET STRUCTURES WEEKLY AND AFTER SIGNIFICANT (½ INCH OR GREATER) RAINFALL EVENTS TO SEE IF ANY EROSION AROUND OR BELOW THE WATTLE HAS TAKEN PLACE, OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

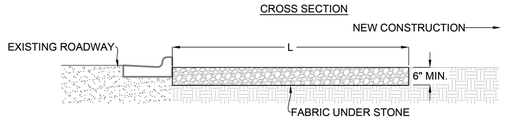


NOTES:

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 VEHICLE MUST BE WASHED BEFORE ENTERING PUBLIC ROAD (SEE DETAIL 400.06 SHEET 2 OF 2).
3. IF A PROJECT CONTINUES TO DEPOSIT MUD AND DEBRIS ONTO THE PUBLIC ROAD, THE TOWN WILL CLEAN THE AREA AND INVOICE THE FINANCIALLY RESPONSIBLE PARTY.

ENTRANCE TYPE	L	W	STONE SIZE
GENERAL	50'	25'	2-3"
RESIDENTIAL*	25'	12'	#57

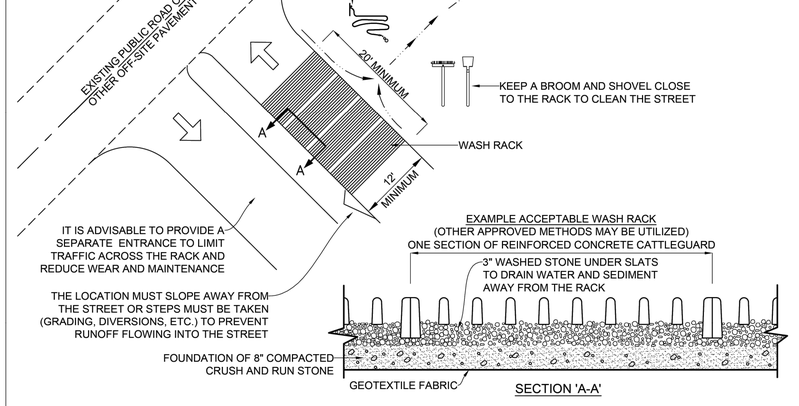
* INDIVIDUAL SINGLE FAMILY



TOWN OF APEX STANDARDS	CONSTRUCTION ENTRANCE	STD. NO. 400.06
EFFECTIVE: JANUARY 20, 2015		SHEET 1 OF 2

CONSTRUCTION ENTRANCE MAINTENANCE NOTES:

1. ADD ADDITIONAL STONE AND "FLUFF" TOP DRESSING WITH 2" STONE.
2. SEE NC DEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL FOR CONDITIONS WHERE PRACTICE APPLIES; PLANNING CONSIDERATION & DESIGN CRITERIA



EXAMPLE ACCEPTABLE WASH RACK
(OTHER APPROVED METHODS MAY BE UTILIZED)
ONE SECTION OF REINFORCED CONCRETE CATTLEGUARD

3" WASHED STONE UNDER SLATS TO DRAIN WATER AND SEDIMENT AWAY FROM THE RACK

SECTION 'A-A'

TOWN OF APEX STANDARDS	CONSTRUCTION ENTRANCE	STD. NO. 400.06
EFFECTIVE: JANUARY 20, 2015		SHEET 2 OF 2

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

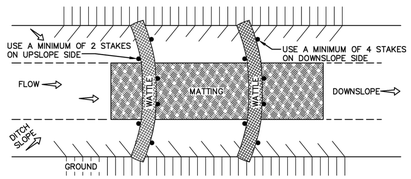
BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL DETAILS

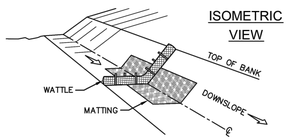
CJS PROJ. #:	100–005
DATE:	12–18–2024
SCALE:	NTS
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC11

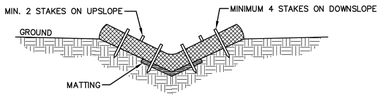
SHEET NUMBER 51 OF 56



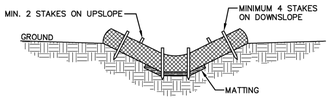
PLAN VIEW



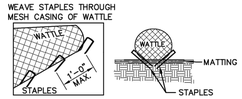
NOTES:
1) USE A MINIMUM 12 INCH DIAMETER EXCELSIOR WATTLE.
2) USE 24 INCH LONG WOODEN STAKES WITH A 2"x2" NOMINAL CROSS SECTION.
4) INSTALL WATTLE(S) TO A HEIGHT ON SLOPE SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR SLOPES, OR AS DIRECTED.
5) INSTALL A MINIMUM OF TWO UPSLOPE STAKES AND FOUR DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND AT BOTTOM.
6) PROVIDE STAPLES MADE OF 0.125 INCH DIAMETER STEEL WIRE FORMED INTO A U-SHAPE NOT LESS THAN 12 INCHES IN LENGTH.
7) INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
8) AFTER INSTALLATION OF STAPLES, CHINK ANY GAPS BETWEEN WATTLE AND GROUND WITH MATTING.



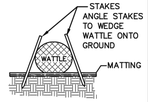
V-DITCH SECTION VIEW



TRAPEZOIDAL DITCH SECTION VIEW

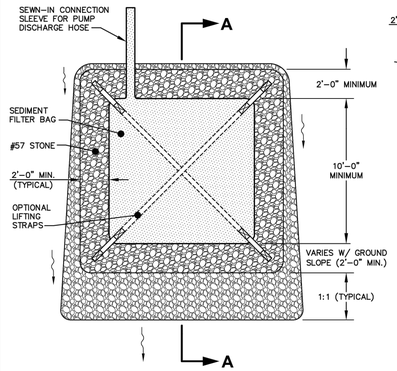


STAPLE INSTALLMENT SECTIONS

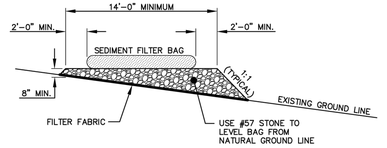


STAKE INSTALLMENT CROSS SECTION

TOWN OF APEX STANDARDS	WATTLE	STD. NO. 400.21
EFFECTIVE: MAY 5, 2020		SHEET 1 OF 1



PLAN VIEW

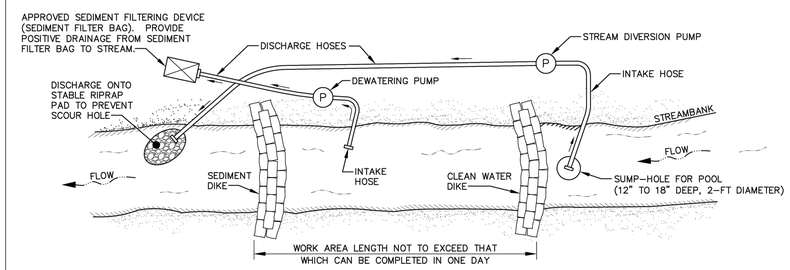


SECTION A-A

SEDIMENT FILTER BAG GENERAL NOTES:

1. CONTRACTOR SHALL EXERCISE CAUTION NOT TO BURST OR DAMAGE THE SEDIMENT FILTER BAG WHEN PUMPING.
2. THE LENGTH AND WIDTH OF THE TEMPORARY SEDIMENT BAG SHOWN ON THIS DRAWING MAY VARY PER VENDOR SPECIFICATIONS. THE MINIMUM "FOOTPRINT" OF THE BAG SHALL BE 10 x 15 FEET.
3. SEDIMENT FILTER BAGS SHALL BE EQUIPPED WITH A SEWN-IN SLEEVE OF SUFFICIENT SIZE TO ACCEPT A MINIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE DISCHARGE HOSE SHOULD BE EXTENDED INTO THIS SLEEVE A MINIMUM OF 6 INCHES AND BE TIGHTLY SECURED WITH A HOSE CLAMP OR OTHER SUITABLE MEANS TO PREVENT LEAKAGE. HOSE CONNECTION THROUGH A SLIT IN THE BAG WILL NOT BE ACCEPTABLE.
4. THE PUMP DISCHARGE HOSE CONNECTION SLEEVE SHALL BE SECURELY TIED OFF DURING DISPOSAL OF THE SEDIMENT FILTER BAG IN ORDER TO PREVENT LEAKAGE OF COLLECTED SEDIMENTS.
5. SEDIMENT FILTER BAG SHALL BE MAINTAINED AND REPLACED WHEN ONE HALF FULL OF SEDIMENT OR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

TOWN OF APEX STANDARDS	FILTER BAG WITH GRAVEL PAD	STD. NO. 400.22
EFFECTIVE: MAY 5, 2020		SHEET 1 OF 1



TEMPORARY PUMP AROUND SEQUENCE
1. SET UP PUMP WITH SUCTION AND DISCHARGE HOSE.
2. INSTALL UP-STREAM SANDBAG DAM.
3. INSTALL DOWN-STREAM SANDBAG DAM.
4. THE PUMP MUST RUN CONTINUOUSLY WHILE WORKING IN THE STREAM.
5. STREAMBANKS MUST BE STABILIZED AT THE END OF EACH DAY.

NOTES:
1. SANDBAG DIKES SHALL BE SITUATED AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE WORK AREA, AND STREAM FLOW SHALL BE PUMPED AROUND THE WORK AREA. THE PUMP SHOULD DISCHARGE ONTO A STABLE VELOCITY DISSIPATER CONSTRUCTED OF RIPRAP OR SANDBAGS.
2. WATER FROM THE WORK AREA SHALL BE PUMPED TO A SEDIMENT FILTERING MEASURE SUCH AS A SEDIMENT BAG OR OTHER APPROVED DEVICE. THE MEASURE SHALL BE LOCATED SUCH THAT THE WATER DRAINS BACK INTO THE CHANNEL BELOW THE DOWNSTREAM SANDBAG DIKE WITHOUT CAUSING FURTHER EROSION BETWEEN THE SEDIMENT FILTER BAG AND THE STREAMBANK.

TOWN OF APEX STANDARDS	TEMPORARY PUMP AROUND	STD. NO. 400.23
EFFECTIVE: MAY 5, 2020		SHEET 1 OF 1

WATTLE MAINTENANCE NOTES:
1. INSPECT WATTLE BARRIERS WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (½ INCH OR GREATER). REMOVE ACCUMULATED SEDIMENT AND ANY DEBRIS.
2. THE WATTLE BARRIER MUST BE REPLACED IF CLOGGED OR TORN. IF PONDING BECOMES EXCESSIVE, THE WATTLE BARRIER MAY NEED TO BE REPLACED WITH A LARGER DIAMETER OR A DIFFERENT MEASURE. THE WATTLE BARRIER NEEDS TO BE REINSTALLED IF UNDERMINED OR DISLODGED.
3. THE WATTLE BARRIER SHALL BE INSPECTED UNTIL LAND DISTURBANCE IS COMPLETE AND THE AREA ABOVE THE MEASURE HAS BEEN PERMANENTLY STABILIZED.

FILTER BAG WITH GRAVEL PAD NOTES:
1. INSPECT WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (½ INCH OR GREATER). REMOVE ACCUMULATED SEDIMENT AND ANY DEBRIS. REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.
2. THE FILTER BAG MUST BE REPLACED IF CLOGGED OR TORN. IF PONDING BECOMES EXCESSIVE, THE WATTLE BARRIER MAY NEED TO BE REPLACED WITH A LARGER DIAMETER OR A DIFFERENT MEASURE. THE WATTLE BARRIER NEEDS TO BE REINSTALLED IF UNDERMINED OR DISLODGED.
3. THE FILTER BAG SHALL BE INSPECTED UNTIL LAND DISTURBANCE IS COMPLETE AND THE AREA ABOVE THE MEASURE HAS BEEN PERMANENTLY STABILIZED.
4. MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. PAD TOPDRESSING WITH 2-INCH STONE PERIODICALLY.

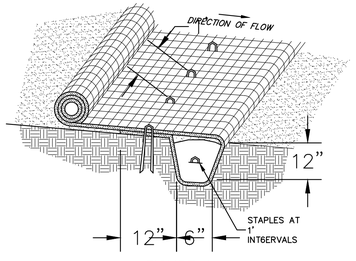


FIGURE 1
INITIAL ANCHOR TRENCH

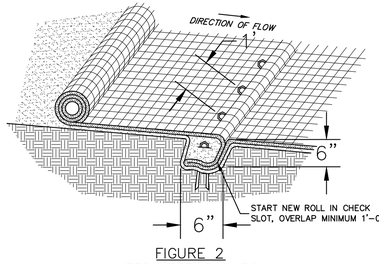


FIGURE 2
INTERMITTENT CHECK SLOT/BEGINING OF NEW ROLL

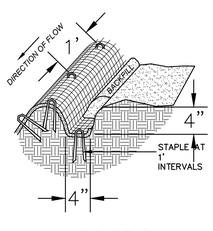


FIGURE 3
TOP OF BANK TERMINATION

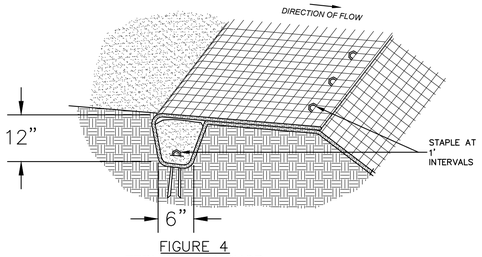


FIGURE 4
TERMINAL ANCHOR TRENCH

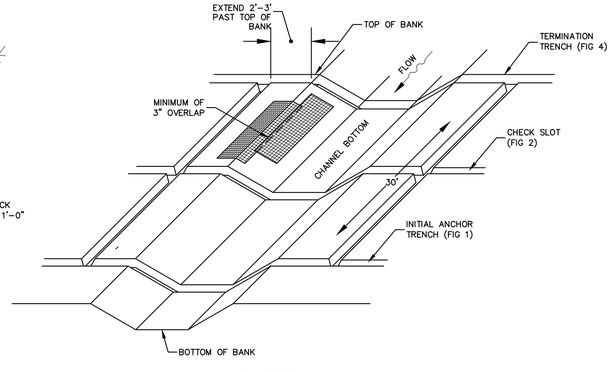


FIGURE 5
TRENCH AND CHECK SLOT LAYOUT

PERMANENT LINER INSTALLATION NOTES:

SITE PREPARATION

GRADE AND COMPACT AREA.

REMOVE ALL ROCKS, CLODS, VEGETATION, AND OBSTRUCTIONS SO THAT MATTING WILL HAVE DIRECT CONTACT WITH THE SOIL.

PREPARE SEEDBED BY LOOSENING 3 TO 4 INCHES OF TOPSOIL ABOVE FINAL GRADE.

APPLY ANY TREATMENT SUCH AS LIME OR FERTILIZERS TO THE SOIL IF NEEDED.

DO NOT MULCH AREAS WHERE MAT IS TO BE INSTALLED.

SEEDING

SEE SEEDING SCHEDULE FOR SEEDING REQUIREMENTS.

APPLY SEED TO SOIL BEFORE PLACING MATTING.

WHEN USING PERMANENT LINER, APPLY ADDITIONAL SEED AFTER INSTALLATION AND FILL MAT WITH SOIL.

INSTALLATION ON BANKS

EXTEND MAT 2 TO 3 FEET OVER CREST OF SLOPE AND EXCAVATE A 12" x 6" TERMINAL ANCHOR TRENCH. SEE FIGURE 4.

ANCHOR MAT IN TRENCH ON 1 FOOT SPACINGS, BACKFILL AND COMPACT SOIL.

OVERLAP ADJACENT MATS 3" AND ANCHOR EVERY 18" ACROSS THE OVERLAP. THE HIGHER ELEVATION MAT SHOULD BE PLACED OVER THE LOWER ELEVATION MAT.

EDGES SHOULD BE SHINGLED AWAY FROM THE FLOW OF WATER.

LAY MAT LOOSE TO ALLOW CONTACT WITH SOIL. DO NOT STRETCH TIGHT.

ANCHOR MAT USING U-SHAPED WIRE STAPLES OR GEOTEXTILE PINS.

INSTALLATION IN STORM WATER CHANNELS

EXCAVATE INITIAL ANCHOR TRENCH 12"X6" ACROSS THE CHANNEL AT THE LOWER END OF THE PROJECT. SEE FIGURE 1.

PLACE 6" x 6" CHECK SLOTS AT 30' INTERVALS ALONG THE CHANNEL. SEE FIGURE 2.

CUT 4" x 4" TRENCH ALONG TOP OF BANK FOR MAT TERMINATION. EXTEND MAT 2 TO 3 FEET ABOVE CREST IF POSSIBLE. SEE FIGURE 3.

BEGINING AT THE CENTER OF CHANNEL AT THE DOWNSTREAM END OF THE AREA TO BE LINED, PLACE THE END OF THE ROLL IN ANCHOR TRENCH AND SECURE WITH U-SHAPED WIRE STAPLES OR GEOTEXTILE PINS. SEE FIGURE 1.

PLACE ADJACENT ROLLS IN THE ANCHOR TRENCH WITH A MINIMUM OF 3" OVERLAP. SECURE WITH STAPLES OR GEOTEXTILE PINS, BACKFILL ANCHOR TRENCH, AND COMPACT SOIL.

UNROLL MAT OVER COMPACTED ANCHOR TRENCH, STOP AT NEXT CHECK SLOT OR TERMINAL ANCHOR.

UNROLL ADJACENT ROLLS IN SAME MANNER, WITH A MINIMUM OF 3" OF OVERLAP.

STAPLE AT 18" INTERVALS ALONG OVERLAP.

FOLD AND SECURE MAT ROLLS TIGHTLY INTO CHECK SLOTS. LAY MAT IN CHECK SLOT, FOLD BACK AGAINST ITSELF, ANCHOR THROUGH BOTH LAYERS, BACKFILL AND COMPACT SOIL, CONTINUE ROLLING MAP UPSTREAM. SEE FIGURE 2.

BEGIN NEW ROLLS IN CHECK SLOT, AND OVERLAP ENDS MINIMUM OF 1'.

SEE FIGURE 4 FOR TERMINATION AT UPSTREAM END.

SEE FIGURE 5 FOR TRENCH AND CHECK SLOT LAYOUT.

NOTE:

1. PERMANENT LINER MUST MEET OR EXCEED THE REQUIREMENTS OF ASTM D 6459 AND D 6460.
2. EROSION CONTROL BLANKET SHALL BE CURLEX, NAG S150, LANDLOCK CS2 OR APPROVED EQUIVALENT.

EROSION CONTROL BLANKET RECOMMENDED INSTALLATION
NOT TO SCALE

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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WATER RESOURCES DEPARTMENT
TOWN OF APEX

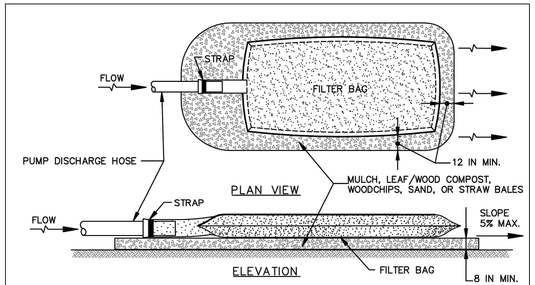
BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL DETAILS

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	NTS
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC12

SHEET NUMBER 52 OF 56



CONSTRUCTION SPECIFICATIONS

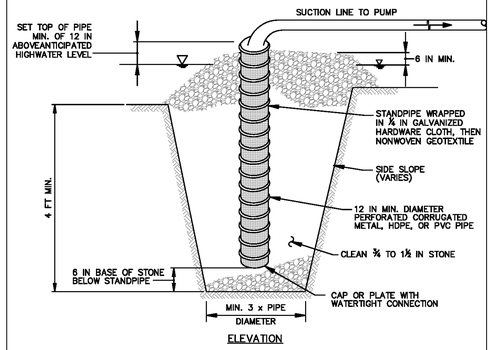
1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D-4491
PERMITTIVITY (SEC^{-1})	1.2 SEC^{-1}	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

FILTER BAG
NTS

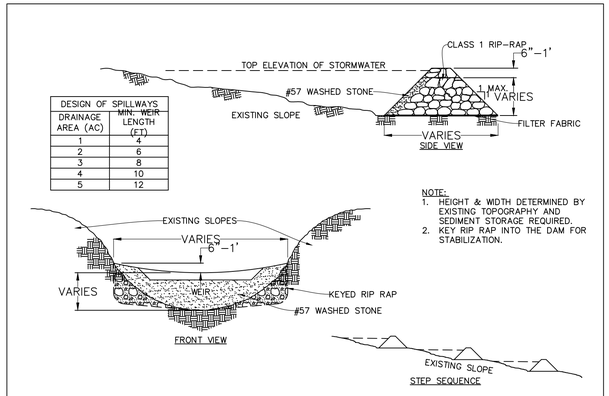
FILTER BAG MAINTENANCE NOTES:
1. INSPECT INLET PIPE AND BAG FOR DAMAGE AND BLOCKAGE.
2. REPLACE BAG WHEN ¾ FULL OF SEDIMENT



CONSTRUCTION SPECIFICATIONS

1. USE 12 INCH OR LARGER DIAMETER CORRUGATED METAL, HDPE, OR PVC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER. BOTTOM OF PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
2. WRAP PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH AND WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
3. EXCAVATE PIT TO THREE TIMES THE PIPE DIAMETER AND FOUR FEET IN DEPTH. PLACE ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
4. SET TOP OF PIPE MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
5. BACKFILL PIT AROUND THE PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
6. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
7. A SUMP PIT REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, REMOVE PERFORATED PIPE AND REPLACE GEOTEXTILE AND STONE. KEEP POINT OF DISCHARGE FREE OF EROSION.

SUMP PIT
NTS

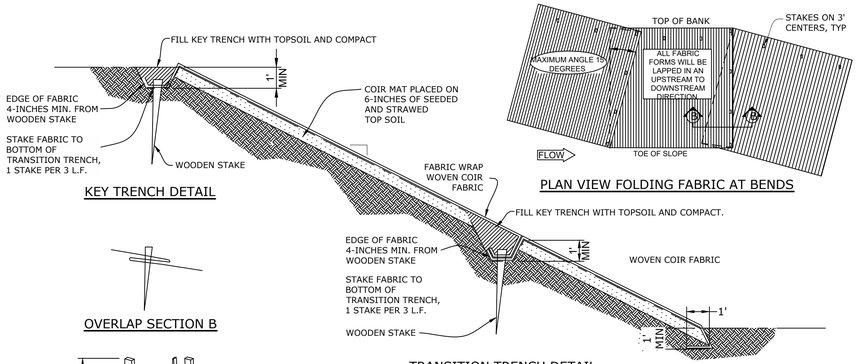


DESIGN OF SPILLWAYS	
DRAINAGE AREA (AC)	MIN. WEIR LENGTH (FT)
1	4
2	6
3	8
4	10
5	12

NOTE:
1. HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
2. KEY RIP RAP INTO THE DAM FOR STABILIZATION.

TOWN OF APEX STANDARDS	CHECK DAM	STD. NO. 400.05
EFFECTIVE: DECEMBER 3, 2002		SHEET 1 OF 1

CHECK DAM MAINTENANCE NOTES:
1. INSPECT CHECK DAMS WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (½ INCH OR GREATER). REMOVE ACCUMULATED SEDIMENT AND ANY DEBRIS.
2. THE CHECK DAM SHALL BE INSPECTED UNTIL LAND DISTURBANCE IS COMPLETE AND THE AREA ABOVE THE MEASURE HAS BEEN PERMANENTLY STABILIZED.



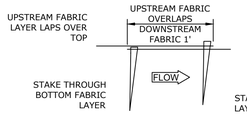
OVERLAP SECTION B

18" MIN

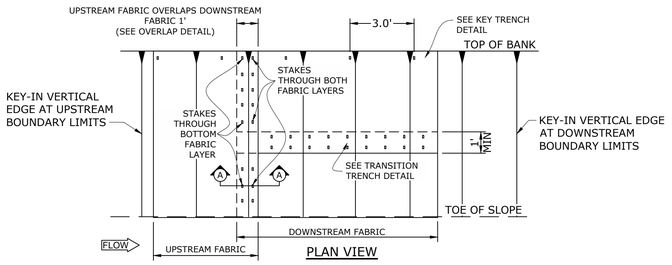
SAW A 2 X 4 DIAGONALLY TO PRODUCE 2 DEAD STOUT STAKES.

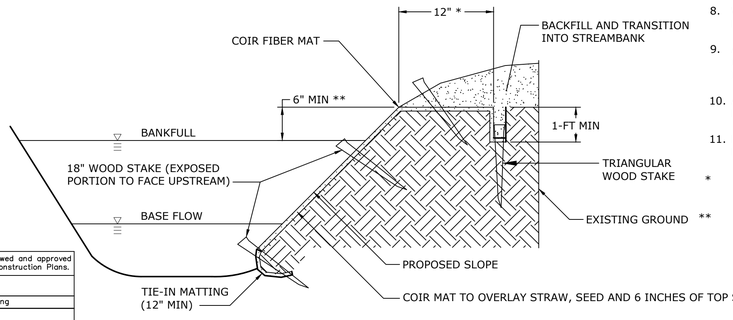
TYPICAL DETAIL STAKE

TOE SLOPE PROTECTION TO BE PROVIDED AS IDENTIFIED ON DETAIL.



OVERLAP SECTION A



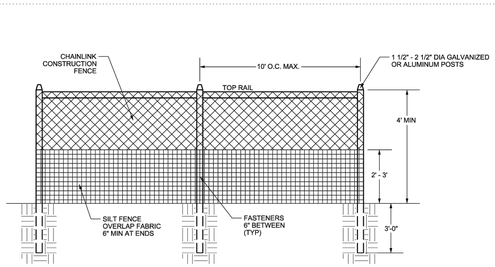


COIR FIBER MATTING OVER TOPSOIL
NTS

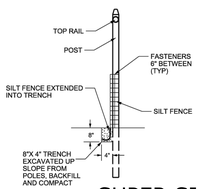
GENERAL NOTES

1. COCONUT EROSION CONTROL BLANKET SHALL BE 'ROLANKA BIO-D 70' OR APPROVED EQUAL, ABLE TO WITHSTAND 12 FPS WATER VELOCITIES AND 4.5 PSF SHEAR STRESS. FABRIC EMBEDMENT 3.0 FT.
2. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER AND SEED.
3. BEGIN AT THE BOTTOM OF THE SLOPE, WORKING FROM DOWNSTREAM UP, AND ANCHOR FIBER MATTING IN A 12" DEEP INITIAL ANCHOR TRENCH. BACKFILL TRENCH AND TAMP EARTH FIRMLY.
4. OVERLAP EDGES OF ADJACENT PARALLEL ROLLS 12" AND ANCHOR AT 12" CENTERS WITH THE UPPER ROLL OVERLAPPING THE TOP OF THE LOWER ROLL.
5. WHEN FIBER MAT MUST BE SPLICED, PLACE END OVER END (SHINGLE STYLE IN DIRECTION OF FLOW) WITH 12" OVERLAP AND ANCHOR USING TWO STAGGERED ROWS OF STAKES AT 6" CENTERS. ADDITIONAL FASTENING MAY BE REQUIRED WHERE MATTING IS CUT TO INSTALL PLANTINGS.
6. LAY FIBER MAT LOOSELY AND ANCHOR SUFFICIENTLY TO MAINTAIN DIRECT CONTACT WITH THE SOIL - DO NOT STRETCH.
7. FOR SLOPES 2:1 AND STEEPER USE A MINIMUM OF (3) 18-INCH WOOD STAKES PER SQUARE YARD AND FOR SLOPES FLATTER THAN 2:1 USE A MINIMUM OF (2) 18-INCH WOOD STAKES PER SQUARE YARD. PROVIDE ADDITIONAL STAKING ALONG CHANNEL BOTTOM WHERE COIR MAT FORMS TOE OF SLOPE.
8. WOOD STAKES SHALL BE ANGLED SUCH THAT EXPOSED PORTION (2"-4") FACES UPSTREAM.
9. ANCHOR, FILL, AND COMPACT END OF FIBER MATTING IN 12"x6" TERMINAL ANCHOR TRENCH (MIRROR IMAGE OF INITIAL TRENCH).
10. ANCHORING DIMENSIONS TO BE REDUCED IN AREAS OF NATURAL RESOURCES TO BE PROTECTED.
11. EROSION CONTROL MATTING MAY BE EXTENDED UP STREAM BANK AS DIRECTED.

COIR FIBER MATTING MAINTENANCE NOTES:
1. INSPECT ROLLED EROSION CONTROL PRODUCTS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (½ INCH OR GREATER) RAINFALL EVENT, REPAIR IMMEDIATELY.
2. GOOD CONTACT WITH THE GROUND MUST BE MAINTAINED, EROSION MUST NOT OCCUR BENEATH RECP,
3. ANY AREAS OF THE RECP THAT ARE DAMAGED OR NOT IN CLOSE CONTACT WITH THE GROUND SHALL BE REPAIRED AND STAPLED.
4. IF EROSION OCCURS DUE TO POORLY CONTROLLED DRAINAGE, THE PROBLEM SHALL BE FIXED AND THE ERODED AREA PROTECTED.
5. MONITOR AND REPAIR THE RECP AS NECESSARY UNTIL THE GROUND COVER IS ESTABLISHED.



MAINTENANCE: CLEAN OUT AT 50% CAPACITY
LIFE OF FENCING: 6-9 MONTHS
SEE NC DEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL FOR CONDITIONS WHERE PRACTICE APPLIES; PLANNING CONSIDERATION & DESIGN CRITERIA



NOTES:
1. MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT FENCE SHALL BE REPLACED EVERY 6 MONTHS AND POSTS SHALL BE INSPECTED TO ENSURE STRUCTURAL INTEGRITY. SILT FENCE SHALL BE INSPECTED WEEKLY AND ALL MAINTENANCE ISSUES SHALL BE CORRECTED AT THAT TIME.
2. SILT FENCE SHOULD BE A MINIMUM OF 5 FEET FROM THE TOE OF SLOPE.

SUPER SILT FENCE
NTS

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning-Transportation
Water Resources-Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
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CARY, NC 27511
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WATER RESOURCES DEPARTMENT
TOWN OF APEX

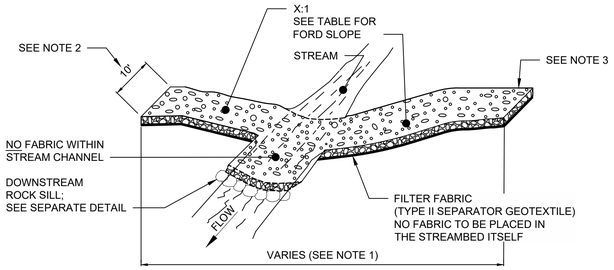
BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL DETAILS

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 20'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC13

SHEET NUMBER 53 OF 56



NOTES:

1. LENGTHS OF CROSSINGS WILL GENERALLY FOLLOW THE LENGTHS PRESCRIBED IN THE TABLE AND MAY BE VARIED IN THE FIELD TO NOT EXCEED MAXIMUM ALLOWABLE SLOPE.
2. STREAM CROSSING SHALL BE NO GREATER THAN 10 FEET WIDE BUT NO LESS THAN 8 FEET.
3. WHEN STREAM CROSSINGS ARE INSTALLED FOR THE CONSTRUCTION OF THE PIPELINE, TEMPORARY CONSTRUCTION ENTRANCES SHALL BE REQUIRED AT BOTH ENDS OF THE CROSSING. SEE SEPARATE DETAIL TEMPORARY CONSTRUCTION ENTRANCE DETAIL.
4. PERMANENT STREAM CROSSINGS TO REMAIN IN PLACE FROM TOP OF BANK TO TOP OF BANK UNLESS OTHERWISE NOTED ON THE DRAWINGS. PERMANENT WETLANDS CROSSING TO REMAIN IN PLACE THROUGH THE WETLANDS FROM BOUNDARY TO BOUNDARY UNLESS OTHERWISE NOTED ON THE DRAWINGS. MAXIMUM WIDTH SHALL BE 10 FT BUT NO LESS THAN 8 FEET.
5. FOR MIX MATERIAL TO BE PLACED AND THICKNESS SEE STONE MIXES TABLE.
6. ALL STONE MIXES ARE TO BE CHINKED WITH #2 STONE.

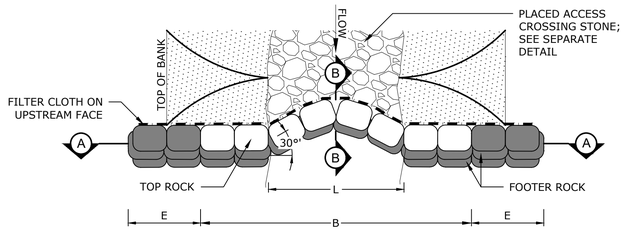
MAINTENANCE REQUIREMENTS:

1. INSPECT WEEKLY AND AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2 INCH OR MORE OF RAIN.
2. CHECK FOR CHANNEL BLOCKAGE, EROSION OF ABUTMENTS, CHANNEL DEGRADATION, RIRRAP DISPLACEMENT, SLOPE FAILURE, AND PIPING.
3. MAKE ALL NEEDED REPAIRS IMMEDIATELY.

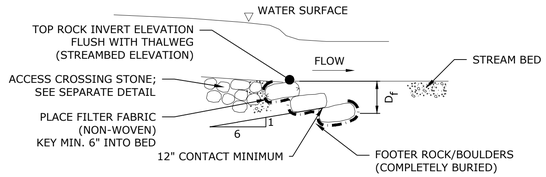
PERMANENT STREAM/WETLAND CROSSING

NTS

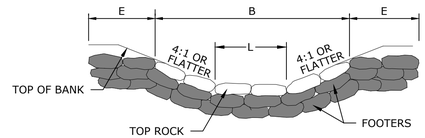
STREAM CROSSING SCHEDULE						
STATION	LENGTH	ACCESS FORD SLOPE	MIX	THICKNESS	PLAN SHEET	NOTES
13+34	60	10 TO 1	50/50 Blend of NCDOT Class A and NCDOT Class B	12" to 18"	C-1	Big Branch (east)
32+44	30	PER EX GRADE	50/50 Blend of NCDOT Class A and NCDOT Class B	12" to 18"	C-2	
51+40	110	5 TO 1 (EAST); 10 TO 1 (WEST)	50/50 Blend of NCDOT Class A and NCDOT Class B	12" to 18"	C-4	
54+74	125	5 TO 1, THEN 10 TO 1 (EAST); 10 TO 1 (WEST)	50/50 Blend of NCDOT Class A and NCDOT Class B	12" to 18"	C-4	White Oak Creek
63+74	30	PER EX GRADE	50/50 Blend of NCDOT Class A and NCDOT Class B	12" to 18"	C-5	
72+22	50	5 TO 1	NCDOT Class B	12" to 18"	C-6	
89+96	30	PER EX GRADE	NCDOT Class A	12"	C-7	
91+10	30	PER EX GRADE	50/50 Blend of NCDOT Class A and NCDOT Class B	12" to 18"	C-8	
96+52	30	PER EX GRADE	NCDOT Class B	12" to 18"	C-8	
126+61	30	PER EX GRADE	NCDOT Class B	12" to 18"	C-11	
147+14	70	5 TO 1 (EAST); PER GRADING PLAN (WEST)	NCDOT Class A	12"	C-12	
167+98	40	PER EX GRADE	50/50 Blend of NCDOT Class A and NCDOT Class B	12" to 18"	C-14	
196+36	50	5 TO 1	NCDOT Class A	12"	C-17	
198+71	55	5 TO 1	NCDOT Class A	12"	C-17	
202+19	30	PER EX GRADE	NCDOT Class A	12"	C-17	
236+76	60	5 TO 1 (SOUTH); 6 TO 1 (NORTH)	NCDOT Class A	12"	C-20	
249+03	30	PER EX GRADE	50/50 Blend of NCDOT Class A and NCDOT Class B	12" to 18"	C-22	



PLAN VIEW



SECTION B-B



SECTION A-A

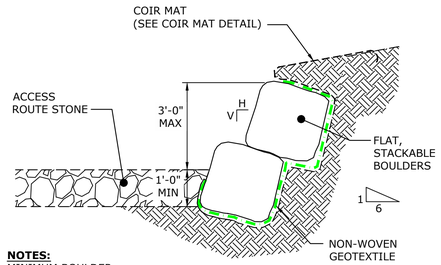
NOTES:

1. SILL SHALL BE CONSTRUCTED BY EXCAVATING A TRENCH SLIGHTLY LARGER THAN THE SILL DIMENSIONS.
2. SILL SHALL BE PLACED ON FILTER CLOTH WHICH SHALL ALSO COMPLETELY COVER THE UPSTREAM FACE OF THE SILL.
3. TOP ROCKS SHALL BE SUPPORTED BY FOOTER ROCKS; ROCKS SHALL BEAR ON EACH OTHER (TOUCH) A MINIMUM OF 12 INCHES. ALL ROCKS TO BE SHINGLED UPSTREAM AND INTO STREAM BANK.
4. ROCKS ARE TO BE PLACED AT 6:1 WITH RESPECT TO HORIZONTAL.
5. ALL ROCKS SHALL BE INTERLOCKED MINIMIZING OR ELIMINATING GAPS WITH NO VOID/GAPS LARGER THAN 3 INCHES.
6. SILL ROCK BOULDERS SHALL BE FLUSH WITH FINISHED GRADE AND CUTOFF ROCKS SHALL EXTEND "E" FEET INTO BANKS.

ROCK SILL (RS) DETAIL

NTS

SILL STRUCTURE SCHEDULE						
LOCATION	B	L	E	Df	MIN BOULDER DIMENSION	NOTES
	FT	FT	FT	FT	IN	
13+34	18	10	4	6	24	BOULDERS FLAT AND STACKABLE
32+44	20	12	4	6	24	
51+40	24	16	4	6	24	
54+74	14	6	4	6	24	
72+22	22	14	6	6	24	
96+52	18	10	4	6	24	
126+61	24	16	6	6	24	
147+14	16	8	4	6	24	
196+36	18	10	4	6	24	
202+19	10	2	4	6	24	
236+76	10	2	4	6	24	
249+03	12	4	4	6	24	



NOTES:
MINIMUM BOULDER
DIMENSION = 2' X 2' X 3'

ACCESS ROUTE GRADE BREAK

NTS

ACCESS ROUTE GRADE BREAK (GB) SCHEDULE												
STRUCTURE #	SITE LOCATION	UPSTREAM STATION	UPSTREAM OFFSET AT FOOTER TOE*	TOP ELEV (UPSTREAM)	BOTTOM ELEV (UPSTREAM)	DOWNSTREAM STATION	DOWNSTREAM OFFSET AT FOOTER TOE*	TOP ELEV (DOWNSTREAM)	BOTTOM ELEV (DOWNSTREAM)	LENGTH*	WALL SLOPE	FOOTER DEPTH D_F
IRW-1	SITE 1 LEFT BANK	STA	FT	MSL	MSL	STA	FT	MSL	MSL	FT	H:V	FT
		1+00	10	500.0	490.0	2+00	10	498.0	488.0	100.0	0.5:1	4.0

* OFFSET, BOTTOM ELEVATION, AND LENGTH MEASURED AT TOE OF FOOTER STONE (SEE TYPICAL SECTION)

SEE ROCK SIZING CHART FOR STONE SIZE

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Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

MAINTENANCE CROSSING DETAILS

CJS PROJ. #:	100-005
DATE:	12-18-2024
SCALE:	1" = 20'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC14

SHEET NUMBER 54 OF 56

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

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

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

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

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

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

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

EQUIPMENT AND VEHICLE MAINTENANCE

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

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

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

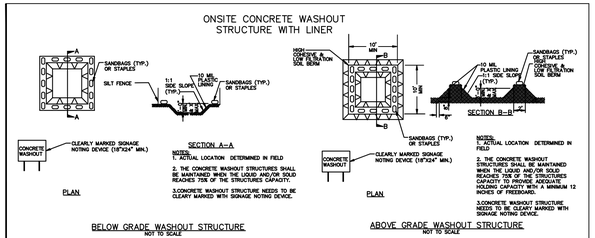
PORTABLE TOILETS

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

EARTHEN STOCKPILE MANAGEMENT

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

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: 04/01/19

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

CJS Conveyance, PLLC
320 S. ACADEMY ST
CARY, NC 27511
NC LICENSE #P-1611 WWW.CJSCONVEYANCE.COM

WATER RESOURCES DEPARTMENT
TOWN OF APEX

BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL
GROUND STABILIZATION

CJS PROJ. #:	
DATE:	12-18-2024
SCALE:	1" = 40'
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC15

SHEET NUMBER 55 OF 56

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.

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

The signatures affixed below certify that this sheet has been reviewed and approved solely per the certifications signed on the cover sheet of these Construction Plans.

Transportation Engineering	Planning
Building Inspections	Planning–Transportation
Water Resources–Utility Engineering	Fire
Water Resources Stormwater and S&EC	Parks, Recreation & Cultural Resources
Electric	

No.	REVISIONS	DATE	BY
1	PERMIT SUBMITTAL	12/18/2024	SDL

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 029995 ENGINEER STEPHEN D. LEITCH

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CARY, NC 27511
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WATER RESOURCES DEPARTMENT
TOWN OF APEX

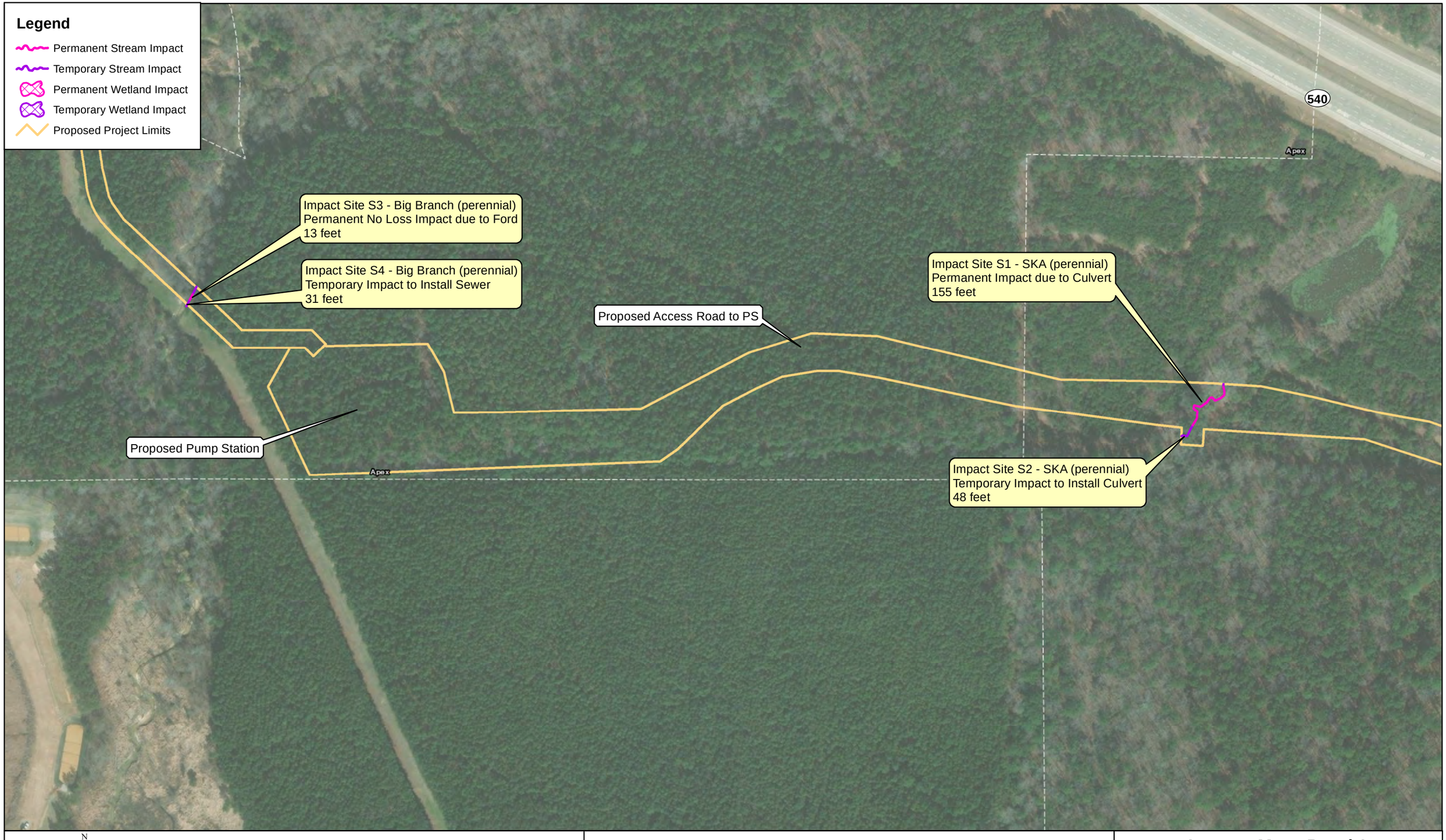
BIG BRANCH 2 PUMP STATION - FORCE MAIN

EROSION CONTROL
SELF INSPECTION

CJS PROJ. #:	
DATE:	12-18-2024
SCALE:	NTS
PROJECT ENGINEER:	SDL
DESIGNED BY:	JJS
DRAWN BY:	JJS
CHECKED BY:	SDL

EC16

SHEET NUMBER 56 OF 56



N
W E
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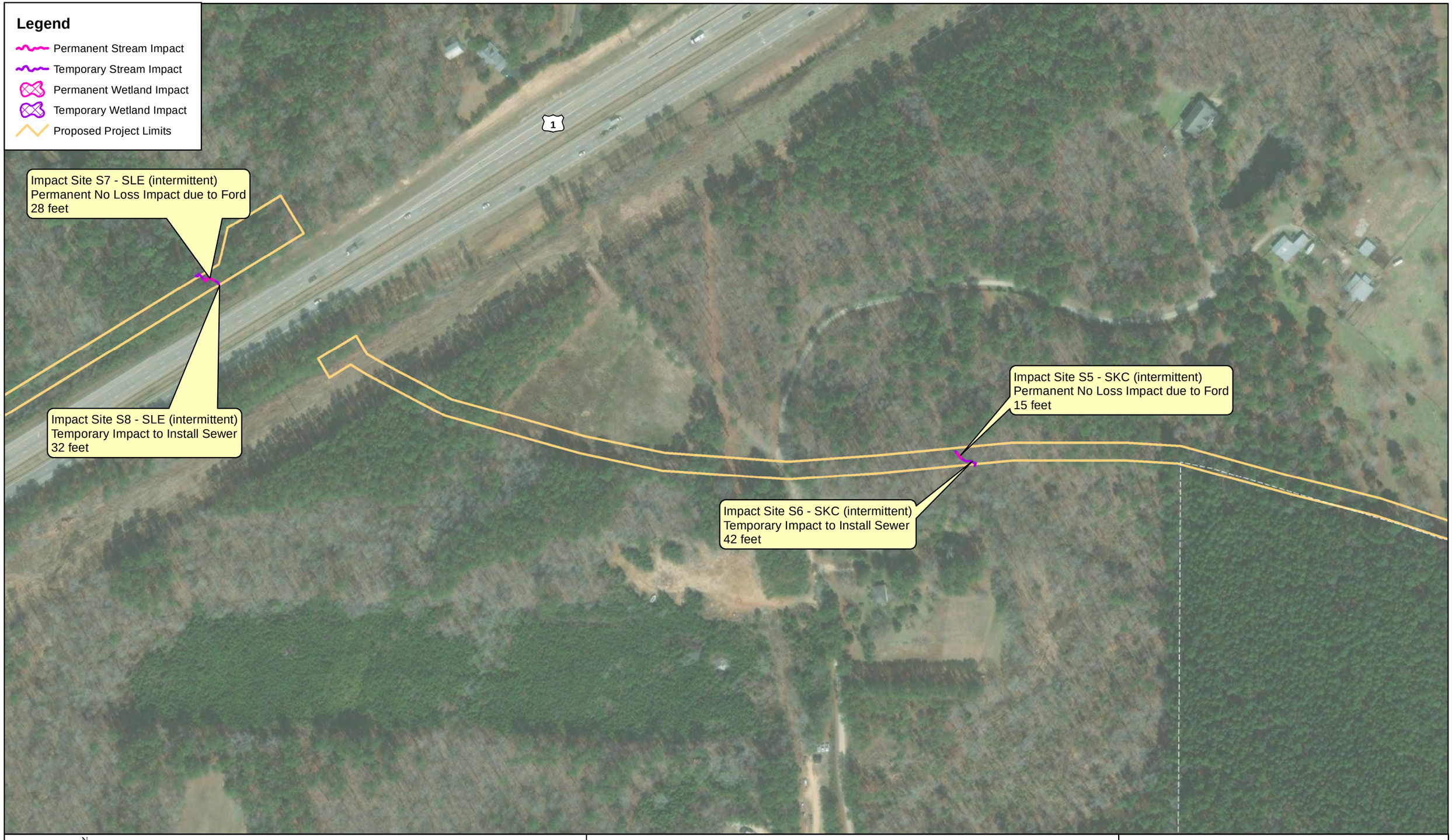
200 0 200 Feet

1 inch = 200 feet

Impacts Map - Panel 1

Big Branch Pump Station and Force Main
Town of Apex
Apex, North Carolina



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1 inch = 200 feet

APEX NORTH CAROLINA 1873

CJS Conveyance, PLLC

Hazen

Impacts Map - Panel 2

Big Branch Pump Station and Force Main
Town of Apex
Apex, North Carolina

Legend

- Permanent Stream Impact
- Temporary Stream Impact
- Permanent Wetland Impact
- Temporary Wetland Impact
- Proposed Project Limits

Winding Way

Friendship Rd

1

Impact Site S9 - SKF (intermittent)
Permanent No Loss Impact due to Ford
10 feet

Impact Site S10 - SKF (intermittent)
Temporary Impact to Install Sewer
16 feet

Impact Site S12 - White Oak Creek (intermittent)
Temporary Impact to Install Sewer
26 feet

Impact Site S11 - White Oak Creek (intermittent)
Permanent No Loss Impact due to Ford
10 feet

Impact Site S13 - SKE (intermittent)
Permanent No Loss Impact due to Ford
12 feet

Impact Site S14 - SKE (intermittent)
Temporary Impact to Install Sewer
25 feet

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200 0 200 Feet

1 inch = 200 feet

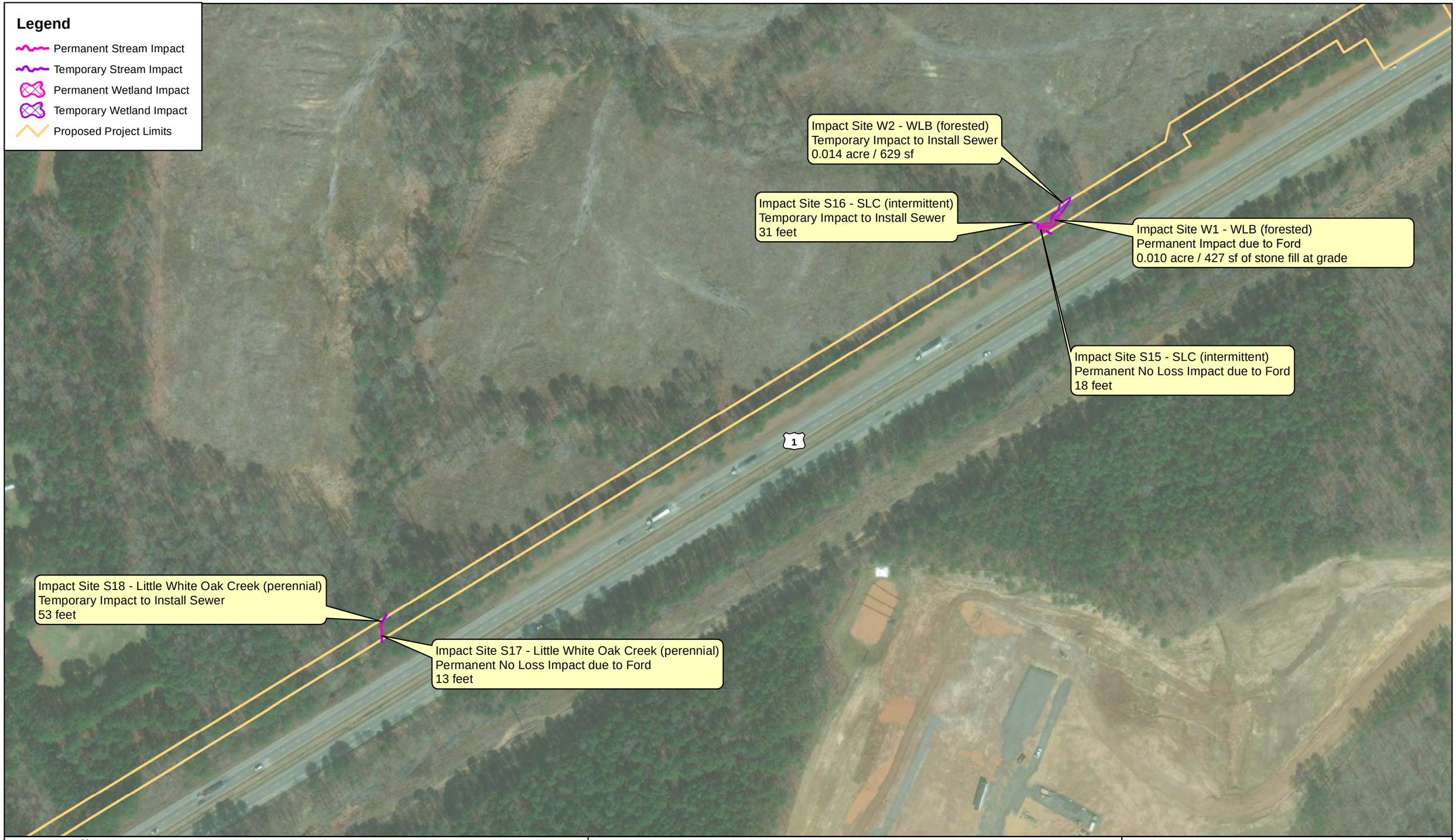
APEX NORTH CAROLINA 1873

CJS Conveyance, PLLC

Hazen

Impacts Map - Panel 3

Big Branch Pump Station and Force Main
Town of Apex
Apex, North Carolina



N
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200 0 200 Feet

1 inch = 200 feet

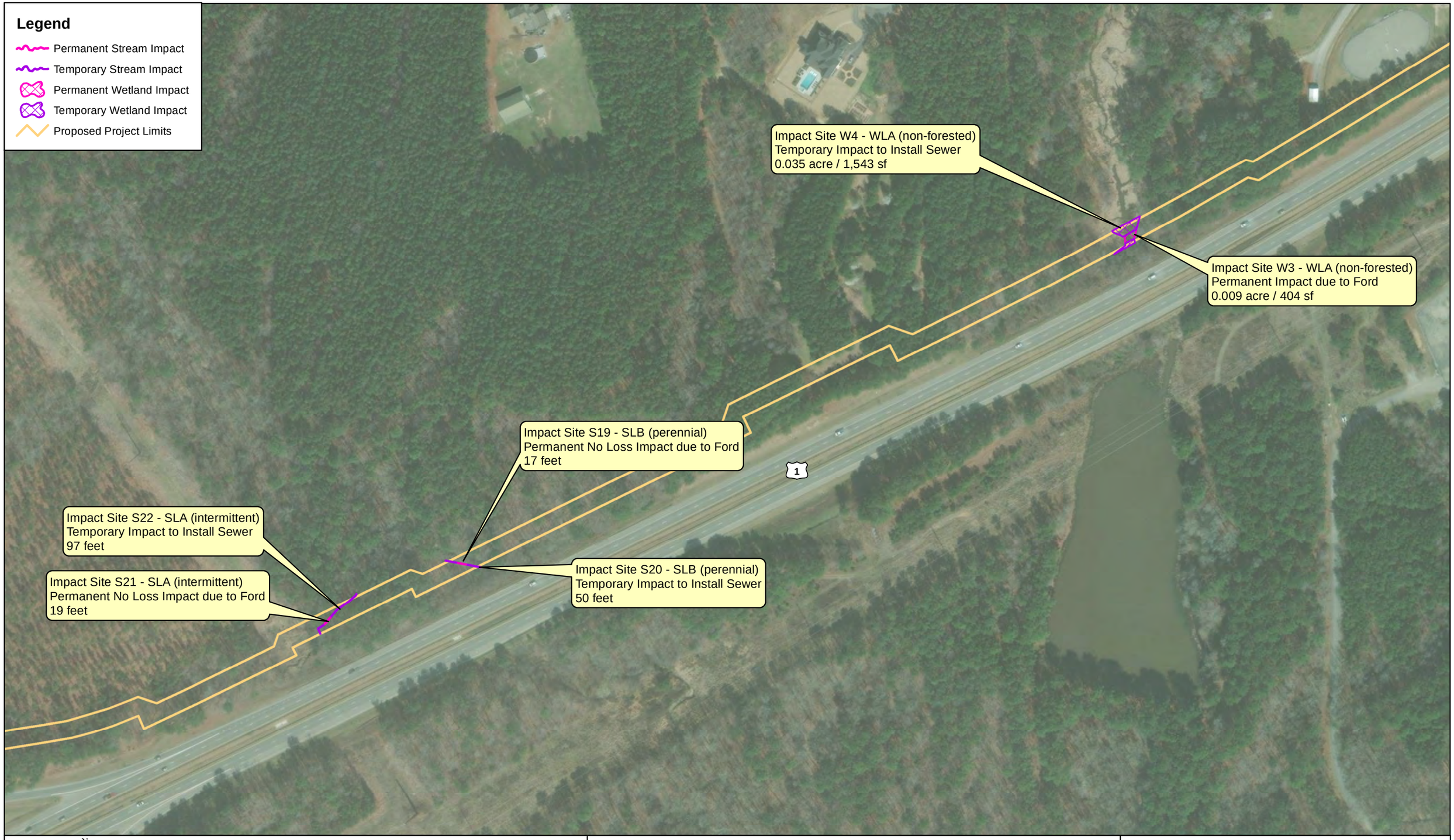
APEX NORTH CAROLINA 1873

CJS Conveyance, PLLC

Hazen

Impacts Map - Panel 4

Big Branch Pump Station and Force Main
Town of Apex
Apex, North Carolina



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200 0 200 Feet

1 inch = 200 feet

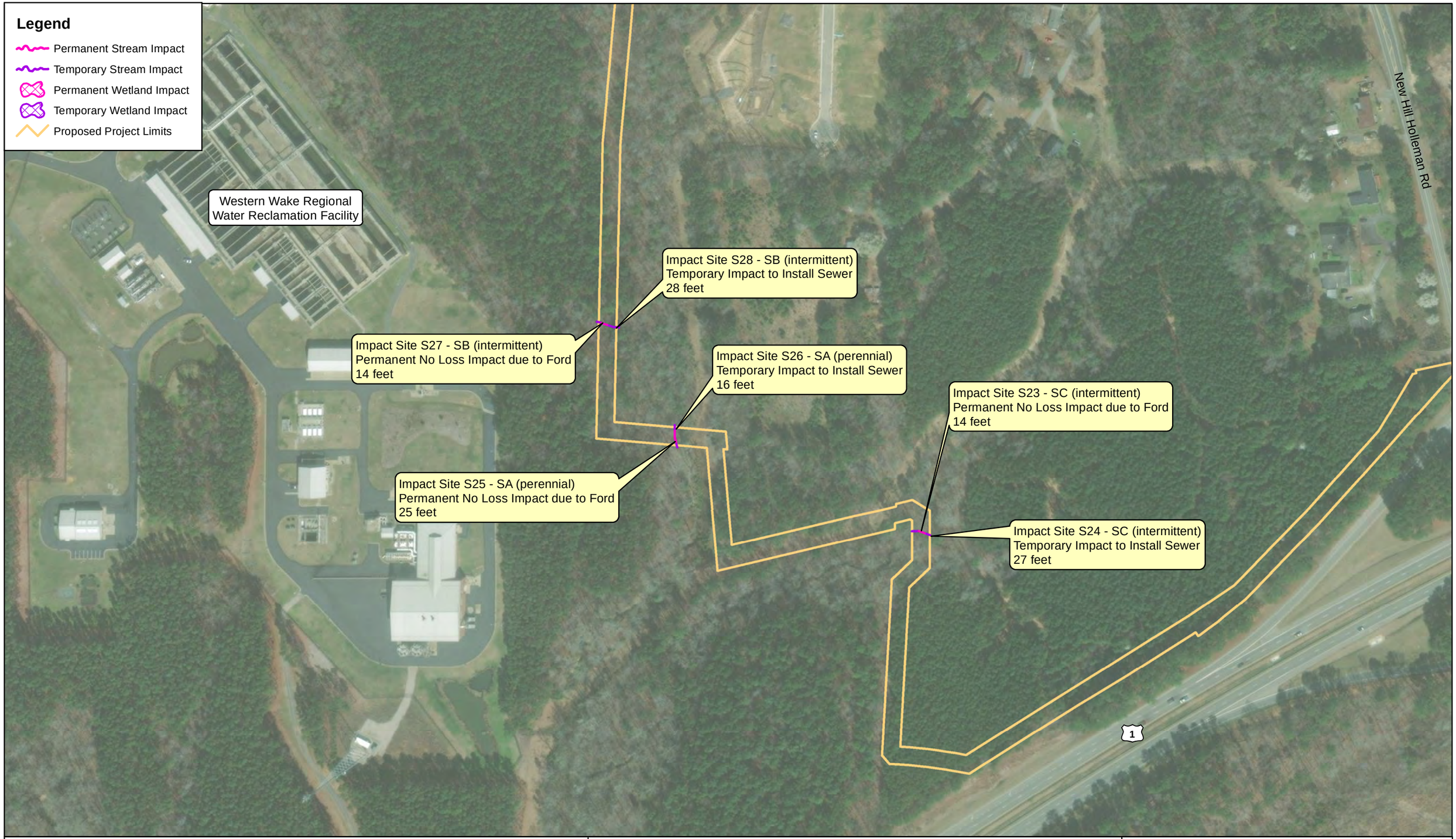
APEX NORTH CAROLINA 1873

CJS Conveyance, PLLC

Hazen

Impacts Map - Panel 5

Big Branch Pump Station and Force Main
Town of Apex
Apex, North Carolina



N W E S

200 0 200 Feet

1 inch = 200 feet

APEX NORTH CAROLINA 1873

CJS Conveyance, PLLC

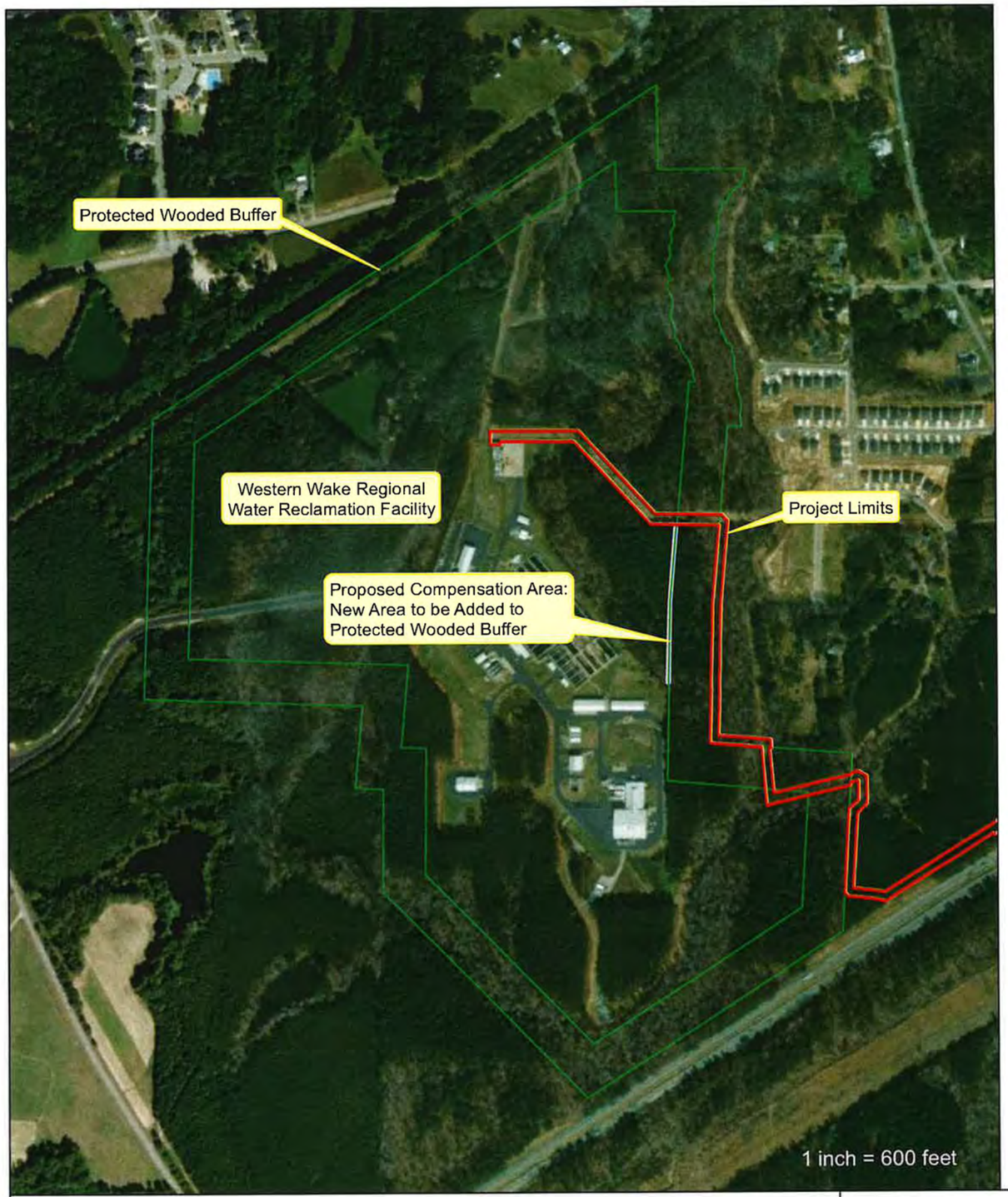
Hazen

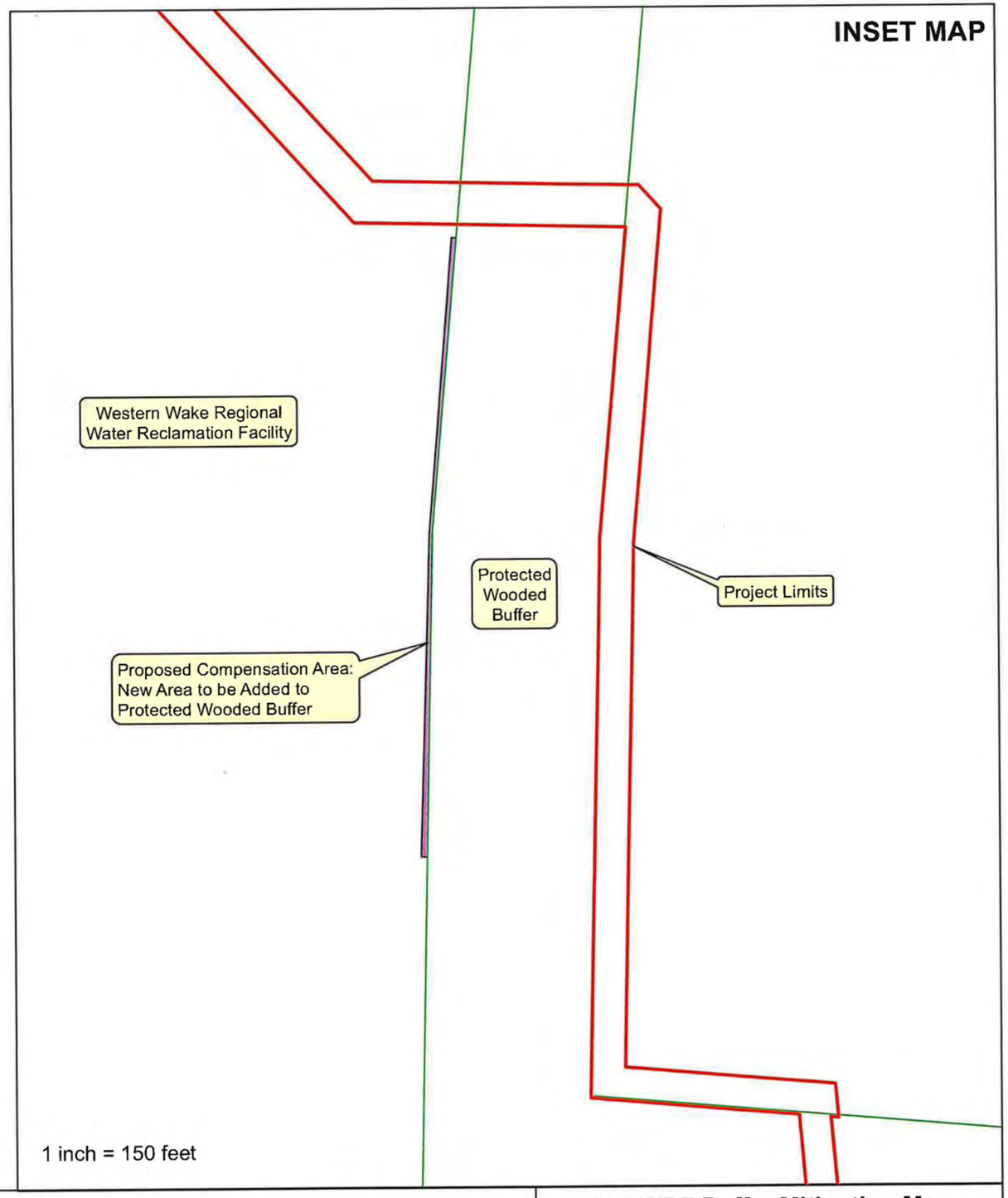
Impacts Map - Panel 6

Big Branch Pump Station and Force Main
Town of Apex
Apex, North Carolina

SAW-2005-20159, Big Branch Force Main and Pump Station

BUFFER MITIGATION DRAWING





N
W E
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APEX NORTH CAROLINA 1872

CJS Conveyance, PLLC

Hazen

WWRWRF Buffer Mitigation Map

Big Branch Pump Station and Force Main
Town of Apex
Apex, North Carolina

SAW-2005-20159, Big Branch Force Main and Pump Station

COMPENSATORY MITIGATION RESPONSIBILITY TRANSFER FORMS

US Army Corps of Engineers – Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: Town of Apex, Randal Vosburg
Action ID: SAW-2005-20159
Project Name: Big Branch Force Main and Pump Station
County: Wake

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that Wilmington District Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one Mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate Mitigation Sponsors.

Instructions to Sponsor: The Sponsor verifies that the mitigation requirements (credits) shown below have been released and are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated ledger to the Permittee, the Project Manager who issued the permit, the Bank Project Manager, and the District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements

Permitted Impacts Requiring Mitigation*: 8-digit HUC and Basin: 03030004, Cape Fear River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
375						

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: 8-digit HUC and Basin: 03030004, Cape Fear River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
530						

Mitigation Site Debited: Middle Cape Fear UMB – Daniels Creek Mitigation Site
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCDMS), as approved by the Wilmington District, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name: _____

Name of Sponsor's Authorized Representative: _____

_____ _____

Signature of Sponsor's Authorized Representative **Date of Signature**

Conditions for Transfer of Compensatory Mitigation Credit:

- Once this document has been signed by the Mitigation Sponsor and the District is in receipt of the signed form, the Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains responsible for any other mitigation requirements stated in the permit conditions.
- Construction within jurisdictional areas authorized by the permit identified on page one of this form can begin only after the District is in receipt of a copy of this document signed by the Sponsor, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein. When NCDMS provides mitigation for authorized impacts conducted by the North Carolina Department of Transportation (NCDOT), construction within jurisdictional areas may proceed upon permit issuance; however, a copy of this form signed by NCDMS must be provided to the District within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the District has received this form, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein.
- Signed copies of this document must be retained by the Permittee, Mitigation Sponsor, and in the USACE administrative records for both the permit and the Bank/ILF Instrument. It is the Permittee's responsibility to ensure that the District Project Manager (address below) is provided with a signed copy of this form.
- If changes are proposed to the type, amount, or location of mitigation after this form has been signed and returned to the District, the Sponsor must obtain case-by-case approval from the District Project Manager and/or North Carolina Interagency Review Team (NCIRT). If approved, higher mitigation ratios may be applied, as per current District guidance and a new version of this form must be completed and included in the District administrative records for both the permit and the Bank/ILF Instrument.

Comments/Additional Conditions:

This form is not valid unless signed below by the District Project Manager and by the Mitigation Sponsor on Page 1. ***Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the District Project Manager at the address below, 3) the Bank Manager listed in RIBITS, and 4) the Wilmington District Mitigation Office, 3331 Heritage Trade Drive, Suite 105, Wake Forest, NC 27587 (or by email to SAWMIT@usace.army.mil).*** Questions regarding this form or any of the permit conditions may be directed to the District Mitigation Office.

USACE Project Manager: George Lyle Phillips III
USACE Field Office: Raleigh Regulatory Field Office
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest
Email: George.L.Phillips@usace.army.mil

George Lyle Phillips III

Wilmington District Project Manager Signature

July 2, 2025

Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil.

US Army Corps of Engineers – Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: Town of Apex, Randal Vosburg
Action ID: SAW-2005-20159
Project Name: Big Branch Force Main and Pump Station
County: Wake

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that Wilmington District Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one Mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate Mitigation Sponsors.

Instructions to Sponsor: The Sponsor verifies that the mitigation requirements (credits) shown below have been released and are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated ledger to the Permittee, the Project Manager who issued the permit, the Bank Project Manager, and the District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements

Permitted Impacts Requiring Mitigation*: 8-digit HUC and Basin: 03030004, Cape Fear River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
				0.019		

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: 8-digit HUC and Basin: 03030004, Cape Fear River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
				0.038		

Mitigation Site Debited: RES Cape Fear 04 UMB – Newman Ranch Site
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCDMS), as approved by the Wilmington District, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name: _____

Name of Sponsor's Authorized Representative: _____

_____ _____

Signature of Sponsor's Authorized Representative **Date of Signature**

Conditions for Transfer of Compensatory Mitigation Credit:

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- Construction within jurisdictional areas authorized by the permit identified on page one of this form can begin only after the District is in receipt of a copy of this document signed by the Sponsor, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein. When NCDMS provides mitigation for authorized impacts conducted by the North Carolina Department of Transportation (NCDOT), construction within jurisdictional areas may proceed upon permit issuance; however, a copy of this form signed by NCDMS must be provided to the District within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the District has received this form, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein.
- Signed copies of this document must be retained by the Permittee, Mitigation Sponsor, and in the USACE administrative records for both the permit and the Bank/ILF Instrument. It is the Permittee's responsibility to ensure that the District Project Manager (address below) is provided with a signed copy of this form.
- If changes are proposed to the type, amount, or location of mitigation after this form has been signed and returned to the District, the Sponsor must obtain case-by-case approval from the District Project Manager and/or North Carolina Interagency Review Team (NCIRT). If approved, higher mitigation ratios may be applied, as per current District guidance and a new version of this form must be completed and included in the District administrative records for both the permit and the Bank/ILF Instrument.

Comments/Additional Conditions:

This form is not valid unless signed below by the District Project Manager and by the Mitigation Sponsor on Page 1. ***Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the District Project Manager at the address below, 3) the Bank Manager listed in RIBITS, and 4) the Wilmington District Mitigation Office, 3331 Heritage Trade Drive, Suite 105, Wake Forest, NC 27587 (or by email to SAWMIT@usace.army.mil).*** Questions regarding this form or any of the permit conditions may be directed to the District Mitigation Office.

USACE Project Manager: George Lyle Phillips III
USACE Field Office: Raleigh Regulatory Field Office
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest
Email: George.L.Phillips@usace.army.mil

George Lyle Phillips III

Wilmington District Project Manager Signature

July 2, 2025

Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil.

SAW-2005-20159, Big Branch Force Main and Pump Station

WATER QUALITY CERTIFICATION

JOSH STEIN
Governor
D. REID WILSON
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

April 15, 2025

DWR #20240227 v3
Wake County

Town of Apex
Attn: Randal Vosburg
105-B Upchurch Street
Apex, NC 27502

Delivered via email to: randal.vosburg@apexnc.org

Subject: **Approval of Individual 401 Water Quality Certification - Modification**
Big Branch 2 Force Main and Pump Station
USACE Action ID. No. SAW-2024-00257

Location: 35.677944, -78.911341

Dear Randal Vosburg,

Attached hereto is a copy of Certification No. WQC007233 issued to Randal Vosburg and Town of Apex, dated April 15, 2025. **This Certification replaces the Certification issued on December 20, 2024.** This Certification is being issued pursuant to a modification request submitted on March 5, 2025, to update impacts and plans related to modifications related to the final design of the access points and pump station.

This Water Quality Certification does not relieve the Permittee of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.

Upon the presentation of proper credentials, the Division of Water Resources (Division) may inspect the property.

This Water Quality Certification shall expire on the same day as the expiration date of the corresponding Section 404 Permit that is current at the time this Certification is issued. The conditions shall remain in effect for the life of the project, regardless of the expiration date of this Water Quality Certification.

Non-compliance with or violation of the conditions herein set forth may result in revocation of this Water Quality Certification for the project and may also result in criminal and/or civil penalties.

This approval and its conditions are final and binding unless contested [G.S. 143-215.5].

This Certification can be contested as provided in Chapter 150B of the North Carolina General Statutes by filing a Petition for a Contested Case Hearing (Petition) with the North Carolina Office of Administrative Hearings (OAH) **within sixty (60) calendar days**. Requirements for filing a Petition are set forth in Chapter 150B of the North Carolina General Statutes and Title 26 of the North Carolina Administrative Code. Additional information regarding requirements for filing a Petition and Petition forms may be accessed at http://www.ncoah.com/ or by calling the OAH Clerk's Office at (919) 431-3000.

A party filing a Petition must serve a copy of the Petition on:

Dan Hirschman, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, NC 27699-1601

If the party filing the Petition is not the Permittee, then the party must also serve the recipient of the Certification in accordance with N.C.G.S. 150B-23(a).

This letter completes the Division's review under section 401 of the Clean Water Act and 15A NCAC 02H .0500. Please contact Samantha Wooten at (919) 707-3631 or samantha.wooten@deq.nc.gov if you have any questions or concerns.

Sincerely,

DocuSigned by:
Stephanie Goss
755ABF0CD80B428...

Stephanie Goss, Supervisor
401 & Buffer Permitting Branch

Electronic cc: Consultant – Keven Duerr, Hazen and Swayer (kduerr@hazenandsawyer.com)
Laura Meyer, PWS, USACE Raleigh Regulatory Field Office (laura.j.meyer@usace.army.mil)
Gabriela Garrison, NCWRC (gabriela.garrison@ncwildlife.org)
DWR 401 & Buffer Permitting Branch Electronic file

Filename: 20240227 v3 Big Branch 2 Force Main and Pump Station – Wake – 401 MODIFICATION.docx

NORTH CAROLINA 401 WATER QUALITY CERTIFICATION

CERTIFICATION #WQC007233 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to North Carolina's Regulations in 15 NCAC 02H .0500 and 15A NCAC 02B .0200, to Randal Vosburg and Town of Apex, who have authorization for the impacts listed below, as described within your modification request received by the Division of Water Resources (DWR) on March 5, 2025, and subsequent information on October 16, 2024, and November 4, 2024, and by original Public Notice issued by the U. S. Army Corps of Engineers on September 25, 2024, and within the *Reasonable Period of Time* pursuant to 40 CFR Part 121.6.

The State of North Carolina certifies that this activity will comply with water quality requirements and the applicable portions of Sections 301, 302, 303, 306, 307 of the Public Laws 92-500 and PL 95-217 if conducted in accordance with the application, the supporting documentation, and conditions hereinafter set forth.

The following impacts are hereby approved. Impacts added or removed pursuant to this modification are shown in **blue bold** within the impact table. No other impacts are approved, including incidental impacts. [15A NCAC 02H .0506(b)]

Type of Impact	Amount Approved Permanent	Amount Approved Temporary	Mitigation Amount Required
Perennial Streams			
S1 – Access Road to PS (Culvert)	155 linear feet	0 linear feet	0 credits
S2 – Access Road to PS (Culvert)	0 linear feet	48 linear feet	0 credits
S3 – Utility Easement (Access/riprap)	13 linear feet	0 linear feet	0 credits
S4 – Utility Installation (Excavation)	0 linear feet	**31 linear feet**	0 credits
S17 – Utility Easement (Access/riprap)	**25 linear feet**	0 linear feet	0 credits
S18 – Utility Installation (Excavation)	0 linear feet	**25 linear feet**	0 credits
S19 – Utility Easement (Access/riprap)	17 linear feet	0 linear feet	0 credits
S20 – Utility Installation (Excavation)	0 linear feet	**50 linear feet**	0 credits

S25 – Utility Easement (Access/riprap)	**25 linear feet**	0 linear feet	0 credits
S26 – Utility Installation (Excavation)	0 linear feet	**16 linear feet**	0 credits
Totals:	***235 linear feet***	***170 linear feet***	***0 credits***
Intermittent Streams			
S5 – Utility Easement (Access/riprap)	15 linear feet	0 linear feet	0 credits
S6 – Utility Installation (Excavation)	0 linear feet	**42 linear feet**	0 credits
S7 – Utility Easement (Access/riprap)	**28 linear feet**	0 linear feet	0 credits
S8 – Utility Installation (Excavation)	0 linear feet	**32 linear feet**	0 credits
S9 – Utility Easement (Access/riprap)	10 linear feet	0 linear feet	0 credits
S10 – Utility Installation (Excavation)	0 linear feet	**16 linear feet**	0 credits
S11 – Utility Easement (Access/riprap)	10 linear feet	0 linear feet	0 credits
S12 – Utility Installation (Excavation)	0 linear feet	**26 linear feet**	0 credits
S13 – Utility Easement (Access/riprap)	12 linear feet	0 linear feet	0 credits
S14 – Utility Installation (Excavation)	0 linear feet	**25 linear feet**	0 credits
S15 – Utility Easement (Access/riprap)	18 linear feet	0 linear feet	0 credits
S16 – Utility Installation (Excavation)	0 linear feet	**31 linear feet**	0 credits
S21 – Utility Easement (Access/riprap)	19 linear feet	0 linear feet	0 credits

S22 – Utility Installation (Excavation)	0 linear feet	**97 linear feet**	0 credits
S23 – Utility Easement (Access/riprap)	14 linear feet	0 linear feet	0 credits
S24 – Utility Installation (Excavation)	0 linear feet	27 linear feet	0 credits
S27 – Utility Easement (Access/riprap)	14 linear feet	0 linear feet	0 credits
S28 – Utility Installation (Excavation)	0 linear feet	**28 linear feet**	0 credits
Totals:	***140 linear feet***	***324 linear feet***	***0 credits***
Riparian Wetlands			
W1 – Utility Easement (Conversion)	0.010 acres	0 acres	0 credits
W2 – Utility Installation (Excavation)	0 acres	0.014 acres	0 credits
Totals:	***0.010 acres***	***0.014 acres***	***0 credits***
Non-Riparian Wetlands			
W3 – Utility Easement (Access/riprap)	0.009 acres	0 acres	0 credits
W4 – Utility Installation (Excavation)	0 acres	0.035 acres	0 credits
Totals:	***0.009 acres***	***0.035 acres***	***0 credits***

This approval requires you to follow the conditions listed in the certification below.

CONDITIONS OF CERTIFICATION [15A NCAC 02H .0507(c)]:

1. The plans and specifications for this project are incorporated by reference as part of this Water Quality Certification. If you change your project, you must notify the Division, and you may be required to submit a new application package with the appropriate fee.

   If the property is sold, the Permittee shall provide the new owner must with a copy of this Water Quality Certification and all plans and specifications incorporated by reference. The Permittee may transfer this Water Quality Certification to the new owner by submitting a letter to the Division with the following statement: *"At the time the property is transferred, the terms and conditions of this 401 Individual Water Quality Certification, including the responsibility to*

ensure compliance, are binding on the new owner(s) of the property." The letter shall be signed and dated by both the transferee and the new owner.

Citation: 15A NCAC 02H .0507(d)(2)

2. Any final construction plans for this project must include or reference the application and plans approved by the Division under this authorization letter and certification. The applicant will also be required to evaluate all acquired permits to assure that they are consistent, and all relative impacts are accounted for and shown on the construction plans. Any additional impacts to streams and/or wetlands within the project may be considered cumulative to impacts approved in this Certification and may require a modification of this 401 Water Quality Certification approval.

   Citation: 15A NCAC 02H .0506; 15A NCAC 02H .0507(c)

3. All wetlands, streams, and surface waters located within 50 feet of the construction area on the project site shall be clearly marked (example- orange fabric fencing) prior to any land disturbing activities and must be maintained on the property until the project phase is completed.

   Citation: 15A NCAC 02H .0506(b)(2); 15A NCAC 02H .0507(c)

4. Appropriate measures should be installed prior to any land clearing activities to protect wetlands, streams, and/or buffers from turbidity and/ or sedimentation. These measures should be routinely inspected and properly maintained, and excavated materials should be contained outside wetland, stream, and/or buffer boundaries. Excessive silt and sediment loads can have numerous detrimental effects on aquatic resources including destruction of spawning habitat, suffocation of eggs, and clogging of gills of aquatic species.

   Citation: 15A NCAC 02H .0506(b)(2); 15A NCAC 02H .0507(c)

5. All wetlands impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and elevations. The impacted areas shall be revegetated with appropriate native species including woody species.

   Citation: 15A NCAC 02H .0506(b)

6. Any additional impacts to streams and/or wetlands as a result of future roads, buildings, driveways, utility lines or other development related activities within the Big Branch 2 Force Main and Pump Station may be considered cumulative to impacts approved in this Certification and may require a modification of this 401 Water Quality Certification approval.

   Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

7. The permittee shall comply with any moratoriums per the National Marine Fisheries Service and/or the US Fish and Wildlife Service.

   Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 04B .0125

8. The permittee shall provide on-site supervision of stability work including, but not limited to bank re-sloping, culvert installation, in-stream structure placement, and riparian zone re-establishment,

by an appropriately trained individual.

Citation: 15A NCAC 02H .0506(b)(1) and (2)

9. Disturbed areas shall be stabilized at the end of each working day to ensure downstream water quality standards are maintained throughout construction.

   Citation: 15A NCAC 02H .0506(b)(1) and (2)

10. The Permittee shall secure an *approved* stormwater management plan (SMP) from NCDEMLR ***before any*** impacts authorized in this Certification occur. The applicable portion of the approved SMP shall be constructed and operational before any permanent building or other permanent structure is occupied at the site. If any of the SCMs are used as an Erosion and Sediment Control device, it must be restored to the approved stormwater design condition within 30 days of close-out of the Erosion and Sediment Control Plan.

    Citation: 15A NCAC 02H .0506(b)(2) and (3); 15A NCAC 02H .0507(c)

11. If the Permittee becomes aware of any inability to comply with any of the conditions of this Water Quality Certification, they must notify the Raleigh Regional Office within 24 hours (or the next business day if it is a weekend or holiday) from the time the Permittee becomes aware of the circumstances. The Permittee may be required to submit a new application package with appropriate fee to initiate modification of this authorization, and/or to conduct corrective actions as determined by the Division.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

12. The Permittee shall report to the DWR Raleigh Regional Office any noncompliance with, and/or any violation of, stream or wetland standards [15A NCAC 02B .0200], including but not limited to sediment impacts to streams or wetlands. Information shall be provided orally within 24 hours (or the next business day if it is a weekend or holiday) from the time the Permittee became aware of the non-compliance circumstances.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

13. No waste, spoil, solids, or fill of any kind shall occur in wetlands or waters beyond the footprint of the approved impacts (including temporary impacts).

    Citation: 15A NCAC 02H .0506; 15A NCAC 02H .0507(c)

14. All activities shall be in compliance with any applicable State Regulated Riparian Buffer Rules in Chapter 2B of Title 15A in the North Carolina Administrative Code.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

15. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and Pollution Control Act, all projects shall

incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur.

Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*, or for linear transportation projects, the *North Carolina Department of Transportation Sediment and Erosion Control Manual*.

All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality Waters (HQW), or Outstanding Resource Waters (ORW), then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds*.

Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC02B .0200; 15A NCAC 02B .0231

16. Sediment and erosion control measures shall not be installed in wetland or waters except within the footprint of temporary or permanent impacts otherwise authorized by this Certification. If placed within authorized impact areas, then placement of such measures shall not be conducted in a manner that results in dis-equilibrium of any wetlands, streambeds, or streambanks. Any silt fence installed within wetlands shall be removed from wetlands and the natural grade restored within two (2) months of the date that DEMLR or locally delegated program has released the specific area within the project to ensure wetland standards are maintained upon completion of the project.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231

17. Erosion control matting that incorporates plastic mesh and/or plastic twine shall not be used along streambanks or within wetlands.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

18. If the project is covered by NPDES Construction Stormwater Permit Number NCG010000 or NPDES Construction Stormwater Permit Number NCG250000, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping, and reporting requirements is required.

Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231

19. All work in or adjacent to streams shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the NC Sediment and Erosion Control Manual or the NC Department of Transportation Construction and Maintenance Activities Manual, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200

20. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. If the width of the culvert is wider than the stream channel, the culvert shall include multiple boxes/pipes, baffles, benches, and/or sills to maintain the natural width of the stream channel. If multiple culverts/pipes/barrels are used, low flows shall be accommodated in one culvert/pipe and additional culverts/pipes shall be installed such that they receive only flows above bankfull.

    Placement of culverts and other structures in streams shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20% of the culvert diameter for culverts having a diameter less than or equal to 48 inches, to allow low flow passage of water and aquatic life. If the culvert outlet is submerged within a pool or scour hole and designed to provide for aquatic passage, then culvert burial into the streambed is not required.

    For structures less than 72" in diameter/width, and topographic constraints indicate culvert slopes of greater than 2.5% culvert burial is not required, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/connectivity has been provided when possible (e.g., rock ladders, cross-vanes, sills, baffles etc.). Notification, including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations, shall be provided to DWR thirty (30) calendar days prior to the installation of the culvert.

    When bedrock is present in culvert locations, culvert burial is not required, provided that there is sufficient documentation of the presence of bedrock. Notification, including supporting documentation such as a location map of the culvert, geotechnical reports, photographs, etc. shall be provided to DWR a minimum of 30 calendar days prior to the installation of the culvert. If bedrock is discovered during construction, then DWR shall be notified by phone or email within 24 hours of discovery.

    Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or

other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native woody vegetation and other soft stream bank stabilization techniques shall be used where practicable instead of rip-rap or other bank hardening methods.

Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

21. Application of fertilizer to establish planted/seeded vegetation within disturbed riparian areas and/or wetlands shall be conducted at agronomic rates and shall comply with all other Federal, State and Local regulations. Fertilizer application shall be accomplished in a manner that minimizes the risk of contact between the fertilizer and surface waters.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231

22. If concrete is used during construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state.

    Citation: 15A 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231

23. All proposed and approved temporary fill and culverts shall be removed and the impacted area shall be returned to natural conditions within sixty (60) calendar days after the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross-sectional dimensions, planform pattern, and longitudinal bed profile. All temporarily impacted sites shall be restored and stabilized with native vegetation.

    Citation: 15A NCAC 02H.0506(b); 15A NCAC 02H .0507(c)

24. All proposed and approved temporary pipes/culverts/rip-rap pads etc. in streams or wetlands shall be installed as outlined in the most recent edition of the *North Carolina Sediment and Erosion Control Planning and Design Manual* or the *North Carolina Surface Mining Manual* or the *North Carolina Department of Transportation Best Management Practices for Construction and Maintenance Activities* so as not to restrict stream flow or cause dis-equilibrium during use of this Certification.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

25. Any rip-rap required for proper culvert placement, stream stabilization, or restoration of temporarily disturbed areas shall be restricted to the area directly impacted by the approved construction activity. All rip-rap shall be placed such that the original streambed elevation and streambank contours are restored and maintained and shall consist of clean rock or masonry material free of debris or toxic pollutants. Placement of rip-rap or other approved materials shall not result in de-stabilization of the stream bed or banks upstream or downstream of the area or be installed in a manner that precludes aquatic life passage.

Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

26. Any rip-rap used for stream or shoreline stabilization shall be of a size and density to prevent movement by wave, current action, or stream flows, and shall consist of clean rock or masonry material free of debris or toxic pollutants. Rip-rap shall not be installed in the streambed except in specific areas required for velocity control and to ensure structural integrity of bank stabilization measures.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0201

27. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the maximum extent practicable. Fueling, lubrication, and general equipment maintenance shall be performed in a manner to prevent, to the maximum extent practicable, contamination of surface waters by fuels and oils.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231

28. Heavy equipment working in wetlands shall be placed on mats or other measures shall be taken to minimize soil disturbance and compaction.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0231

29. In accordance with 143-215.85(b), the Permittee shall report any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours.

    Citation: 15A NCAC 02H .0507(c); N.C.G.S. 143-215.85(b)

30. The Permittee and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

31. The Permittee shall require its contractors and/or agents to comply with the terms and conditions of this certification in the construction and maintenance of this project and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this Water Quality Certification. A copy of this Water Quality Certification shall be available at the project site during the construction and maintenance of this project.

    Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

32. This Water Quality Certification neither grants nor affirms any property right, license, or privilege in any lands or waters, or any right of use in any waters. This Water Quality Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and does not create any prescriptive right or any right of priority regarding any usage of water. This Water Quality Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Water Quality Certification to possess any prescriptive or other right of priority with respect to any other consumptive user.

This Water Quality Certification shall expire on the same day as the expiration date of the corresponding Section 404 Permit that is current at the time this Certification is issued. The conditions shall remain in effect for the life of the project, regardless of the expiration date of this Water Quality Certification.

This, the 15th day of April 2025

DocuSigned by:
Stephanie Goss
755ABF0CD80B428...

Stephanie Goss, Supervisor
401 & Buffer Permitting Branch